Project number: 2024-1-RO01-KA220-VET-000255736

Strategies for Combating Unfair Practices Regarding Horticultural Cooperative Products Sold Directly to Consumers and Through Distribution Networks (PART 1)

Specifications for greenhouse producers



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Block 1: INTRODUCTION TO GREENHOUSE TOMATO CULTIVATION



Geographical distribution and economic importance

Description: taxonomy and morphology Agronomic factors

Crop cycles Crop management

Pests, diseases, and disorders Harvesting

Cultivation costs

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1. Geographic distribution and economic importance

The tomato is the most widely cultivated vegetable in the world and the one with the highest economic value.

- The global area under tomato cultivation is nearly 5 million hectares, with a production of 186.1 million tons. The world's largest producer is China, with 68 million tons, while Spain ranks eighth with 3.8 million tons (*).

- In 2023, 43,027 ha were cultivated in Spain, producing 3.5 million tons; in Andalusia, the cultivated area was 9,029 ha, with a production of 1.5 million tons, of which 8,568 ha and 0.760 million tons correspond to greenhouses in the province of Almería (**).

- Average global consumption is 10 kg per capita per year: 13.6 kg in the EU and 13.32 kg in Spain (**).

(*) FAOSAT data, 2023 (**) MAGRAMA data, 2023

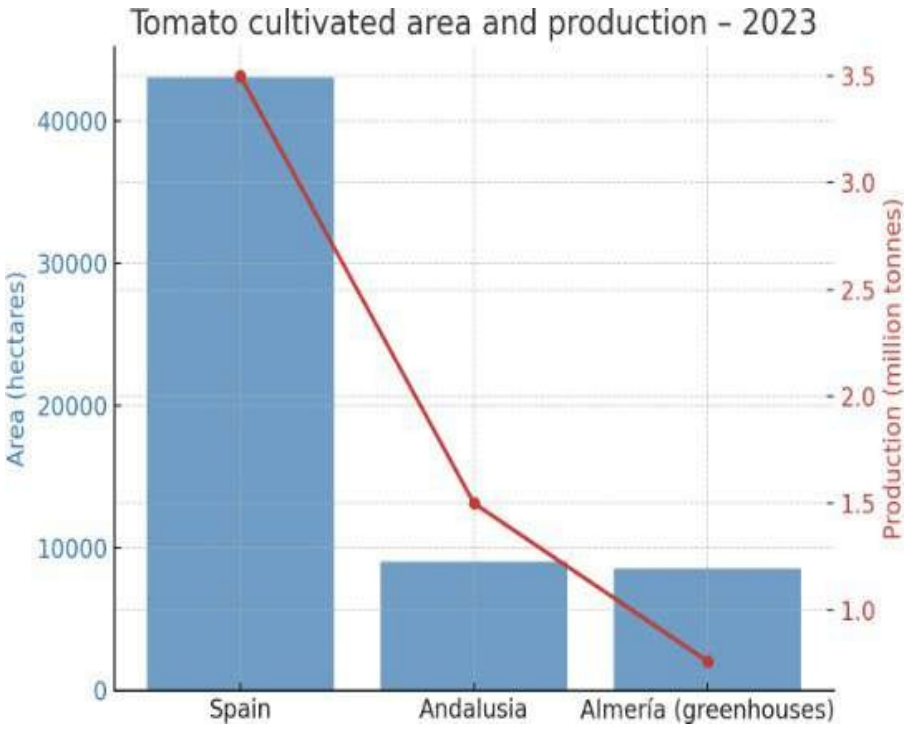

Figure 1. Data on cultivated area and tomato production in 2023 in Spain, Andalusia, and Almería.

Prepared by the authors based on MAGRAMA data.

2. Description

Taxonomy

- FAMILY: Solanaceae
- GENUS: *Lycopersicum*
- SPECI *esculentum*

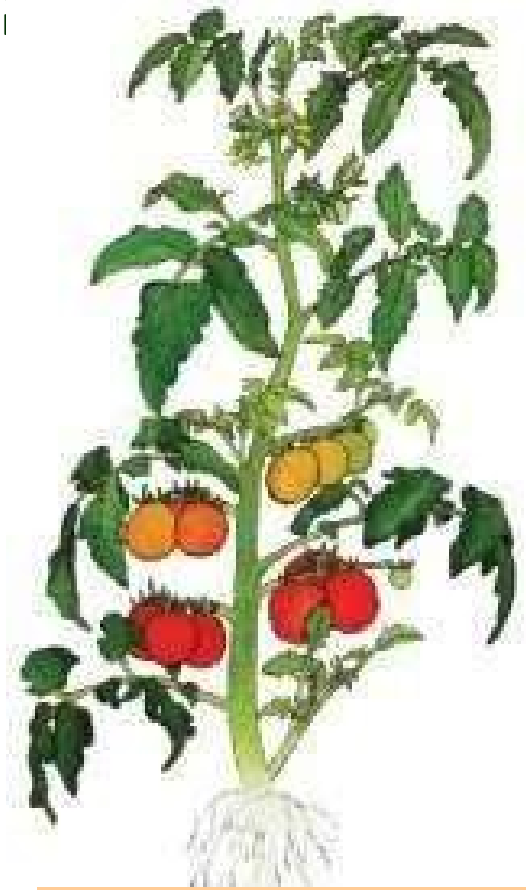

Image 1. Tomato plant.
Source: Eureka Portal.

Morphology

ROOT SYSTEM

- It consists of a taproot, secondary roots, and adventitious roots.
- Its development is influenced by growing conditions; in the greenhouses of Almería, due to localized drip irrigation, it is more horizontal than vertical, and 70% of the roots are found in the top 20 centimeters of soil.

STEM

- The stem is erect in the early stages of development and semi-erect or trailing later on, which is why it requires **support.**
- The lateral branches are as vigorous as the main stem, and their growth can be determinate (up to a certain number of leaves) or indeterminate, reaching up to 20 m in length.
- It is covered with **glandular hairs,** and the outer cells are photosynthetic.
- The plant develops adventitious roots, so **pruning** and **shallow plowing** can stimulate root development.

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Description: Taxonomy and Morphology

LEAVES

- They are compound, with an odd number of leaflets.
- They are arranged alternately on the stem.
- They are hairy and have glands that secrete aromatic substances.

FLOWER

- The flower is complete, with 5 or more petals, 5 or more sepals, and multiple **carpels**.
- They appear in clusters with a variable number of flowers, simple at the lower part of the stem and more branched at the upper part.
- The first inflorescence appears on the stem starting with the 5th leaf and then every 2 or 3 leaves.
- It is self-pollinating but requires minimum temperature and humidity conditions to form.
- It does not contain nectar, so if bumblebees are needed for pollination, we must provide them with sugar-containing drinks.

FRUIT

- The fruit is a fleshy berry with two or more locules.
- When ripe, it can be red, pink, or yellow.
- The shape can be round, flattened, or pear-shaped.
- The surface is smooth or ridged
- The size is highly variable, with a weight ranging from 5 to 500 g, depending on the variety.
- The green fruit is photosynthetic, generating 10–15% of its own weight.
- The time required for a fertilized ovary to develop into a fruit is 7 to 9 weeks.



Image 2. Tomato inflorescence.

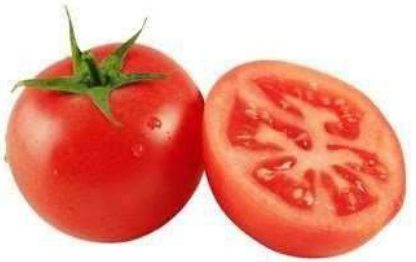

Image 3. The Image 2.

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3. Agronomic factors

The tomato is a warm-climate crop, but we now have varieties adapted to winter growing cycles.

All climatic factors are interdependent, and any one of them can affect crop development, from germination to fruit ripening.

Climate and Soil

TEMPERATURE

- The **optimal** temperature for tomato growth is between 20 and 25 °C during the day and between 15 and 18 °C at night. This plant requires a daily temperature range of 6–7 °C.
- **Extreme temperatures** affect growth, fruit set, and yield.
- Soil temperatures below 12 °C are critical for root development and, consequently, affect the growth of the aboveground parts.

RELATIVE HUMIDITY

- The optimal humidity level depends on temperature. The combination of these two factors determines the amount of water vapor present in the greenhouse atmosphere, the vapor pressure deficit (VPD), the plant's stress status, and its ability to transpire and grow.
- Relative humidity levels above 80% create an environment conducive to pathogen attack (fungi and bacteria).
- Levels below 60% relative humidity lead to water stress and a low rate of photosynthesis.

Agronomic factors. Climate and soil

SUNLIGHT

- Tomatoes require between 8 and 16 hours of light per day and good illumination.
- **Low levels** lead to:
  - Excessive vegetation
  - Thinning of plants
  - Difficulty setting fruit
  - Reduced fruit size and quality
- **High levels** cause:
  - Growth arrest
  - Deformed fruit

CARBON DIOXIDE (CO2)

- It is one of the factors that limit crop growth and development.
- The atmospheric concentration is approximately 360 ppm.
- The optimal value for a tomato crop in a Mediterranean greenhouse is 355 ppm with the windows open and 600–700 ppm with the windows closed.

SOIL

- Tomatoes are not particular about soil, but they prefer well-drained soils.
- They tolerate salinity up to 3.5 dS/m in saturated extract. Above these values, fruit quality increases, but yield decreases.



Figure 4. Greenhouse with side and zenithal ventilation

Plant material

The most common tomato varieties grown in greenhouses are:

PLANT TYPE



- This is the traditional variety from La Cañada (Almería).
- Flat fruit with ridges and a green stem end.
- Most appreciated for its taste
- It has a very short shelf life.

SMOOTH OR BEEF TYPE



- A globular, thick fruit with green shoulders.
- Harvested in 0.5-liter containers for the domestic market.

LONG-TERM TYPE LONG



- Round, smooth fruit, deep red.
- Their long shelf life has led to a a commercialization.



RAMILLET VARIETY

- A medium-sized fruit, deep red in color, with a long shelf life and good flavor.
- The cluster should resemble a fish scale , and the ripening of the fruit must be uniform.



PEAR TYPE

- Ovoid, medium-sized fruit, deep red in color, firm, with a less acidic taste than the previous varieties.



CHERRY TYPE

- Small fruits with highly branched clusters

The varieties available on the market for each type of tomato can be found in the “Seed Handbook” and on the website **www.portagrano.net.**

Agronomic factors. Plant material

GATEKEEPERS

- Grafted tomatoes offer greater vigor and resistance to soil-borne problems, such as fusarium or nematodes, and the same yield with a lower planting density.
- The most commonly used rootstocks for tomatoes are interspecific hybrids derived from the cross *between L. sculentum and L. hirsutum.*
- Currently, 60% of cultivated tomatoes are grafted, and this trend is on the rise.



Image 5. Grafted plant Source: Tecnobioplant

SELECTING PLANT MATERIAL

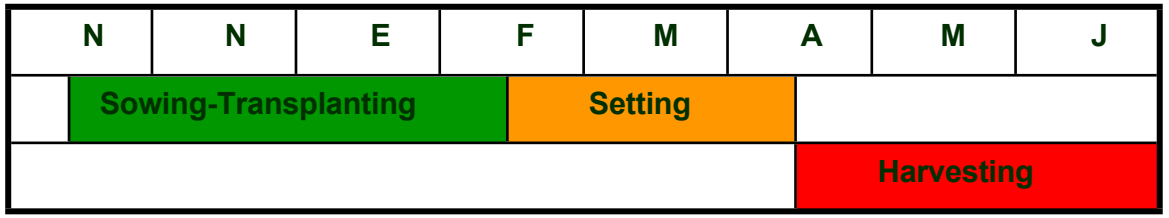
- This will be based on:
- **The market,** taking into account
- Consumer preferences regarding color, flavor, and shape.
- Fruit preservation, which will allow for a longer or shorter shelf life.
- **The growing environment,** taking into account
- Greenhouse structure: if it is low and/or poorly ventilated, very vigorous varieties will have rot problems, so it is necessary to choose varieties with reduced foliage and thin stems.
- The soil, its fertility, and health, which will determine the vigor and resistance required of the variety and rootstock.
- Climate, which will determine adaptation to the region and the growing season.
- The quality of irrigation water, particularly salinity.

Agronomic factors. Planting stock

The most common crop cycles in Almeria greenhouses are:

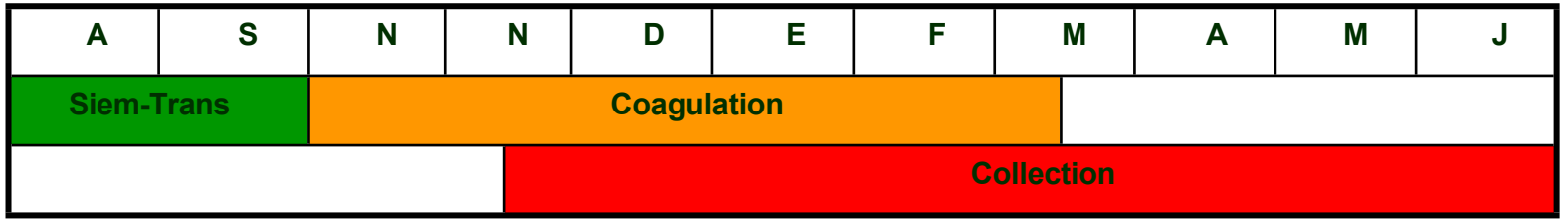
SPRING CYCLE

Specifically, varieties for harvesting cherry tomatoes



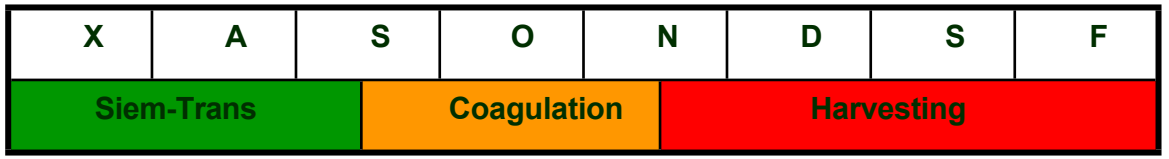
LONG CYCLE

Vigorous varieties that grow well in cold conditions and low light



AUTUMN CYCLE

Varieties that coagulate well in warm weather



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4. Crop Management

Soil and Greenhouse Preparation

SOIL PREPARATION

- Analyze the health issues of the previous crop and take appropriate action.
- Disinfect the soil if necessary, giving priority
- non-chemical methods.
- Conduct a physical-chemical analysis of the soil.
- Fertilize the soil and add organic matter judiciously, based on the results of the soil analysis.
- Test the water for proper management and adjustment of fertigation.

GREENHOUSE PREPARATION

- Repair plastic screens, doors, and windows.
- Remove weeds from inside and outside the greenhouse.
- Remove all plant debris.
- Check the irrigation and treatment systems.
- Disinfect the structure with products whose residual effect does not affect the subsequent establishment of beneficial fauna.



Image 6. Solarization.



Image 7. Organic matter in layers



Image 8. Repairing the plastic

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Crop management. Sowing and planting

Sowing and planting

SOWING

- Sowing must be carried out in authorized germination beds.
- The plant must have a phytosanitary passport.
- If grown in soil, sow approximately 30 days before transplanting in summer and 40 days before transplanting in winter.
- If grown hydroponically, sow approximately 20 days before transplanting.
- If the plant is grafted, it must be planted 45–60 days in advance before transplanting.



Tomato plants in seed trays.

PLANTING SPACING

- Planting density must allow for good light and air circulation around the plant and therefore depends on:
- Variety: more vigorous varieties require larger structures.
- Growing season: Long growing seasons require large structures.
- The type of pruning and support to be used. The most common structures are

- 1 m x 0.5 m → 2 plants/m²
- 1.5 m x 0.5 m → 1.33 plants/m²
- 2 m x 0.5 m → 1 plants/m²



Figures 10 and 11. View of the greenhouse after transplanting and a close-up of the recently transplanted plant.

TRANSPLANTING INTO SOIL

- Before transplanting, the soil is irrigated to ensure it has sufficient moisture. Soil test results will be evaluated to determine whether salt leaching and a reduction in
- electrical conductivity. Watering must be carried out efficiently. Excessive irrigation leads to water contamination through nitrate leaching.
- Sand and manure are removed along the drip line, and holes are made.
- Place the root ball in the hole, press it gently into the soil, and cover it with sand.
- Water briefly to settle the root ball to soil.



Image 12.
Plant ready for transplanting.

TRANSPLANTING INTO THE SUBSTRATE

- Thoroughly water the substrate with water and nutrient solution before planting.
- If the plant is delivered in mineral wool blocks, place the root ball on the substrate and secure the drip stake to the root ball.
- If the plant comes with a root ball made of peat or perlite with vermiculite, place it in the substrate.
- After planting, drainage is provided at the bottom of the tray or bag.



Figures 13 and 14. Plants before and after transplanting into the substrate.

The pruning and support system must ensure optimal exposure of the crop to sunlight and adequate ventilation, especially in winter.

CONSIDERATIONS

- The stem is not **apically dominant**; the lateral stems are just as vigorous as the main stem, so pruning is necessary to improve production.
- Suckers should be removed as soon as possible to avoid wasting sap on unnecessary parts of the plant and to prevent causing too much damage to the plant.

PRUNING

- Begins 2–3 weeks after transplanting.
- The first shoots and lower leaves are removed so they do not touch the ground.
- This operation is performed throughout the entire growth cycle, repeating every 1–2 weeks, depending on the growth rate.

1 BRANCH PRUNING: consists of removing all lateral shoots.

2 BRANCH PRUNING

- It is performed on grafted crops and on
- ungrafted crops when the plant next to it has been lost.
- One axillary shoot is left in addition to the main stem.
- This allows for a greater number of fruits per plant, but they are usually smaller in size.

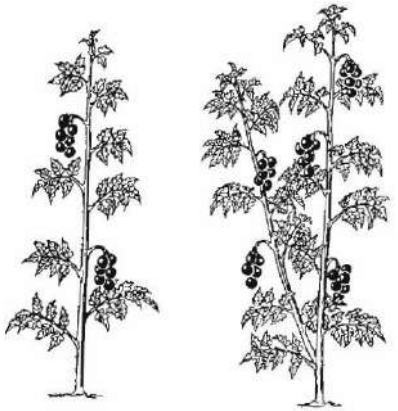
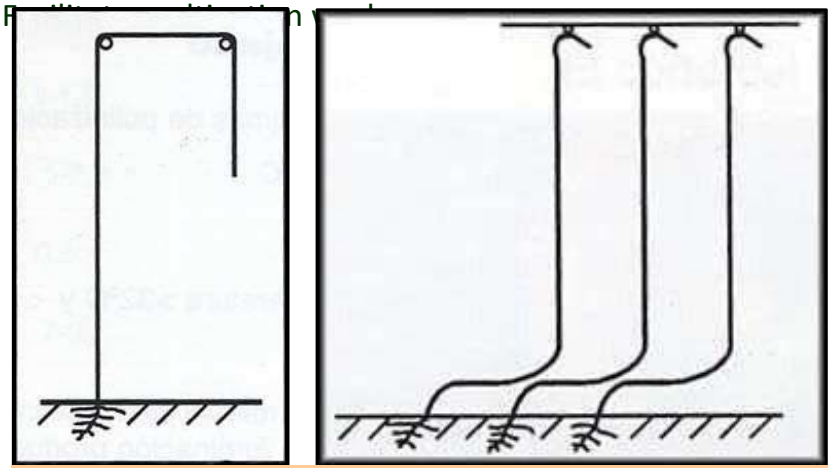


Figure 16. Single-arm and two-arm pruning diagrams

At first, the stem grows upright, but later becomes trailing, so staking is absolutely necessary for this crop.

THE BENEFITS OF A TRELLIS

- Make better use of the space.
- Prevents leaves and fruit from touching the ground.
- Improves air circulation and light exposure for the plant.
- Optimal use of plant protection products.
- [illegible]



Figures 17 and 18. Diagram of the horizontal trellis and trellis without hooks.

TRELLIS SYSTEMS

- The most common system uses raffia twine tied to the base of the stem and to the trellis wire for support. The raffia twine is tied or clipped to the stem with rings as the plant grows.
- When the plant reaches the wire, you can choose to:
  - **Let it grow horizontally** along the trellis to the next wire, forming a canopy, and from there let it hang vertically.
  - **Detach the plant**, detach the base, loosen the string by about 30 cm, and reattach it to the wire.

POST-AND-TWINE TREILLISING

- This is a variation of the plant support method, in which one end of the twine is tied to the stem, and the other end is wrapped around a hook suspended from the trellis. The twine is secured to the stem using rings.



Figures 19, 20, and 21. Trellis cultivation using the post system and details of the posts and rings.

PRUNING

Recommended to facilitate light exposure, air circulation, and fruit ripening.

- Do not remove more than 2 or 3 leaves per plant at a time, so as not to unbalance the plant.
- Cut the leaf at the stem with a blade, making a clean cut to prevent disease.
- Diseased and old leaves should also be removed.



Image 22. Leafless tomato plants

Pollination and Fruit

All modern tomato varieties are self-pollinating, but under unfavorable environmental conditions, it is necessary to apply techniques that promote fruit set.

CLIMATIC INFLUENCE

- Temperature and light are the two factors that most influence fruit set.
- At extreme temperatures, pollen quantity and viability decrease.
- High temperatures cause flowers to drop, while low temperatures lead to branching of the inflorescences and an increase in the number of flowers.
- Low light causes the stigma to elongate, which, when positioned below the anthers, hinders self-pollination.



A bumblebee hive and a bumblebee pollinating a tomato flower.

- Relative humidity must be above 70%, because the anther must "absorb" moisture to open and release pollen, and the pollen grains must adhere to the stigma.

COAGULATION METHODS
Moving the plant with a jet of air

- This allows pollen to be released if the humidity and temperature are right: neither at dawn nor at dusk.

Bumblebees *(Bombus terrestris)*

- Improved quantity and quality and quality and labor savings.
- 4 hives/ha are are facing toward the south, protected from the sun, moisture, and ants.
- They are replenished every 6 weeks.
- Only protective plant products compatible with bumblebees are applied.

Fertigation

In greenhouse crops with drip irrigation, fertilizers are applied dissolved in the irrigation water.

Water and nutrient requirements depend on:

- The time of year
- The phenological stage of the crop
- Plant vigor
- Soil type
- Salinity of irrigation water

NUTRITIONAL REQUIREMENTS

To produce one ton of crop, the plant must extract the following amounts of nutrients from the soil, according to Segura, 2009:

- N 3.11 kg/mt of crop
- P 0.60 kg/mt of crop
- K 4.21 kg/mt of crop
- Ca 2.26 kg/mt of crop
- Mg 1.08 kg/ton of crop

WATER REQUIREMENTS

- To calculate them:
- **Irrigation recalculations** in L/m^2 per day, from the IFAPA Irrigation Assistance System, which can be consulted on the IFAPA website.
- Soil **moisture meters** that allow us to determine the amount of water available in the soil. Irrigation is recommended when the value is between 20 and 30 cb.



Figure 25. Tensiometer



Fig. 26. Irrigation nozzle for fertigation

Pests, Diseases, and Disorders

A nutrient solution must contain all the elements necessary for the crop, namely: **Macroelements:**

- Nitrogen
- Phosphorus
- Potassium
- Calcium
- Sulfur
- Magnesium

Trace elements:

- Iron
- Manganese
- Copper
- Zinc
- Boron
- Molybdenum

En g/m² y día

Fase de cultivo	Equilibrio N:P:K	g/m² día	CE (dS/m)
Transplante - Floración	1:2:1	1,5	Agua + 0,5
Floración - Cuajado	1:1:1	3	Agua + 0,8
Recolección	1:1:1,5	4	Agua + 1,0

Fuente "Técnicas de producción en cultivos hortícolas protegidos" (2003)

En milimol/L

Ion	NO_3^-	$H_2PO_4^-$	SO_4^{2-}	NH_4^+	K^+	Ca^{2+}	Mg^{2+}
mmol/L	10,5	1,5	2,5	1,5	7	3,75	1

Sonnelveld, 1984

Ion	Fe	Mn	Cu	Zn	B	Mo
mmol/L	10,5	1,5	2,5	1,5	7	1

Steiner, 1966

The fertilizer recommendations provided here are general guidelines and should be adapted to growing conditions, as explained above.

5. Pests, Diseases, and Pathologies

PESTS	DISEASES	PHYSIOLOGICAL DISORDERS
• Insects ♦ Whitefly ♦ Thrips ♦ Tuta absoluta ♦ Leaf miner ♦ Caterpillars ♦ Aphid • Mites ♦ Red spider mite ♦ White spider ♦ Vessels • Nematodes ♦ Batatilla	• Airborne fungi ♦ Mold ♦ Alternaria ♦ Powdery mildew ♦ Botrytis • Stem and root rot • Fusarium • Bacterial blight ♦ Pseudomonas ♦ Erwinia ♦ Clavibacter • Virus ♦ TYLCV ♦ TSWV ♦ ToMV	• Nutritional • Environmental

The following is a summary of the most common pests and diseases affecting greenhouse-grown tomato crops.

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Pests, Diseases, and Disorders

Whitefly *Bemisia tabaci*

- They colonize the young parts of the plants and lay their eggs on the underside of the leaves. As they feed, they cause the plant to weaken and turn yellow and produce honeydew, which reduces photosynthesis and transpiration. The fungus "black mold" settles on the honeydew.
- It transmits, among other things, the TYLVC virus.
-



THRIPS *Frankliniela occidentalis*

- They lay their eggs in the plant tissue of leaves, fruits, and flowers. Their feeding causes the affected parts to turn silvery.
- The main damage is the transmission of the TSWV virus.
-



APHIDS *Myzus persicae* and *Aphis gossypii*

- They form colonies and are distributed in foci that are dispersed, especially in spring and fall, by winged females.
- As they feed, they release deform injecting toxins and secreting honeydew the leaves by injection bees.
- transmit, among others, the CMV and PVY viruses, which have a limited effect on tomatoes.



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Pests, Diseases, and Disorders

Liriomyza sp. **leaf miner**

- It is a small dipteran that lays its eggs in the tissue of young leaves. The larva feeds on the parenchyma, burrowing galleries and thus reducing photosynthesis.
-



TOMATO MOTH *Tuta absoluta*

- A small, nocturnal Lepidopteran. During the day, it hides in the leaves. Eggs are laid on the underside of young leaves, on stems, and on the calyx of immature fruits.
- The larvae burrow into the leaves, pierce the stems and shoots, and penetrate the immature fruits, causing deformities.
-



NETTLE MOTHS *Heliothis armigera, Spodoptera exigua, Autographa gammna, and Chrysodeisis chalcites*

- Several species of Lepidoptera whose larvae differ in the number of false abdominal legs.
- Damage is caused by larvae that feed on leaves, fruits, and stems and can even defoliate plants.



Green stink bug

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Pests, Diseases, and Disorders

RED SPIDER MITE *Tetranichus urticae*

- It is a polyphagous mite that develops on the underside of leaves. Infestation occurs in the form of outbreaks.
- It causes discoloration, indentations, and yellowish spots and can even lead to defoliation and the plant drying out.



WHITE MITE *Polygotarsonemus latus*

- It is a tiny mite. Like the red spider mite, it develops on the underside of leaves and attacks in outbreaks.
- It causes curling of the leaves and the central vein.



VASATES *Aculops lycopersici*

- This mite is not visible to the naked eye.
- It is spread by light from spotlights and spreads mechanically. It develops upward, starting from the base of the plant.
- It first appears on the stem, then on the leaves, and even on the fruit.



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Pests, Diseases, and Disorders

NEMATODES

- These penetrate the roots from the soil and block the vessels, preventing the roots from absorbing water and nutrients.
- They produce the characteristic root galls that give them the common name "batatilla," green wilting within a few hours, chlorosis, and stunted growth in plants.



Batatilla on tomato roots

GENERAL PEST CONTROL MEASURES

Physical/mechanical

Remove weeds and plant debris. Install screens on the windows.

Set traps (chromotropic, pheromone, and light traps).

Biological

Use of natural enemies. Organisms for biological control of major pests can be found in the IFAFAFA publication **"Collection of Biological Control Organisms in Protected Horticultural Crops."**

Chemical

Apply plant protection products rationally. Authorized products can be found in the Plant Protection Products Register of the Ministry of Agriculture, Food, and the Environment.

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Pests, Diseases, and Disorders

TOMATO BLIGHT

Phytophthora infestans and Phytophthora nicotianae

- These cause the appearance of oily-looking spots, which later turn brown, giving the plants a scorched appearance.
- It requires high relative humidity (90%), cool nights, and warm days.
- It develops very rapidly.



ALTERNARIASIS *Alternaria dauci*

- Brown, concentric spots on the leaves and necrosis on the sepals. Requires environmental conditions similar to those of powdery mildew.



Powdery mildew or gray powdery mildew *Leveillula taurica*

- Produces yellow spots on the upper surface, corresponding to the purplish mold on the lower surface.
- Requires a relative humidity of 50–70% and a temperature of 20–25°C for development.



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Pests, Diseases, and Disorders

GRAY RUST *Botrytis cinerea*

- To develop, it requires a relative humidity of 95% and a temperature between 10 and 23 °C.
  The infection begins at wounds and senescent tissues.
- A brown, watery spot forms, on which a gray mold develops. It affects all parts of the
- plant.
-



WHITE POD ROT *Sclerotinia sclerotiorum*

- Similar to the previous one, but with white mold.
  It affects all parts of the plant.
-



FUSARIOSIS *Fusarium oxysporum f.sp. lycopersici*

- Causes the plant to wilt, starting on one side and then spreading to the entire plant.
  Greenhouse-grown varieties are resistant.
-



FUSARIOSIS *Fusarium oxysporum f.sp. radicis lycopersici*

- Causes widespread wilting of the aboveground parts. The leaves turn yellow from the base to the terminal bud.
- Brown root rot.
-



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Pests, Diseases, and Disorders

Some fungal lesions on tomato fruits



Botrytis rot



Botrytis ghost spot



Brown spot caused by downy mildew

GENERAL METHODS FOR CONTROLLING FUNGI

- Use resistant varieties.
- Remove plant debris and.
- Ventilate the greenhouse to avoid excessive humidity.
- Water and fertilize properly, avoiding excess nitrogen.
- Apply preventive and curative chemical treatments depending on the causative agent.
- For soil-borne fungi, graft onto resistant rootstocks.
- Disinfect the soil, giving priority to non-chemical methods.

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Pests, Diseases, and Disorders

BACTERIA	DAMAGE	IMAGE	CONTROL MEASURES
Pseudomonas syringae pv. tomato	Dark spots 2–3 mm in size on all above-ground parts.	 Source: Plant Health Almeria	PREVENTIVE • Proper management of irrigation and ventilation • Disinfection of tools • Removal of affected parts • Pay special attention when pruning, avoiding large cuts. • Avoid exposing the plants to liquid water. TREATMENTS • Copper compounds • Apply copper paste to wounds
Pectobacterium spp.	Soft, watery rot. Enters through wounds.		
Clavibacter michiganesis	Leaf drop, plant wilting, and browning of vessels	 Source: Plant Health Almeria	

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Pests, Diseases, and Disorders

VIRUS	TRANSMISSION	SYMPTOMS	IMAGE	CONTROL METHODS
PepMV	Contact and Seeds	Phyllomorphism Mosaics Irregular ripening		• Cultivation of resistant varieties • Removal of diseased plants • Weed control • Control of insect vectors • Use of seeds with a health guarantee • Disinfect tools, hands, etc.
TYLCV	Whitefly	Dwarfing Yellowing Leaf curling		
TSWV	Thrips	Yellowing of young leaves Ring spots on fruit		

Pests, diseases, and disorders

NUTRIENTS	SYMPTOMS	IMAGE	POSSIBLE CAUSES	CORRECTION
Nitrogen	Generalized yellowing.		Inadequate fertilization.	Increase the nitrogen dose.
Phosphorus	Purple discoloration on the underside of the leaves.		Immobilization caused by low temperatures, high pH, and high calcium content.	Foliar application of phosphorus fertilizers. Correct pH.
Potassium	Yellowing and necrosis at the leaf margins and fruit ripening.		Inadequate fertilization, antagonisms, K/N or Mg/K imbalance.	Application of potassium fertilizers. Correct the imbalances.
Calcium	Apical fruit rot. Discoloration of young leaves.		High plant transpiration, which shifts calcium to the leaves. Na/Ca antagonism	Foliar application of calcium. Correct the imbalance.

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Pests, Diseases, and Disorders

PHYSIOPATHY	SYMPTOMS	IMAGE	CAUSES	CORRECTION
Fruit deformation	Fruit deformation with deep indentations.		Abnormal flower development due to low temperatures	Control temperature and fertilization.
Cracks	Radial or circular cracking of the fruit.		Excessive irrigation or heavy rainfall. Condensation on fruit.	Avoid excessive irrigation. Fertilize after heavy rainfall.
Sunscald	Depressions and whitish spots on the fruit.		Exposure of fruit to direct sunlight during hot weather.	Do not leave the fruit uncovered, without removing the southern side.
Phytotoxicity	Spots and burns on leaves and fruit.		Incorrect application of pesticides.	Do not treat during hot weather; follow dosage and compatibility guidelines.

QUALITY STANDARDS

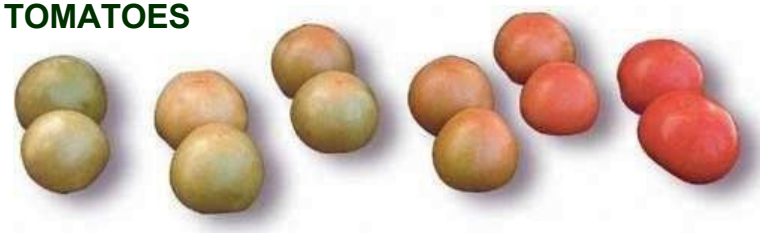
- The minimum requirements that “ ” tomatoes must meet in order to be marketed, in accordance with the Order of October 7, 2008, issued by the Ministry of Agriculture of the Regional Government of Andalusia, are as follows:
- Whole, sound, and clean
- Must have a fresh appearance
- Free of pests
- Free of foreign odors and flavors

COMMERCIAL CLASSIFICATION		
CATEGORIES	SIZES (mm)	
• Extra • First • Second • Destroy Destruction	**GG** 75-78 **G** 65-75 **M** 55-65	**MM** 45-55 **MMM** 40–45 **P** 35–40

6. Harvest

- Harvested by hand into field crates at commercial maturity.
- The minimum ripeness level must be “green-ripe,” except for long-storage varieties, which are harvested when red.
- The presence of the calyx indicates freshness.
- Sorting and packing may be done manually or mechanically.

MATURITY STAGES OF TOMATOES



1 2 3 4 5 6

1. Mature green
2. Beginning of coloration Beak
3.
4. Pink Red
5. Pale Red
6.

CULTIVATION COSTS

7. Cultivation costs

These cultivation cost data are those published by the Price and Market Observatory of the Junta de Andalucía for a long-life, long-cycle tomato crop in the 2011/2012 season. They should be considered an approximation and not a fixed value.

Item		Cost €/m²
AVERAGE DIRECT COSTS		
Inputs	Seeds + seedlings	0.28
	Fertilizers	0.45
	Pesticides + beneficial organisms	0.53
	Water	0.19
	Energy	0.22
	Supplies	0.09
	Total excluding bribes	1.76
	Total with graft	2.02
	Wage labor	1.25
	External services	0.08
TOTAL DIRECT COSTS		3.09

Item		Cost €/m²
AVERAGE INDIRECT COSTS		
Depreciation	Greenhouses	0.15
	Leveling/substrate	0.03
	Plastic	0.21
	Irrigation system	0.03
	Irrigation basin	0.01
	Buildings	0.01
	Other depreciation	0.05
TOTAL AVERAGE INDIRECT COSTS		0.49
General expenses		0.08
Financial costs		0.22
TOTAL AVERAGE GENERAL EXPENSES		0.30

Item	Cost €/m²
AVERAGE DIRECT COSTS	3.09
AVERAGE INDIRECT COSTS	0.49
AVERAGE OVERHEAD COSTS	0.30
TOTAL PRODUCTION COSTS	3.88
AVERAGE YIELD kg/m²	13.50

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Unit 2. QUALITY PARAMETERS OF FRESH TOMATOES



1 Introduction

2 Sampling

3 Physical and Chemical Quality

4 Sensory quality

5 Examples of Retailer Specifications

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Project number: 2024-1-RO01-KA220-VET-000255736

1. Introduction

External aspects (presentation, appearance, uniformity, ripeness, freshness) are the main factors influencing the decision to purchase tomatoes for fresh consumption. Internal quality (taste, aroma, texture, nutritional value, absence of biotic and abiotic contaminants) relates to aspects that are generally not perceptible but are nonetheless important to consumers.
In general, consumers demand quality in terms of appearance, freshness, presentation, as well as nutritional value and food safety.

This document briefly describes the **quality control** procedures for tomatoes, which ensure compliance with regulations and market requirements.



Figure 1. – Facilities of Europe's leading fresh tomato producer

2. Sampling

To properly control quality, the sampling procedure for analysis must be designed correctly so that the information obtained is representative of the entire production and sufficient to detect defective batches or products that do not meet the company's internal quality standards.
There are various sampling procedures that must be applied depending on production volume, product variability, target markets, etc. Sampling can be performed in receiving containers using appropriate sampling equipment (Figure 2), or at the entrance to the production line to prevent the introduction of substandard products, as well as on the packaging lines to ensure the quality of the shipped product.

Depending on the parameters to be controlled, the necessary sample shall be taken for all determinations.



Figure 2.- Sampling device for canned tomatoes



Figure 3.- Receiving area for salad tomatoes

3. Physical and chemical quality

Firmness

Although firmness can be assessed manually by applying pressure with the fingers, this quality parameter is usually determined using instruments. Various devices are available on the market for determining firmness based on:

- **Penetration force:** the maximum force required to penetrate the fruit with a probe after removing the skin. Two punctures must be made on the fruit, in opposite positions located in the equatorial zone. A probe with an appropriate diameter (4–8 mm) must be used.

Deformation force: the maximum force required to cause a specific deformation of the fruit, 5 mm in the case of tomatoes. Or, the deformation produced when applying a specific force of 10 N (Newton).

At least 15 fruits must be used to determine firmness. This parameter is significantly influenced by temperature, so the fruits must be analyzed after they have reached room temperature. Firmness must be expressed in newtons (N).



Figure 6.- Top hardness tester



top and texturometer bottom

Color

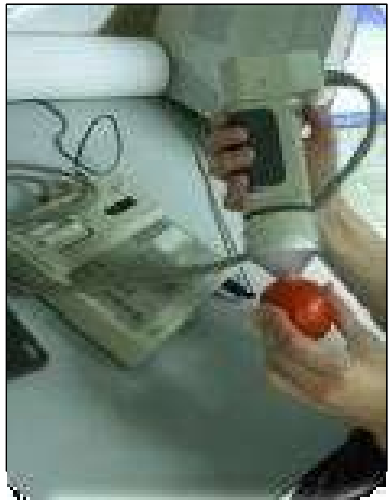
Color is related to the fruit's degree of ripeness (Figure 7) and can be determined using a **color chart** (Figure 8) and/or a **colorimeter** (Figure 9), depending on the amount of light reflected or transmitted by the fruit. This latter measurement system, expressed in **CIELab** values, aims to approximate human color perception. It provides a triplet of coordinates that allow for the colorimetric localization of color in space. These coordinates are correlated with three basic concepts that can be distinguished in any color evaluation, namely: **hue, lightness**, **and chroma** or saturation.



Figure 8.- The exterior color of the Raf tomato and ripening



Figure 7.-The color alphabet



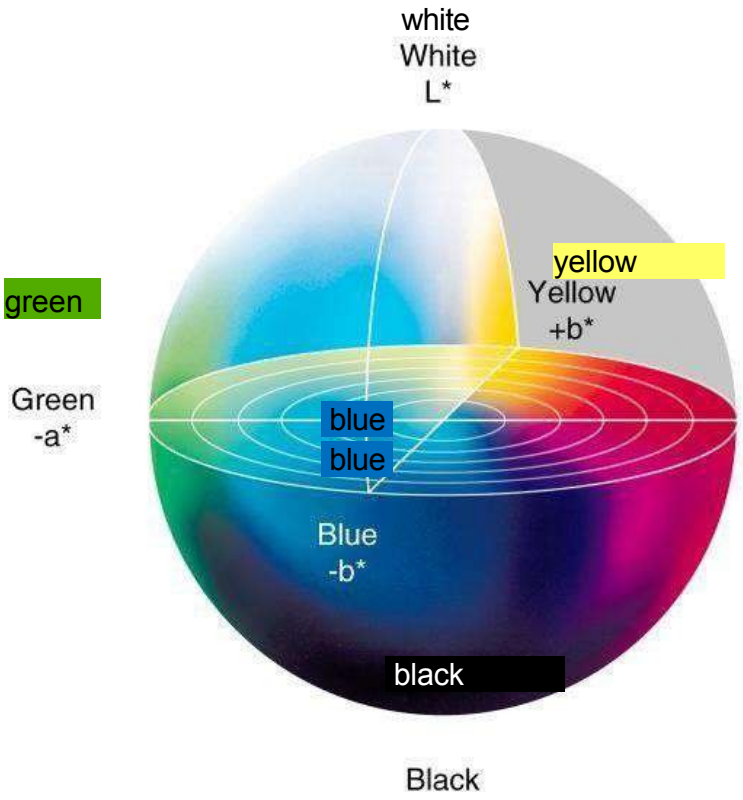


Figure 10.- CIELAB color representation

Luminance is the L* value (L*=100 white, L*=0 black).

Chromaticity (hue and saturation) is indicated by the a* and b* values together, where a* represents the axis ranging from green (-a*) to red (+a*) and b* represents the axis that varies from blue (-b*) to yellow (+b*). Each color is given by three values of these coordinates, which represent a point in three-dimensional space (Figure 10).

The chromaticity (saturation) and hue (h) are determined using the a and b values obtained in each case.

Total soluble solids (TSS)

Most of the soluble solids present in fruit and vegetable juices are sugars, so determining their content provides an estimate of the sugar content. Organic acids, amino acids, phenolic compounds, and soluble pectins are also present, although in smaller proportions.

To determine the total soluble solids (TSS) content, the tomato samples under study are crushed, filtered through cheesecloth, and analyzed using a refractometer (Figure 11). The refractometer measures the change in the direction of a light beam as it passes from one medium to another with different densities.
In a refractometer, the measured value can be expressed in °Brix or TSS (%). The temperature of the juice is a crucial factor to consider, as this variable can affect the density of the juice and, therefore, the validity of the result.



Figure 11.- Digital refractometer

pH and titratable acidity

pH and titratable acidity are determined based on the juice obtained from crushing the tomato samples. Titratable acidity is obtained by titrating a known volume of juice with a 0.1 N NaOH solution until a pH value of 8.1 is reached, measured with a pH meter (Figure 12) or using phenolphthalein as an indicator. Automatic titrators can also be used (Figure 13).

The volume of NaOH added is used to determine the acidity expressed as a percentage (%) of citric acid.



Figure 12.- pH meter



Figure 13.- Titration equipment for acidity

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Lycopene content

Lycopene is a fat-soluble plant pigment that gives tomatoes and other fruits and vegetables their characteristic red color (Figure 14). It belongs to the carotenoid family, just like *beta-carotene and lutein.* These *compounds* are not synthesized by the human body, but by plants and certain microorganisms. Lycopene has antioxidant properties and acts by protecting the body's cells against oxidative stress caused by free radicals.

Lycopene is found in foods such as tomatoes and tomato products (sauces, roasted tomatoes, crushed tomatoes, ketchup, etc.) and watermelon. In ripe tomatoes, lycopene is the primary carotenoid (83%). *Beta-carotene* is also present in significant amounts, ranging from 3–7%, along with others such as *gamma-carotene, phytoene, phytofluene*, etc.

The lycopene content increases as tomatoes ripen and can vary greatly depending on the variety, growing conditions—such as soil type and climate—storage methods, and so on. The amount of lycopene in *"salad"* tomatoes is approximately 3 mg/100 g, while in "pear" tomatoes is more than ten times higher than this value.



Figure 14.—Fruits rich in

Lycopene extraction: To assess the carotenoid content (*lycopene*, *beta-carotene*, and *lutein*) in tomato juice, an extract is prepared by performing a solid-liquid extraction with *hexane*, due to its hydrophobic nature (1).

After sampling, tomatoes from the same replicate are crushed together (Figure 15). To 400 mg of the crushed mixture, add 600 mg of distilled water, 5 ml of a 0.05% *BHT* solution in *acetone,* 5 ml of 96% *ethanol*, 10 ml of *n-hexane, and* 3 ml of distilled water (Figure 16). The mixture is then homogenized (Figure 17). Evaporation of the solvents used must be avoided; therefore, homogenization at a low temperature for less than 30 seconds is recommended.



Figure 15.- Sample for lycopene extraction



Figure 16 Preparation of preparation

Figure



Figure 16.- Homogenization

(1) FISH, W.W., PERKINS-VEAZIE, P., COLLINS, J.K., (2002). A method for the quantitative analysis of lycopene using reduced volumes of organic solvents. Journal of Food Composition and Analysis 15, 309–317.

The mixture is then shaken in an orbital shaker at 150 rpm for 15 minutes (Figure 17). After adding 3 mL of distilled water, the mixture is shaken again for another 5 minutes.

Once extracted from the plant matrix, carotenoids are more susceptible to oxidation due to the effects of temperature or light (photooxidation), so the extraction process must be carried out at low temperature and in the dark.

Once the extraction step is complete, the mixture is decanted (in the dark for 2 minutes) at room temperature for analysis. An aliquot of the organic phase is then extracted (Figure 18) and analyzed using a spectrophotometer (Figure 19).

The lycopene concentration (mg/100 g fresh product) is determined based on the absorbance values obtained at 503 nanometers.



Figure 17 Shaking of the

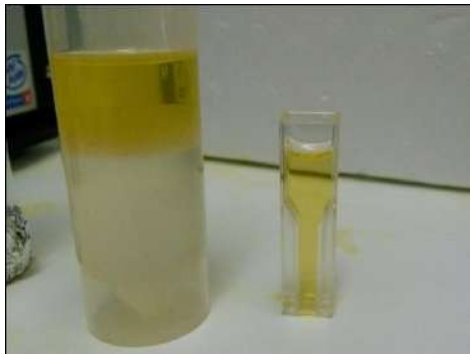

Figure 18.—Phase separation



Figure 19.-Spectrophotometer

4. Sensory quality

The sensory quality of tomatoes must be determined by a group of 4–5 pre-trained evaluators. It is necessary to evaluate different replicates together, given the inherent variability of the product.
To avoid any influence on the evaluator, it is recommended to use a three- to six-digit code for labeling the samples, as well as adequate lighting that allows for the correct evaluation of the parameter under study. (Red light: aroma and taste; white light: overall visual quality).
Numerical scales, such as those presented below, are frequently used to determine sensory quality:

Overall visual quality

Overall visual quality is used to remove fruit that is not considered suitable for a particular market. This can be assessed by trained operators following simple guidelines regarding shape, color, smoothness of the skin, and the presence of imperfections or damage caused by pests and diseases or by improper storage conditions. On a scale of 1 to 9 [9 = Excellent, 7 = Good, 5 = Acceptable, 3 = Poor, 1 = Unacceptable], a score of 5 is considered the marketability threshold.
There is also sorting equipment for the packaging line that uses image analysis for each fruit to reject or accept it into different categories.

Aroma and Taste

Determining aroma and taste requires well-trained personnel with sufficient sensitivity to differentiate between very similar products. Product-specific methodologies are used, and triangular tests must be included. Typically, simple scales and well-evaluated samples are used as a reference for tasters.
Simple scales are usually used (from 1 to 5, with 3 as the minimum value for marketing): 5 = maximum or strong aroma (flavor), 4 = nearly typical or strong aroma (flavor), 3 = moderate, 2 = mild, 1 = nonexistent

It is recommended to use appropriate booths (Figure 20) that isolate tasters from the surrounding environment, both visually and from other aromas.



Figure 20.- Sensory analysis booths

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5. Examples of Retailer Specifications

[redacted]	SPECIFICATION BOOKLET BRANCH TOMATO	Revision: 05 Date: 29/10/21 Page1 of 6

1- ASSORTMENT AND SIZE SPECIFICATIONS



RANGE	COMMERCIAL CAT.	REFERENCE	*SIZES	DIAMETERS	ORIGIN
AG	-	-	-	-	-
MG	I *	Loose vine tomatoes	G-M	>57–≤ –82 mm	Spain
		Carrefour vine pear tomatoes	G-M	>57 -≤ 82mm	Spain
		Carrefour vine tomatoes	G-M	>57 -≤ 82mm	Spain
		Tomato Vine Flow Pack	G-M	>57 -≤ 82mm	Spain
		Local/market vine tomatoes	G-M	>57 -≤ 82mm	Spain
EG	II	-	-	-	-

* **Size is optional for cherry tomatoes, including cocktail, marbled and vine tomatoes.**
SIZE M-MM (>47 -≤ 67mm) may be used for Cat. I references from June to October inclusive. SIZE

The size will be determined by the maximum diameter of the equatorial section, by weight, or by the number of pieces.
In the case of tomatoes graded by diameter, to ensure uniformity, products in the same container may not exceed:

- +10mm, if the diameter of the smallest piece is< 50mm.
- +15 mm, if the diameter of the smallest piece is> 50 mm and< 70 mm.
- +20mm, if the diameter of the smallest part is bet≥ r 70mm and bet< r 100mm.
- ≥ 100mm there is no upper limit on the difference in diameter.

Range	AG	MG	EG	EG
Category	Category I	Category I	Category II	Category II
Criterion	Rejection	Rejection	Calibrated, Rejection	Not calibrated
CALIBRATION	> 10	>10%	>10%	Not applicable (N/A)

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2- PRODUCT QUALITY SPECIFICATIONS

Product reception temperature:

Temperature control	Minimum temperature (°C)	Maximum temperature (°C)
BRANCH TOMATOES	7	10

Temperature will only be grounds for rejection if the product has been damaged by it.

Visual appearance:

Compliant	Commercial Quality Criteria	Tolerance	
		Maximum	Minimum
Vine tomatoes/ CRF	Presence of CRF label (hanging on stem): minimum 4 tomatoes/bunch	Maximum per box 1 Trunk with three tomatoes	Half of the branches must have a CRF tag

Acceptance or rejection criteria for quality defects:

- **Extra category:** no more than 0.5% of the total product may fail to meet the quality requirements for "CAT II".
- **CAT I:** no more than 1% of the total products may fail to meet the quality requirements of "CAT II". In the case of truss tomatoes, 5% in number or weight of tomatoes separated from the stem.
- **CAT II:** for trusses of tomatoes, 10% in number or weight of tomatoes separated from the stem.

QUALITY Period: November-May	AG: CAT I		MG: CAT. I		EG: CAT. II	
	ADV	RECH	ADV	RECH	ADV	RECH
Rotten:	1	> 1	1	> 1	1	>1%
Unstable defects:	2	> 5	2	> 5	2	> 5
+ UNSTABLE DEF.	2	> 5	2-5	> 5	2	> 5
Colour	2-5	>5%	5	>10%	10	> 15
Stable defects	2	> 5	5	> 1	2	> 5
STABLE DEF. + COLOURING	5	> 10	10	> 15	5-10% defects outside category II	> 10% defects outside cat. II
TOTAL DEFECTS	5-10	> 10	10	> 15	5-10% of defects outside category II	> 10% defects outside category II

QUALITY Period: June-October	AG: CAT I		MG: CAT. I		EG: CAT. II	
	ADV	RECH	ADV	RECH	ADV	RECH
Rotten:	1	> 1	1	> 1	1	>1%
Unstable defects:	2-5	> 5	5	> 1	5	> 10
ROT. + UNSTABLE DEFICIENCIES	2	> 5	5	> 1	5	> 10
Colour	2-5	>5%	10-15	>15%	15	> 20
Stable defects	2	> 5	10	>15%	15	> 20
STABLE DEF. + COLOUR	5	> 10	10	> 15	15-20% defects outside cat. II	> 20% defects outside cat. II
TOTAL DEFECTS	5-10	> 10	10	> 15	15-20 % defects outside category II	> 20% defects outside category II

NOTES:

- Three consecutive or repeated warnings will result in rejection
- For products imported by SOCOMO that come directly from the supplier of origin or from a stock platform, the following tolerance for rot will be used: warning 1 – 2% and rejection> r 2%.
- Stable defects: Scarred, Rameado, Deformities, Hollow, Blotchy, Virus, Dirt, Soft, Cracked.
- Unstable defects: Unhealed wounds, Bruising, Dehydration, Freezing, Pests, Cold damage, Sun damage.

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MATURITY PARAMETERS:

º BRIX	ACCEPTANCE	REJECTION
	>3	<3
FLAVOUR	ACCEPT	REJECT
	Eats well	Tasteless

3- COLOURING TABLE FOR TRIPTYCH TOMATOES

		
COLOURING 1-4	COLOURING 5	COLOUR 6
REJECTION	REJECTIO N 15/09 to 15/05 INCIDENCE 15/05 to 15/10 seasonal	ACCEPT
		
COLOURING 7	COLOURING 8 Turgidity, hardness and consistency	COLOUR 9 Colour 8+flaccidity and overripe
ACCEPTANCE	ACCEPTANCE	REJECTION

4- SAMPLING

PROCEDURE FOR MEASURING BRIX DEGREES

Take 1 kg of tomatoes:

1. Chosen at random (Regulation (EC) No. 1221/2008 of the Commission of 5 December 2008 and standard UNE 66020).
2. First, cut the tomato lengthwise, take one side and squeeze out a little juice.
3. Drop it onto the refractometer, repeat the same procedure on the opposite side of the fruit, and the average of the two values obtained is the Brix value of the fruit. Repeat this process until you have obtained the data for all the pieces.

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5- APPENDIX

Product quality defects:

PODREDUMBRE
Podrido / moho



DEFECTOS INESTABLES / EVOLUTIVOS
Herida No Cicatrizada (abierta afectando la carne)/ craking



Golpeado: Se considera golpe cuando afecte a la carne del producto y se observe de forma visual (no al tacto)

1ºgrado (se cuenta el defecto en el control):
Golpe de tamaño > 20% de la pieza (mayor al tamaño de la uña) afectando el interior del mismo tamaño (traslucido).



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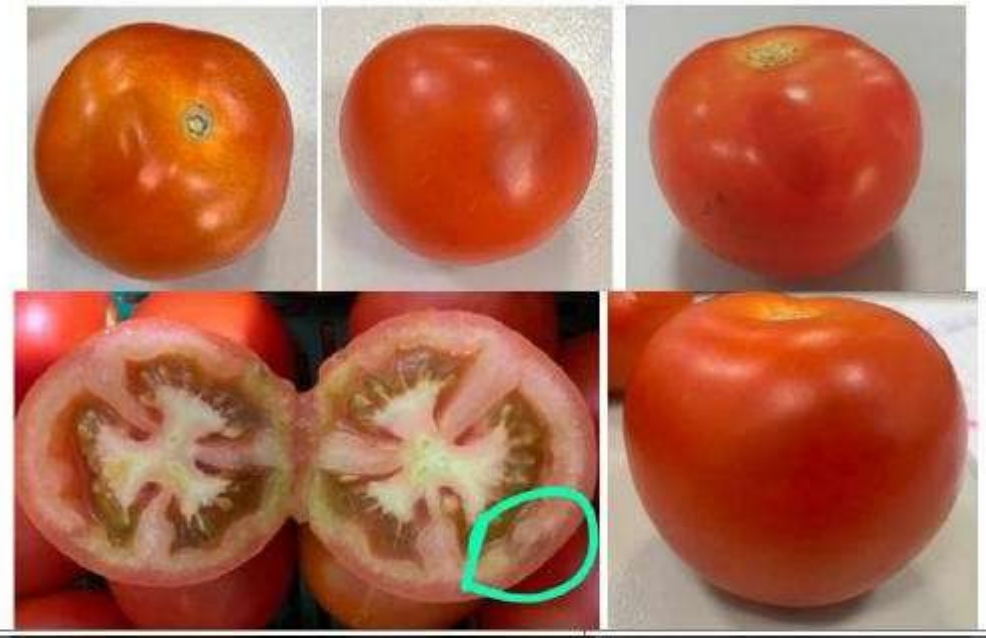
2º grado (NO se contabilizará en los controles): Golpe de tamaño < golpe 1ºgrado-No afecta a la pulpa.



Deshidratado (piel)



Congelación (afectando al interior)





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STABLE/NON-EVOLUTIONARY DEFECTS

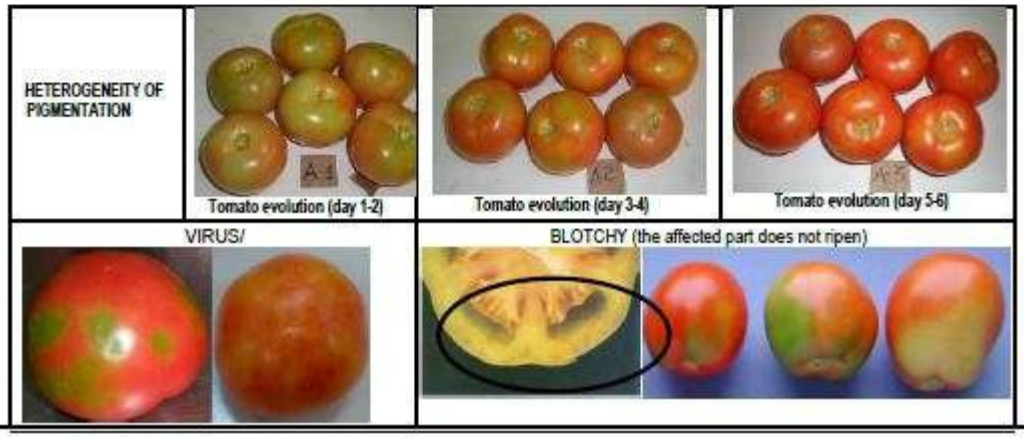


STABLE/NON-EVOLUTIONARY DEFECT (Graininess on the skin similar to dehydration)



DIFFERENCE BETWEEN VIRUS BLOTCHING AND HETEROGENEITY OF PIGMENTATION

In beefsteak tomatoes, a distinction must be made between blotching and heterogeneity in pigmentation, which occurs in the summer months due to the incidence of sun and heat. In the winter months, it is less pronounced because the sun is less intense and affects the tomato more evenly and slowly. This heterogeneity in pigmentation is NOT considered a defect as it evolves properly.



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Block 3: FOOD QUALITY AND SAFETY IN FRUITS

Erasmus+
Project number: 2024-1-RO01-KA220-VET-000255736

I. Cleaning and washing operations for fresh vegetables at the Fruit and Vegetables

1. Introduction

2. Microbiological quality and safety of vegetables after harvest

3. Guidance on the microbiological quality of fresh vegetables

4. Why is proper cleaning of produce in the handling facility important?

5. Vegetable cleaning operations

6. Washing with water

7. Drying phase

8. Use of disinfectants or biocides

G. Physical sanitation methods

10. Bibliographic references



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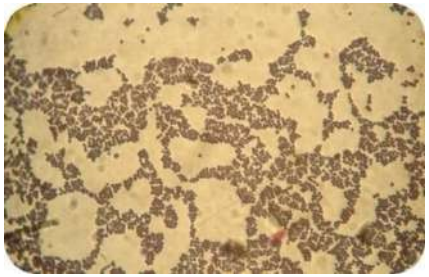
1. Introduction



Open irrigation basin



Gram-positive bacteria with spherical (coccoid) morphology.

- Fungi and bacteria are part of the agricultural environment and are necessary for maintaining and balancing the ecosystem.
- The natural microbiota present in vegetables acts as a barrier that prevents the proliferation of harmful and pathogenic microorganisms in plants and fruits.
- However, some of the microorganisms present in the greenhouse environment can themselves cause significant losses by inducing plant diseases during cultivation or in fruits during post-harvest storage.
- These microorganisms can reach the fruit through the plant's circulatory system, through water used for irrigation and crop management, through or through contact with contaminated tools or equipment, among other causes.
- In addition, there are some bacterial species capable of causing human disease that may be present in the agricultural environment naturally or due to poor agricultural practices, such as the use of fertilizers or water under poor sanitary conditions or improper handling during harvesting. These human pathogens can survive on fruit and remain there, even multiplying in sufficient quantities to cause food poisoning in humans if consumed.



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2. The microbiological quality and safety of harvested vegetables

harvest

The physiological processes (ripening) that fruits undergo once harvested are the main cause of their deterioration. These processes trigger a series of biochemical changes that promote the proliferation of microorganisms that may be present in vegetable products.

- The survival and reproduction of spoilage and/or pathogenic microorganisms in vegetables throughout the production and marketing chain depend on factors such as the characteristics of the product itself, pre-harvest and post-harvest operations, and even consumer handling.

- Proper post-harvest handling can significantly reduce product losses and enhance microbiological safety throughout the production, processing, and marketing chain of fruits and vegetables.

KEY FACTOR

Prevention during field production and packaging processes is the primary way to ensure the quality and microbiological safety of vegetables.









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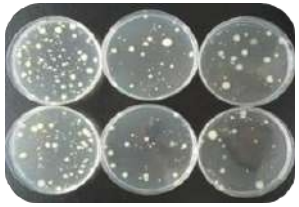
Quality and microbiological safety of vegetables after harvest







Microbial enumeration by plate count method, using serial dilutions.

CONSIDERATIONS

Numerous species of microorganisms pathogenic to humans have been isolated from a wide variety of fruits and vegetables and, in many cases, have been linked to outbreaks of food poisoning caused by the consumption of fresh vegetables.

In general, high temperatures and high humidity promote bacterial growth. However, the actual risk of pathogenic microorganisms multiplying in fresh vegetables arises when the barrier provided by the fruit's epidermis is broken by factors such as abrasions, insect bites, or the action of phytopathogenic microorganisms, which often have mechanisms to destroy the skin's structure.

While the overall quality of vegetables can often be assessed by their external appearance, the same is not true for microbiological quality.

Some microorganisms have very low infectious doses, meaning that, if ingested, even a small number of bacterial cells is sufficient to cause illness in the consumer, without requiring favorable conditions for bacterial multiplication.

Various processes and technologies can reduce the microbial load of vegetables during processing and packaging, but if a pathogenic microorganism contaminates the product, these processes cannot guarantee its microbiological safety.

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3. Guidance on the microbiological quality of fresh vegetables



Indicative reference values for the microbiological quality of vegetables	
Group of microorganisms	**Acceptance range (CFU/g)***
Mesophilic aerobes	10^2 _ 10^5
Escherichia coli	10^2 10^4

*CFU/g = colony-forming units per gram.

Reference: Pascual, RM. 1992. "Food Microbiology." Ed. Díaz de Santos.

Concentration of microorganisms (CFU/g)

Commercially viable zucchini fruits Zucchini fruits with visible changes

Group of microorganisms	Source: IFAPA La Mojonera, own farm			Source: wholesale market		
	M1	M2	M3	M4	M5	M6
mesophilic aerobes	3×10^4	5×10^4	3×10^5	2×10^6	5×10^5	2×10^6
Psychrotrophic aerobes	7×10^4	7×10^4	4×10^5	2×10^6	2×10^5	7×10^5
Enterobacteria	4×10^4	4×10^4	1×10^4	3×10^3	1×10^5	5×10^5

CONSIDERATIONS

The microbiological quality of vegetables depends on both field production and post-harvest handling and storage, both of which are decisive factors in the evolution of the microbial load of the final product and, consequently, in its shelf life and microbiological safety.

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4. Why is it important to clean the produce properly in the handling facility?

The presence of soil, dust, treatment residues (lime, sulfur), etc., will have negative consequences for the marketing of the produce for the following reasons:

- Soil or dust from the surrounding environment usually contains various species of fungi and bacteria, as well as their spores, which, once they come into contact with the fruit's surface, can occasionally penetrate inside it, causing significant losses as they multiply and spread among products in the same lot or adjacent lots.
- The presence of whitish spots or dust on the surface of the products may be interpreted by an inexperienced observer as residues of toxic substances.
- In general, a "dirty" appearance leads to rejection by the consumer.

The presence of organic matter or other substances on the surface of the fruit will prevent the effective performance of subsequent sanitation processes and treatments.







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5. Vegetable cleaning operations

The objectives of cleaning operations are:

- Removing dirt from the field.
- To remove any traces of treatment products.

PROCEDURES

MANUAL CLEANING



MECHANICAL CLEANING



Manual

Applicable to delicate products with visible dirt, provided that production volume allows for it.



Tomatoes on the vine



Eggplant



Zucchini

HOW IS IT DONE?

It is done manually, using disposable textiles or cellulose paper.



RECOMMENDATIONS

- Cleaning materials must be replaced and treated frequently enough to ensure they remain clean and hygienic.
- The use of disposable materials is recommended to avoid potential chemical or microbiological cross-contamination.

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Mechanical cleaning or brushing

- This operation is performed when production volume requires it and provided that the nature of the product and the configuration of the equipment allow it.
- For products with a natural wax coating on the surface (tomatoes, zucchini, cucumbers, eggplants, peppers), brushing helps enhance their natural shine.

HOW IS IT DONE?

- Use of roller brushes. The rollers can be made of natural bristles (horsehair) or synthetic materials (polyethylene, nylon).
- Some floor scrubbers are equipped with a vacuum and dust collection system to enhance cleaning efficiency.



Melon Brushing Machine

Th
rollers must be suitable for the
size, shape, and sensitivity

MENDATIONS

the product from mechanical damage.

Incorporating a fruit-feeding system into the washing machine will ensure that the washing time does not exceed what is strictly necessary, a situation that must be avoided, as it could cause mechanical damage to the product.

It is important that the equipment be designed so that the brushes are easy to clean and maintain, to avoid cross-contamination.

Tomatoes in bulk



Peppers



Zucchini



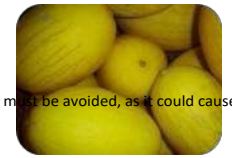
Cucumbers



Eggplant



Melon



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6. Washing with water

The main objective is to remove dirt and residues from field treatments, reduce the microbial load, and minimize the risk of cross-contamination during post-harvest operations.

PROCEDURES

SHOWER OR SPRAY



The fruit are transported on a conveyor belt that passes through a closed chamber equipped with a series of sprinklers that spray them with water.

IMMER



The fruit is poured into a tank through which water containing disinfectant circulates.

The incorporation of air-injection bubbling systems increases the efficiency of the process.

APPLIES TO:



Loose tomatoes



Cucumber



Aubergine

NEVER APPLY TO:



Courgettes



Melon



Green beans

RECOMMENDATIONS

1. **Preliminary cleaning of the fruit** must be performed to prevent rotten fruit from entering the system and spreading contaminants along the production line.
2. For greater efficiency in reducing the microbial load, it is recommended **to pre-wash the fruit with potable water using a spray shower** to mechanically remove dirt and any cellular exudates.
3. If water is supplied from a **public network**, **the chlorine level and the physicochemical parameters** established by current legislation (RD 140/2003) must be checked periodically.
4. If water **from another source** is used, there must be a **filtration system** and a tank equipped with a pump for adding **a disinfectant**.
5. It is important that **the water temperature be approximately 5–6 °C higher than the internal temperature of the fruit** to be washed, to prevent water absorption by the tissues, which would increase the risk of microorganism penetration.

Tomato washing machine.

KEY PARAMETERS

In the case of IMMERSION WASHING, the water flow rate and the product's dwell time in the tank must be correctly defined, as they must be appropriate for achieving the desired objective.

In the case of SPRAY WASHING, the length of the conveyor belt and its speed are the parameters that define the product's dwell time in the system and, therefore, the effectiveness of the wash.



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Drying phase

The objective of this phase is to remove excess water from the product after washing.

PROCEDURES



drying vegetables.

- The product is transported on a conveyor belt under a system of fans or hot air injection nozzles.
- The system can be supplemented with an absorbent roller system to help remove residual moisture.



removing excess water.

RECOMMENDATIONS

1. **The cycle duration, air flow rate, and air temperature** must be appropriate to ensure the complete removal of water residues from the product's surface, as moist vegetables are more susceptible to attack by microorganisms that cause spoilage.
2. At the same time, these factors must be optimized so **as not to cause dehydration of the product**, which would shorten its shelf life and lead to significant weight loss.

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7. Use of disinfectants or biocides

The main objective is to maintain the hygienic conditions of the wash water.



Colorimetric equipment for measuring concentration of free chlorine in the washing water.

WHEN SHOULD A DISINFECTANT BE USED?

- When deemed necessary to prevent cross-contamination during post-harvest operations.
- Whenever the water used to wash vegetables is recirculated.

WHAT PRODUCT SHOULD BE USED?

- A product authorized for the treatment of water intended for human consumption and for the food industry must be used (RD 140/2003(1), Order SAS/1915/2009)(2).

RECOMMENDATIONS

- Whenever a disinfectant is used, a final rinse must be performed to remove any chemical residues in concentrations exceeding the recommended limits.
- Periodic monitoring of the concentration of the active substance in the final product is required.

TO BE TAKEN INTO ACCOUNT

AUTHORISED PRODUCTS (1,2)	
Chlorine	Hydrogen peroxide
Chlorine dioxide	Sulphur dioxide
Sodium hypochlorite	Potassium peroxymonosulphate
Calcium hypochlorite	Chlorine dioxide

(1) Royal Decree No. 140/2003 of February 7, establishing sanitary criteria regarding the quality of water intended for human consumption.

(2) SAS Order SAS/1S15/200S of July 8 regarding substances used for the treatment of water intended for the production of water for human consumption.

Although its use does not guarantee the elimination of any pathogenic microorganisms present in the product, it can help reduce the total microbial load of the fruit.

100 ppm of sodium hypochlorite in the wash water can reduce the total microbial load of the product by up to 100 times.

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The use of chlorine and its derivatives

- It is one of the most effective disinfectants.
- It can be used in the form of hypochlorous acid, in various formulations. Chlorine dioxide or chlorine gas can also be used.
- The laws of certain countries prohibit the use of certain chlorinated derivatives for washing food, as their contact with organic matter gives rise to compounds that are potentially harmful to health.

HYPOCHLOROUS ACID

- This is the most widely used disinfectant. There are special products intended for use in the food industry:
  - Sodium hypochlorite in a 10–15% solution (bleach), a strongly alkaline solution (pH ≈ 13).
  - Solid calcium hypochlorite in tablet or granule form (30–37%).
- Free, active, residual, or available chlorine, capable of acting against microorganisms, is what remains after the reaction with organic or inorganic substances present in the wash solution.

Therefore, the presence of dirt, tissue exudates, or microorganisms in the water will require a higher concentration of the product for effective action.

- The active chemical against microorganisms is hypochlorous acid (HOCl), which predominates in the pH range between 6.5 and 7.5.
- Both sodium hypochlorite and calcium hypochlorite lower the pH, particularly the former, so acidification is necessary, for example with citric acid.

KEY PARAMETERS

Free chlorine: 50–200 ppm

pH 6.5–7.5

Temperature 5–6 °C > Fruit temperature

Organic matter content in the wash water

Exposure time: 1–5 minutes

GENERAL RECOMMENDATIONS FOR THE USE OF SODIUM HYPOCHLORITE (BLEACH FOR FOOD USE)

1. Concentrations of 50, 100, 150, or 200 ppm of free chlorine are recommended, depending on the type of product. The disinfectant is less effective on products with rough surfaces, such as cucumbers, peppers (the calyx area), or melons, because bacteria are protected in cavities and rough areas, providing resistance to the mechanical action of the water and making them less accessible to the disinfectant. In these cases, a higher concentration of disinfectant will be required.
2. A pH of 6.5–7.5 is most suitable for effective chlorine action that does not damage equipment surfaces. To achieve this, the solution can be acidified with 1 M citric acid.
3. As a guideline, the amounts of 10% sodium hypochlorite to be added to the indicated volume of water would be:

Cloro libre	Hipoclorito sódico 10%	Ácido Cítrico 1 M	Volumen total de agua
100 ppm	52 ml	28 ml	25 l
150 ppm	77 ml	41 ml	25 l
200 ppm	102 ml	55 ml	25 l

4. The free chlorine concentration must be checked regularly, especially when using immersion washing or water recirculation. It must be > 0 at the outlet of the washing machine.
5. In cases where water is recirculated, it must be completely replaced at least once a day.
6. The water temperature must be 5–6 °C higher than the temperature inside the fruit to avoid a temperature gradient that would cause water to be absorbed from the outside of the fruit to the inside. This would provide a pathway into the interior for microorganisms present on the fruit peel or even in the wash water, which could lead to fruit rot during storage or to the presence and proliferation of bacteria pathogenic to humans in products treated in this manner.

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CHLORINE DIOXIDE

- It dissolves easily and is a strong oxidizing agent, being effective at very low concentrations and even in the presence of organic matter.
- It does not alter the pH and does not form organochlorine derivatives, but it generates other degradation products that are harmful to health, which is why its use in well-ventilated areas is recommended.
- The optimal pH range is between 6 and 10, and it is non-corrosive.
- Because it is extremely unstable and explosive, it must be generated immediately before use and requires special precautions when handled.
- There is industrial equipment that uses an electrochemical reaction to generate chlorine dioxide from sodium chlorite and hydrochloric acid.
- It is also sold as a stabilized solution that can be activated at the time of use.



Chlorine dioxide generator.

Photo: *Smart!*

- It is recommended to use it at concentrations between 3 and 5 mg/l, the former being the maximum value recommended by the FDA (the U.S. health authority).

CHLORINE GAS

- This is chlorine in its pure form. Since it is a gas at atmospheric pressure, it is sold in liquefied form in pressurized cylinders.
- Although it is highly effective due to its high solubility in water, it is difficult to dose and handle, as it is an extremely corrosive gas; consequently, its use is typically limited to treating large volumes of water (swimming pools, wastewater treatment plants, etc.).

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Other chemical disinfectants

OZONE

- This is a powerful oxidant with a strong disinfecting effect.
- Its high instability means it must be generated on-site using specific equipment. Furthermore, it is poorly soluble in water and, ultimately, difficult to homogenize in the wash solution.
- It is extremely corrosive; therefore, special precautions must be taken to protect the health and safety of workers and to ensure the maintenance of facilities and equipment.

HYDROGEN PEROXIDE OR OXYGENATED WATER (H_2O_2)

ELECTROLYZED WATER

- It is obtained by generating an electric current that hydrolyzes chlorinated water, producing hypochlorous acid and hypochlorite ions. It is then diluted to the desired concentration of free chlorine.
- Some authors have observed that, above 120 ppm of free chlorine, it can have negative effects on product quality; therefore, below this concentration, it may be recommended as a complementary disinfection technique, applied during the pre-wash and final rinse stages.

PEROXIAZETIC ACID (PAA)

- It is marketed as a mixture of acetic acid and hydrogen peroxide (precursor agents), in an unstable equilibrium with peroxyacetic acid, which is why a stabilizing agent is added.
- Its disinfectant action is due to the production of highly reactive oxygen species, making it very effective against bacteria and somewhat less effective against fungal spores and protozoa.
- The optimal pH range is between 3 and 7.5, even at low temperatures.
- It is effective even at low concentrations, and its use is recommended in the range of 40–200 ppm, depending on the product type. However, some health authorities recommend maximum concentrations of 80 ppm.
- Its main disadvantage is instability at high concentrations and its high price compared to other products.

ORGANIC ACIDS

- Lactic, citric, or acetic (vinegar) acids have a mild bactericidal effect due to the pH reduction they cause, requiring extended exposure times (5–15 minutes).
- Their use increases the organic matter content in wash water, generating unpleasant odors.

ESSENTIAL OILS FROM PLANTS

- Some essential oils derived from aromatic plants, such as thyme, rosemary, oregano, and eucalyptus, have antibacterial and/or antifungal properties. The application of these substances is still in the research and development phase.

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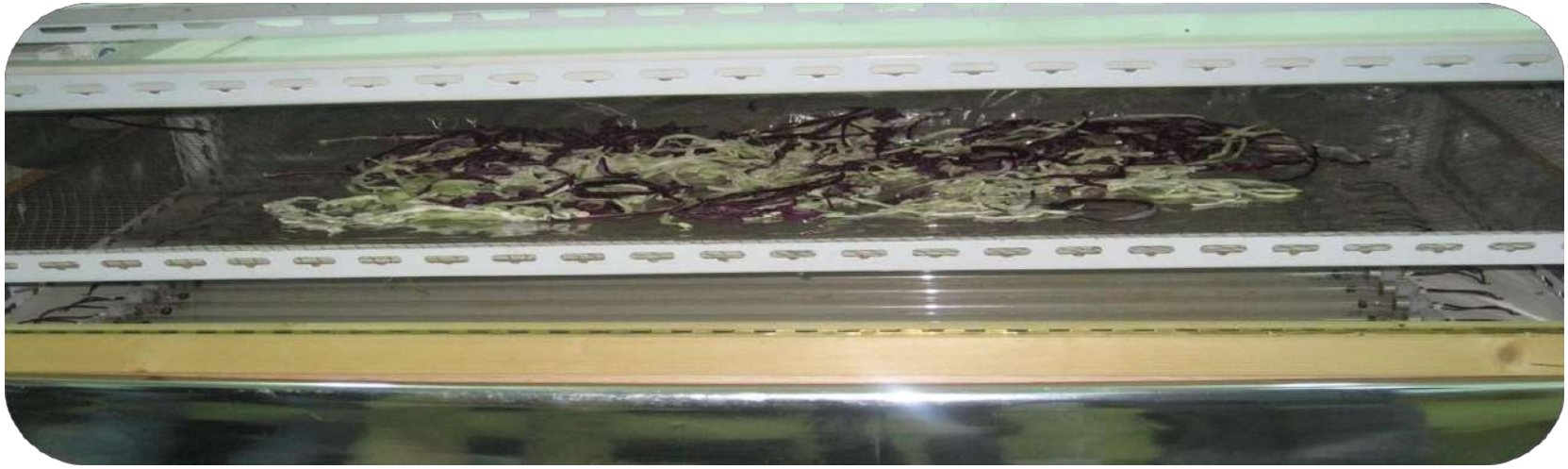
Physical sanitation methods

APPLICATION OF ULTRAVIOLET LIGHT

- It has been demonstrated that UV light, at low doses and short exposure times (2 $^{kJ/m^2}$), is effective in reducing the microbial load of certain vegetables.
- Since its penetration capacity is practically zero, it is effective only on the exposed surface, requiring application to both the top and bottom surfaces, preferably on thin-format products.
- Excessively high doses (7 $^{kJ/m^2}$) have negative effects on product quality.



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Block IV: TRACEABILITY OF VEGETABLES



1. Context
2. Definition, advantages, obligations
3. Types of traceability
4. How to implement a traceability system
5. Record-keeping and responsibilities
6. Example: Plant protection treatments on a bell pepper farm.

1. Context



Figure 1: The cooperative model in Almeria by role (first-level cooperatives)

Figure 1 illustrates the functions of farmers and cooperatives in Almería at the various stages of the supply chain. The sector in Almería is predominantly family farm/owner operated and producer organizations, with the help of the family and/or one or two employees. Among manufacturers are small and medium-sized enterprises, although they represent a minority. Given the large number of farmers and cooperatives, production and marketing are very fragmented.

Furthermore, with nearly 400 export companies, the supply chain is highly dynamic, with many actors and interactions leading to a complex network of relationships and product flows.

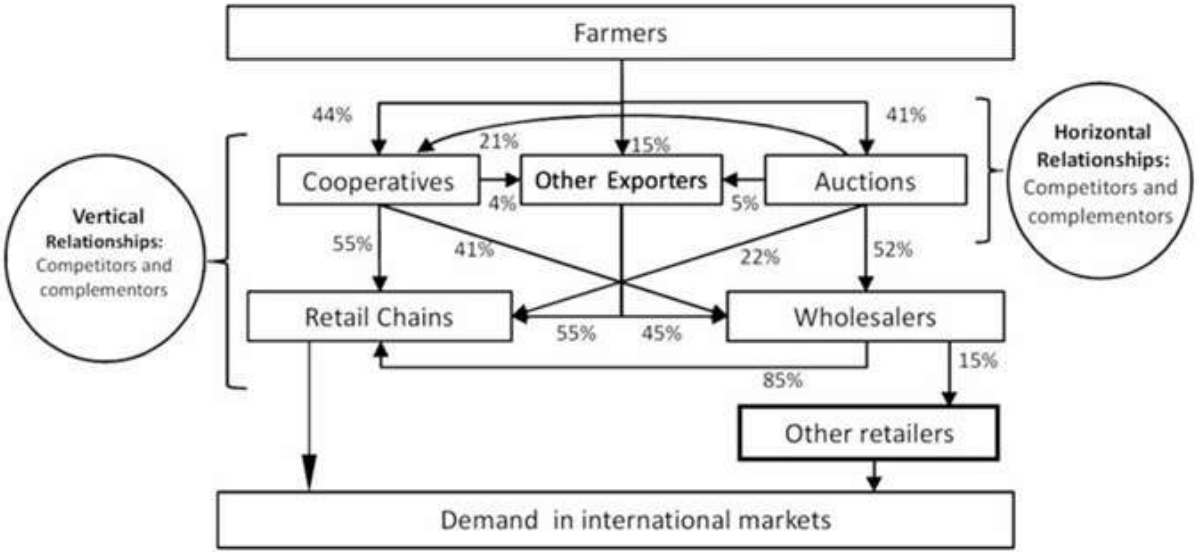
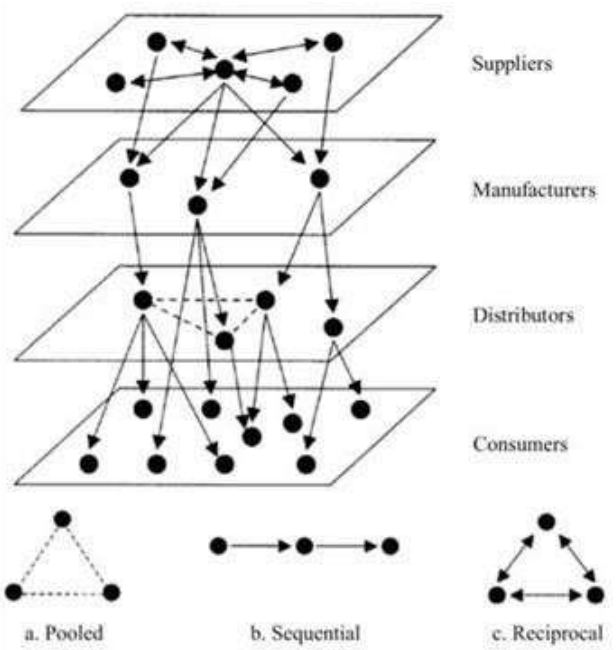


Figure 2: Core relationships of vegetable exporters in Almería, southeastern Spain, within the international supply chain

Figure 3: Structure of the net chain and types of relationships



By analyzing actual supply relationships (Figure 2) and taking Almeria's horticultural production as an example, we can see that the system is much more complex, presenting organizational challenges regarding the coordination, development, and maintenance of traceability systems. This horticultural model in Almería can serve as an example of a resilient and flexible production system, based on small-scale farms, offering a viable alternative for endogenous rural development. In the case of Almería, it was found that competitive advantages stem from co-competition; essentially, a generator of capabilities within the network chain for the internationalization of small firms and their ability to export. Implicit in such capabilities is compliance with traceability and quality standards, as well as collaboration in RCD logistics, joint grant applications, and sales planning. Relationships within the Almeria network chain are not merely horizontal between farmers, technicians, cooperatives, and RCD centers. Vertical relationships with retailers (who have greater market power than wholesalers) are also a key driver of collaboration among cooperatives, not only in coordinating distribution channels but also regarding access to information, technology, and the adoption of technology and research and development (innovation). (see Figure 3)

2. Definition, advantages, obligations

Traceability is defined as “the ability to identify and track, throughout all stages of production, processing, and distribution, a food product, feed, an animal intended for food production, or a substance intended for or likely to be incorporated into food or feed.” In this monograph, we will focus on traceability in the case of vegetables, as a supplement to the Servifapa paper:
“Introduction to Traceability in the Agri-Food Industry” (*Cañizares *et al.,* 2014). As an example of traceability, we will use the phytosanitary treatments carried out on a vegetable farm (p. 8).



Characteristics:
Food safety. Traceability is not a guarantee of safety, but it is a very useful tool that reduces risks and allows for a rapid and effective response in the event of an alert.
Food quality. Knowing all the production stages of a food product provides valuable information about how and where it was produced, what products it was treated with, who packaged and transported it, or how it was preserved and marketed.

Ima ...ding the traceability code (800205), which corresponds to a specific farmer.



Image 2. Traceability on the labels of a fruit and vegetable processing plant.

In accordance with the criteria set out in the White Paper on Food Safety, three regulations and two directives (www.aesa.msc.es) were adopted, applicable as of January 1, 2006. One of the most important provisions regarding traceability is Regulation (EC) No. 852/2004 of the European Parliament and of the Council of April 29, 2004, on the hygiene of foodstuffs (OJ L 226, 25.6.2004).

Food business operators *who produce or harvest plant products* must, in particular, keep records regarding:

a) The use of plant protection products and biocides.
b) the occurrence of pests or diseases that may affect the safety of products of plant origin; and
c) the results of all relevant analyses carried out on samples taken from plants or on other samples relevant to human health.

3. Types of traceability



Figure 4. Traceability flowchart

Source: http://www.definicionabc.com/tecnologia/trazabilidad.php

Depending on the company's role in the chain, the following types **of traceability** exist

- **Backward**: This allows us, through a information regarding the entire entire process from from raw materials.

- **Intermediate or process:** Allows for the correlation of products entering a company with those leaving it.

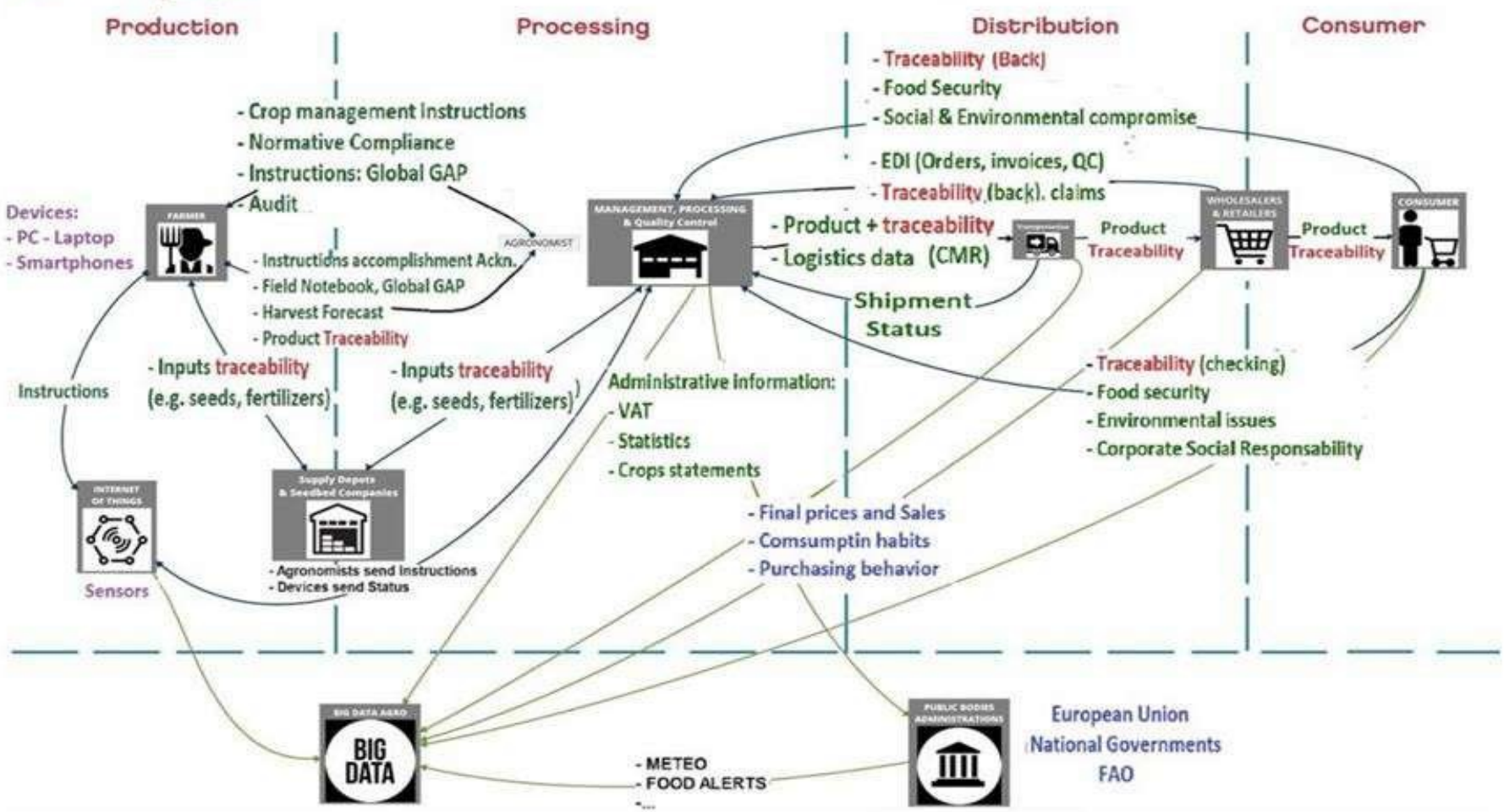
- **Downstream:** Allows for identifying where a specific product was distributed.

4. How to implement a traceability system

Regulation 178/2002 *does not specify the manner and means by which a mandatory traceability system* for food, feed, and food-producing animals *must* be implemented. However, *some of the measures that must be taken* are outlined below. In general, businesses involved in *primary production* (agriculture and animal husbandry) will need a traceability system based on:

- **Upstream traceability**, to collect information on all products entering the farm and the production process, such as feed, plant protection products, water, fertilizers, livestock, seeds, and plants intended for transplanting.
- **Internal traceability**, which must include all operations performed on crops and animals. Special attention is given to practices that may impact product safety and hygiene, such as, for example, plant protection treatments, irrigation, and fertilization. In the case *of phytosanitary treatments* and in accordance with the provisions of the Resolution of June 18, 2007, of the General Directorate for Agricultural and Zootechnical Production (BOJA 125 of June 26, 2007), it will be necessary to record, in an updated form—either on paper or electronically—the data pertaining *to the date and purpose of the phytosanitary treatment, the product's trade name and registration number, as well as the product dosage and the volume of the treatment solution.* This register will be accompanied by three other registers concerning the geographical location of the treated plot, data on the crop being marketed and its recipient, as well as a list of crop samples analyzed for their content of active substances in plant protection products, the laboratory, and the results of the analyses.
- **Upstream traceability**, which takes into account the products distributed and the customer for whom they are intended. For example, in the case of agricultural products, the following will be recorded: the product sold, the variety, the plot identification, the quantity, the harvest date, the date of sale, the type of

  packaging, the number of packages, and the delivery note.



Most cooperatives in Almería have implemented Hispatec's traceability system, called ERPagro. (See Figure 5: Input, flow, and analysis of traceability data in Almería across the various levels of the supply chain). The main objective is to enable the successful application of new technologies, such as IoT and Big Data, in future traceability systems, while maintaining the strongly decentralized economic model based on cooperatives.

5. Record Keeping and Responsibilities

Record retention period.

Although *not explicitly mentioned in the regulations*, as a guideline, the criteria may be:

Highly perishable products: **1 year**

Products with a longer shelf life: **2 years**

Products without a specified shelf life: **3 years**

Responsibilities

Article 18 of Regulation (EC) No 178/2002 *provides that the employer is responsible* for identifying and retaining the information over which it has control, that is, the information it can verify and ensure within the scope of its operations. Their obligations are:

- To have a traceability system in place
- To make the traceability system documentation available to the authorities upon request
- To possess the necessary information
- To cooperate with the competent authorities



Individual companies *are not required to ensure traceability throughout the entire food chain, but* they *must* collect and retain all information regarding ingredients and raw materials, food, products used in the production process, feed, food products, and activities *under their control.*

6. Example: Phytosanitary treatments on a bell pepper farm



The example we will detail involves monitoring a traceability system for vegetables intended for fresh consumption, from the producer's purchase of seeds or seedlings through to sale to the public.

Given the diversity of traceability systems, we will focus on phytosanitary applications carried out on a pepper farm, where soluble sulfur was applied via spraying to combat powdery mildew, a fungus that affects pepper leaves.

The sulfur is an irritant. All pesticides plant protection chemicals must be applied by personnel holding a "personal pesticide license." The applicator must wear protective equipment.

To ensure the traceability of a production system, the various operations carried out during the production process must be recorded manually or by computer, as listed below:

1.- FIELD PHASE



Image 5. Pepper seedlings

Pre-planting phase

The producer must hold the phytosanitary passport for the pepper plants purchased from the nursery and keep it for one year. This passport is issued by the same nursery that grew the plant and contains, among other things, the details of the producer and the plant material.

Cultivation phase

The farm owner is required to keep detailed records of phytosanitary treatments, safety intervals, fertilizers applied, etc., in the so-called “Farm Register” or “Field Log.” In this way, in the hypothetical case of discovering a batch of peppers with pesticide residues, we could verify whether these correspond to the plant protection products applied on the farm.

2. RECEIPT AT THE MARKETING COMPANY

When the farmer transports their peppers to the marketing company, they are issued an *incoming delivery note* that records the farmer's identity, the delivery date, and details regarding the received product (species, variety, weight, and production plot), generating a *traceability code for each batch*

Along with the delivery note, another document (*sampling report*) is generated and attached to the shipment; this includes the data from the delivery note, plus a list of the kilograms of peppers to be obtained by category (based on product quality: extra, 1, 2) and sizes (based on quantifiable parameters, such as length or diameter).

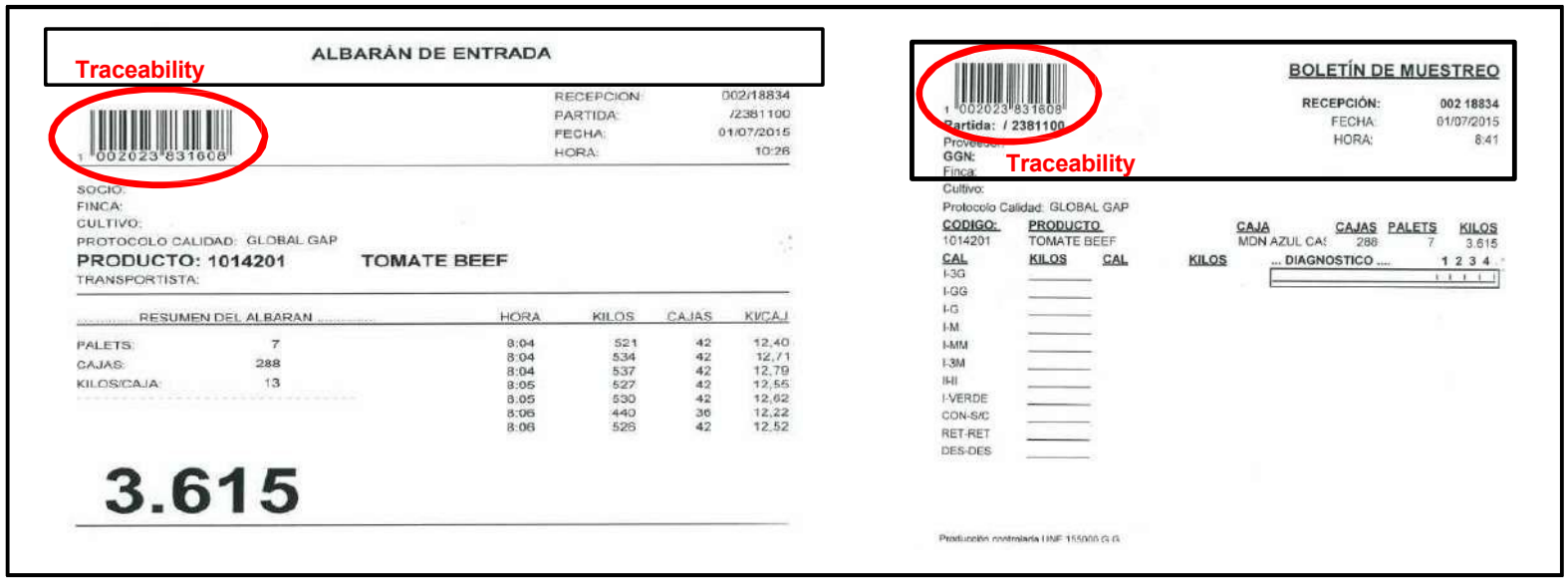


Figure 6. Examples of an incoming delivery note and a sampling report

Depending on the retailer's level of computerization, it is common for documents to include a barcode that allows a scanner to quickly identify traceability information, such as the product's genus, species, and variety, the date of receipt, the crop it comes from, etc.

3.- STORAGE BEFORE PACKAGING

Once the goods have been received, they are temporarily stored in a designated area, during which time they are prepared and, usually, pre-chilled.

4.- UNLOADING

As soon as the batch is about to be unloaded, the line supervisor notifies the other operators that a batch change is about to take place. The notification can be given verbally, via a board displaying the identification code, and even—if the line allows it—via a separator, which allows operators to observe the batch change and record it. In robotic lines, there are sensors that detect specific separators inserted between the different batches being swapped.

5.- MANUFACTURING AND LABELING OF BOXES

Once unloaded, the goods are sorted into different categories and, if necessary, graded according to current quality standards. Each box is individually labeled in accordance with current labeling regulations, indicating the product type, category, size, weight, origin, traceability code, lot number, food industry registration, and complete details of the trader.



Image 7. The interior of a fruit and vegetable center.

6.- PALLETIZING

During palletizing, a record is kept of the items comprising each pallet; in other words, each completed pallet will have a document (**pallet sheet**) attached to it indicating the pallet in question and the items it contains.



Image 8. Example of a pallet log or label

7.- STORAGE

Before storage, the pallet is assembled, weighed, and recorded. These pallets are stored in cold storage rooms at an optimal preservation temperature, which varies depending on the goods being stored.

8.- SHIPMENT and SALE TO THE PUBLIC

Under normal conditions, it would be sufficient to record the data from *the* issued *outbound delivery note*. This document ensures the continuity of the traceability system, and for this purpose, the customer's identification data, the identification numbers of the shipped pallets, the date, and the carrier's identification data must be recorded. When the product arrives at the company that sells it to the public, if the goods are unpacked, the company will apply an internal traceability system to know the origin of the products at all times.

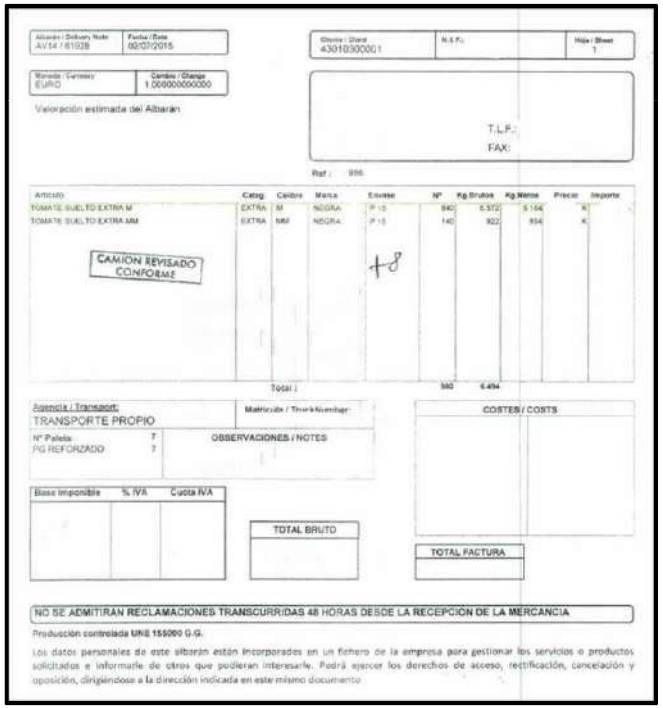


Figure 9. Example of a shipping notice

G. – RECORDS

Throughout the entire process, documentation was compiled recording the most important aspects of the process. In this way, a traceability system can be implemented within a commercial enterprise. The documents generated were:

- **Delivery note.**
- **Sampling report.**
- **Pallet register.**
- **Shipping notice.**





10.- VERIFICATION PROCEDURE

At the end of the season, traceability will be verified by randomly selecting a package of the final product and identifying the areas and farmers from which the peppers originated (backward traceability), or by randomly selecting a delivery note and identifying the customer to whom it was sold (forward traceability).

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Agricultural Cooperatives and the Role of Organizational Models in New Smart Traceability Systems and Big Data Analysis. Cynthia Giagnocavo1, Fernando Bienvenido2, Li Ming3, Zhao Yurong4, Jorge Antonio Sanchez-Molina2, Yang Xinting3 (1. Coexphal-UAL Chair of Horticulture, Cooperative Studies, and Sustainable Development, University of Almería, Spain; 2. Department of Computer Science, University of Almería, Almería, Spain; 3. Beijing Research Center for Agricultural Information Technology/National Engineering Research Center for Agricultural Information Technology/National Engineering Laboratory for Agricultural Product Quality Traceability/Key Laboratory of Agricultural Information Technology, Ministry of Agriculture, China; 4. School of Economics and Management, Shandong Agricultural University, China)

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Project number: 2024-1-RO01-KA220-VET-000255756

nd strategies to combat unfair practices regarding horticultural cooperative products sold directly to consumers and through distribution networks (PART 2)

Specifications for greenhouse producers



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5. ILLUSTRATED GUIDE TO PESTS AND NATURAL ENEMIES OF HORTICULTURAL CROPS IN TOMATO GREENHOUSES



CIT | COEX
unidosinnovando

Foreword

Horticulture is undoubtedly one of the main economic drivers in southeastern Andalusia, both for the production and marketing of its products and for the associated auxiliary industry. The climatic conditions of this geographical area have allowed for the development of specialized production using simple greenhouses, as well as a technological sector that is highly competitive at both the national and international levels.

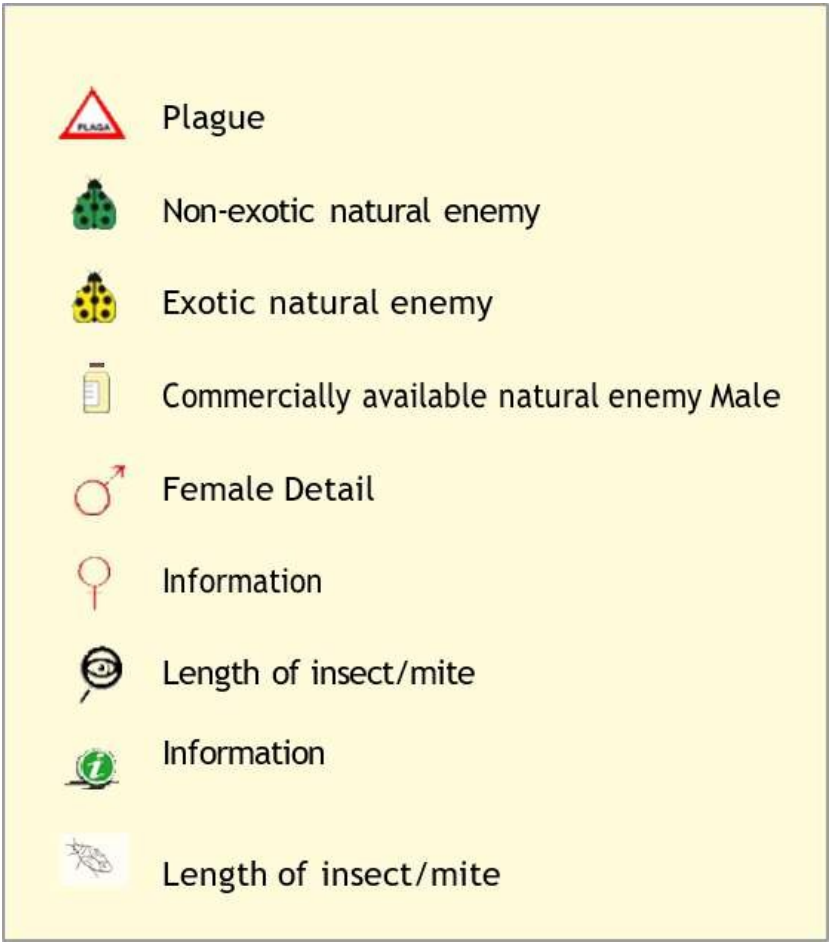
In recent years, the fruit and vegetable sector's commitment to integrated pest management techniques, as part of a sustainable production system, has led to a significant increase in the use of biological control organisms

COEXPHAL has been involved since the early 1990s in developing applied research projects in the field of biological control. This "Illustrated Guide to Pests and Natural Enemies in Greenhouses," dedicated to horticultural crops, was intended to provide a practical identification guide for professionals in the agricultural sector.

COEXPHAL aims to continue contributing to the training of professionals in the horticultural sector, helping them identify and detect the main pests and natural enemies, thereby helping to overcome the ongoing challenges posed by the implementation of biological control in intensive horticulture.

5.1 Major Pests in Greenhouses and Beneficial Organisms

Key to symbols



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PEST: WHITEFLY (*Bemisia tabaci*)





0.9–1 mm

Adult *Bemisia tabaci*

Canopy-type wings



Bemisia tabaci laying eggs

Mature, golden-yellow eggs



Oval, becoming globular in advanced stages.

Mycetomas symmetrical about the longitudinal axis of the body



Bemisia pupae

Globular shape. Wing outlines easily distinguishable



Exhumation of *Bemisia tabaci*

T-shaped exit hole of the adult

PLAG: WHITEFLY (*Trialeurodes vaporariorum*)



Adult *Trialeurodes vaporariorum*

Wings arranged horizontally



Trialeurodes vaporariorum laying eggs

Mature brown-black eggs



Nymphs, eggs, and larvae *of Trialeurodes vaporariorum*

Bulky back across the entire surface (box-shaped).

Presence of marginal fungi



Pupae of *Trialeurodes vaporariorum*



Emergence of *Trialeurodes vaporariorum*

T-shaped exit hole of the adult. Presence of marginal setae

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Parasitoid of *Bemisia tabaci: Eretmocerus mundus*







1 mm

Adult *Eretmocerus mundus*

Yellow body color. Transparent wings with metallic sheen



Bemisia tabaci nymph with an *Eretmocerus mundus* egg

Nymph with head up (*E. mundus* lays eggs between the nymph and the leaf)

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Bemisia tabaci nymph parasitized by *Eretmocerus mundus*

Mycelia displaced from their original position

ÇÇ



Pupa of *Eretmocerus mundus*

Golden-brown. Colouring Globose shape



Adult *Eretmocerus mundus* emerging from the pupa



Exhumation of *Bemisia tabaci* parasitized by *Eretmocerus mundus*

The circular exit hole of the parasitoid

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PARASITOID of *Trialeurodes vaporariorum: Encarsia formosa*





0.6 mm

Adult female *Encarsia formosa*

The female has a black head and thorax, and a yellow abdomen.



Pupae of *T. vaporariorum* parasitized by *E. formosa*

Black. Coloration Bulky back across the entire surface (box-shaped).



Freshly emerged adults *of Encarsia formosa*



Exuvia of *T. vaporariorum* parasitized by *E. formosa*

Circular exit hole of the parasitoid

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PREDATORS: Amblyseius swirskii





0.3–0.5 mm

Adult *Amblyseius swirskii*

Polyphagous predator that also feeds on pollen



Amblyseius swirskii hunting whitefly nymphs

A. swirskii feeds on whitefly eggs

eggs



Pepper leaf with *Amblyseius swirskii*

A. swirskii shelters in the wettest areas of the leaf.



Pepper leaf with *Amblyseius swirskii* eggs

On peppers, *A. swirskii* lays eggs on the hair-like structures of the veins on the underside of the leaf.

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PREDATORS: *Macrolophus caliginosus*





9–3.6 mm [2]

Adult *Macrolophus caliginosus*

polyphagous predator with a mixed diet
mixed diet,



Detail of the style of *Macrolophus caliginosus*

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PREDATORS: *Nesidiocoris tenuis*



3.4–4 mm



Adult *Nesidiocoris tenuis*

Black ring on the posterior margin of the head. Polyphagous predator with a mixed diet, both zoophagous and phytophagous



Nesidiocoris tenuis nymph

In the final nymphal stages, the wing outlines are visible



Nesidiocoris tenuis in the process of molting

Nymphs go through five larval stages, molting at the end of each stage



Adult *Nesidiocoris tenuis*

Early adult, the stage in which the black color of the ring is not yet visible

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PREDATORS: *Chrysoperla carnea*



23–30 mm



Adult *Chrysoperla carnea*

Characteristic green color. The adult is not predatory but has a high dispersal capacity



2–10 mm



Larva of *Chrysoperla carnea*

Hook-shaped mandibles. All three larval stages are predators of the whitefly

ENTOMOPATHOGENS: Lecanicillium muscarium



Whitefly nymph infested with *Lecanicillium muscarium*

ENTOMOPATHOGENS: Beauveria bassiana



Whitefly nymph infested with *Beauveria bassiana*

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EST: SPIDER MITE (Tetranychus urticae)



0.3–0.5 mm



Adult and eggs *of Tetranychus urticae*

The color of *T. urticae* varies depending on the growing environment



Colony of *Tetranychus urticae*

Two characteristic black spots can be seen on the spider's body.

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PREDATORS: *Phytoseiulus persimilis*



Adult *Phytoseiulus persimilis*

Bright red color. Long legs. In the absence of pests, the predator disappears quickly.

PREDATORS: *Amblyseius californicus*



Adult *Amblyseius californicus*

Cream-colored. Short, yellow legs. Survives longer in the absence of prey than *P. persimilis.*

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PEST: TOMATO MOTH (Tuta absoluta)



Pupa of *Tuta absoluta*

The larvae are lowered to the ground via a silk thread to pupate. They can also pupate on the calyx and leaves, forming white silk cocoons



Galleries created by *Tuta absoluta* on a leaf (left) and by *Liriomyza trifolii* (right)

The galleries created by the larvae vary in size. They can be distinguished



Tuta absoluta larvae inside the gallery

The larvae burrow into the leaf, where feed on the mesophyll, leaving translucent galleries.



L4 larva of the species *Tuta absoluta*

During their development, the larvae emerge from the leaf and re-enter it, passing through 4 stages. Larvae: L1 cream, yellow; L4 green-pink before pupation.



Tuta absoluta pupa

The larvae are lowered to the ground by a silk thread to pupate. They can also pupate on



the feeding tunnels of *Tuta absoluta* on leaves (left) and *Liriomyza trifolii* (right)

.

The galleries created by the larvae cover larger or smaller areas. They differ from those of the leaf miner in that they consume the entire mesophyll, leaving only the epidermis

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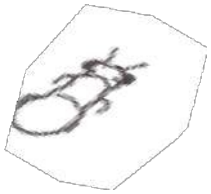
PREDATORS: *Trichogramma achaea*





Adult *Trichogramma achaea*

A small wasp that lays its eggs inside the eggs of the tomato leafminer. The *T. achaea* larva develops entirely inside the moth's egg.



Tuta absoluta egg parasitized *by Trichogramma achaeae*

Parasitized eggs turn black after a few days. This discoloration distinguishes them from unparasitized eggs.

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PREDATORS: *Nesidiocoris tenuis*





3.4–4 mm

Adult *Nesidiocoris tenuis* hunting *Tuta absoluta* eggs

Adults *of Nesidiocoris tenuis* are highly predatory of *Tuta absoluta* eggs

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PLAG. VASATES (Aculops Lycopersici)



0.1–0.2 mm



Aculops lycopersici

Creamy-reddish or orange-coloured mite, appears in the affects crops in patches, although it is very difficult to spot in the field due to its small size.



Symptoms of vasates, healthy stem (left) and stem with symptoms (right).

The first symptoms appear on the lower part of the plant and progressively increase. They can be identified by the stem turning a rusty brown colour (→←), the leaves becoming silvery on the underside and then drying out

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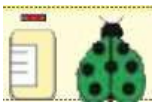

PREDATORS: *Amblyseius andersoni*





0.3–0.5 mm

Amblyseius andersoni

A. andersoni is a polyphagous predator that hunts various species of spider mites and also feeds on *Aculops lycopersici.* Its use in greenhouse tomato cultivation is being studied

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5.2 Biological control strategies



TOMATOES

PEST CONTROL PROTOCOL BIOLOGICAL PEST CONTROL



Pest	Biological control agent	DOSE	Application interval and recommendations
Whitefly (*Bemisia tabaci*)  	*Nesidiocoris tenuis* 	0.3–1 ind. / plant (seedbed) 1–1.5 individuals/m² (after transplanting)	Introduce directly onto seedlings in trays 5–7 days before transplanting under long-day conditions and low temperatures, and 12 days before under short-day conditions and low temperatures. Combine with the release of Ephestia eggs at a rate of 10 g per two jars. Yes, HE introduction is carried out after transplanting (4–5 weeks); the dose should be increased to at least 1–1.5 individuals per square meter (in two applications).
	Eretmocerus eremicus  OPTIONAL	3–5 individuals/m².	Apply every two to three weeks, as long as whitefly larvae are present.
	*Yellow plates/rolls** 	100–200 plates / 1,000 m²	Place the plates 25–30 cm away from the crop at the time of transplanting. * Plates/rolls should only be placed in the case of Nesidicoris in HE. These are introduced after transplanting and removed before sowing.

Pest	Biological control agent	DOSE	Application interval and recommendations
Tuta absoluta 	*Nesidiocoris tenuis* 	0.3–1 plant/plant (seedling) 1–1.5 units/m² (after transplanting)	Introduce directly onto seedlings in trays 5–7 days before transplanting under long-day and low-temperature conditions, and 12 days before under short-day and low-temperature conditions. HE should be combined with the release of Ephestia eggs at a rate of 10 g per two jars. Yes, HE is introduced after transplanting (4–5 weeks), and the dose should be increased to at least 1–1.5 individuals per square meter (in two applications).
	Trichogramma larvae  	100–200 cards/ha per week	The dose and frequency of application will depend on the level of infestation; from 100 cards/ha at two-week intervals up to 200 cards/ha weekly. The maximum distance between cards will be 10 m, maintaining a distance of 5 m from the rows.
	Sex pheromones confusion  	300 dispensers/ha	HE dispensers should be placed a few days before planting. Each diffuser must be placed directly on the support wire (at approximately 1.6–2 m, depending on its height). Uniform spacing between dispensers
	Transparent adhesive rolls with embedded pheromones  **OPTIONAL**	1 roll / 500–1,000 m²	Place the roll horizontally, parallel to the floor, among the plants, to also help capture emerging moths. It can also be placed between vertical posts.

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Plague	Biological control agent	DOSAGE	Application interval and recommendations
Thrips (Frankniella occidentalis) 	*Orius laevigatus* * *Lobularia maritima* 	2 individuals/m²	Apply Orius to soil covered with Lobularia and directly onto the crop in areas with higher infestation rates. Lobularia planting locations should be established at the start of cultivation along the rows to ensure adequate light exposure as the plant grows. *Recommended especially for cherry tomatoes.
	Blue plates / rolls * 	100–200 plates /1,000 m²	HE pheromone rolls should be placed 10 m apart and 5 m from the edge of the row. *Recommended especially for cherry tomatoes.
	Hypoaspis mii  **OPTIONAL**	200 units/m²	Preventive. Apply directly to the soil along the crop rows. The dose is calculated based on 40% of the total farm area. Alternative to applying Staphyline

Pest	Biological control agent	DOSE	Application interval and recommendations
Thrips (Frankniella occidentalis) 	*Atheta coriaria*  **OPTIONAL**	1 cube / 2,000 m²	Apply the preventive treatment 4–5 weeks after transplanting. Strictly follow the product's preparation, installation, and maintenance instructions to ensure optimal growing conditions and extend its useful life. Distribute the cubes evenly across the plot, shielding them from direct sunlight by placing seed trays or similar items over them when the crop's foliage does not provide sufficient cover.
Aphids *Macrosiphon euphorbiae* 	*Aphidus ervi Aphelinus abdominalis* 	1–2 units/m² (0.25–0.5 x 4–8)	HE recommends a progressive dose with weekly frequency between 0.25–0.5 each (depending on incidence). The number of individuals released will depend on the infestation level and parasitism rates (up to 80%). It can be combined with the localized release of predators such as *Aphidoletes aphidimyza, Chrysoperla carnea, Adalia bipunctata, and Sphaerophoria ruepelii.*
	Reservoir plants and *Sitobion barley-oat* mixtures 	10 pots per hectare	Areas with barley will be sown along the aisles to ensure access to light when the plant is tall. The pots of barley that HE will use to infest the various cereal planting sites (reservoir plants) distributed throughout the greenhouse. Once an adequate infestation level is reached in the reservoir plants, a preventive release of 250 parasitoids per bait site will be carried out.

Pests	Biological control agent	DOSE	Release interval and recommendations
Aphids *Macrosiphon euphorbiae* 	***Aphidoletes aphidymiza*** 	0.5–1 ind./m²	It is recommended to introduce it in areas with high infestation rates. To promote its development, it is recommended to introduce it into perforated containers (boxes) protected from sunlight and with a moist substrate, placed in areas with higher incidence.
Red spider mite ***Tetranychus urticae*** 	***Phytoseiulus persimilis***  OPTIONAL	6–9 individuals/m²	Begin treatment as soon as you detect the first presence of the red spider mite. The total dose should always be divided into several doses over consecutive weeks, with the number of doses depending on the infestation level (1–3 individuals / 3–5 weeks). In affected areas, the dose should be significantly increased, ensuring that both the affected plants and those in the surrounding area receive the largest amount (60–70%). The remaining product should be distributed evenly over the crop, in small piles every few plants in the same row (even though the red spider mite is not visible in those rows).
Vasates ***Aculops Lycopersici*** 	***Amblyseius Andersoni***  OPTIONAL	1 approx. / 125 individuals/m² plants	Identify free-living insects in areas at risk of infestation as a preventive measure. It can also be introduced into loose substrate along with mite prey. It is also intended for controlling red mites.

Pest	Biological control agent	DOSE	Application interval and recommendations
Leaf miners **Liriomyza sp.** 	***Diglyphus isaea***  **OPTIONAL**	0.25–0.5 individuals/m² x 4–6 sprays	Begin application when you observe the first punctures, galleries, or adults captured on sticky traps, and apply weekly or every two weeks for 4–6 weeks. Open the boat and inspect the crop, avoiding peak sunlight hours.
Biodiversity 	**Packs for indoor greenhouse floors** 	1 package containing 104–108 plants/ha	• Plant by the start of harvest. • Well-lit areas with space (25 cm spacing). • Irrigation available. • Combine the 5 species (for example, create 9 vegetation islands with approximately 12 plants, spaced 25 cm apart) • Near grain silos. Recommended species: sunflower, fennel, marigold, yarrow, savory, rue, sage, cilantro, Limonium, borage….

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6. BIODIVERSITY AND ECOLOGICAL IMPROVEMENTS

Key to symbols


Hosts natural enemies


Hosts pollinators


Host fauna fauna (vertebrates)

oth
er
Creeping plant

Small plant Medium-sized plant


Large plant Plant


large



6.1 Introduction

Greenhouse horticulture faces the challenge of ensuring the sustainability of the production system by balancing economic efficiency with respect for and care of the environment. In this context, agricultural waste management and the adoption of circular economy principles are emerging as fundamental strategies for mitigating environmental impact and conserving biodiversity.

Materials used in the production process can be reused or repurposed, optimizing resources, reducing waste generation, and minimizing the ecological footprint. Furthermore, these practices encourage biodiversity and promote biological control through conservation. This approach not only fosters sustainability but also strengthens crop resilience to pests and diseases, thereby reducing dependence on chemical inputs.

Transforming agricultural waste into resources integrated into sustainable systems paves the way for multiple benefits. These residues can be used to create habitats, enrich soils, and support local flora and fauna. For example, integrating hedgerows around facilities and creating ecological corridors, as well as building shelters for beneficial insects using various types of materials, are strategies that support pollinators and auxiliary fauna. These initiatives, in addition to promoting biodiversity, become essential tools for strengthening agricultural ecosystems.

Hedges composed of native plants facilitate biological control by providing shelter, suitable microclimates, and food for natural enemies, such as predators and parasitoids. These conditions foster complex food webs that act as natural barriers against the spread of pests between greenhouses.

Enriching agricultural landscapes with hedgerows of native plants complements the biodiversity of natural ecosystems and strengthens ecosystem services. Furthermore, the ability to inoculate these hedgerows, at certain key times, with commercial predators and parasitoids could enhance their effectiveness.

Using local seeds to establish these hedgerows offers significant benefits, such as greater resistance and resilience to adverse weather events, thereby contributing to the sustainability of the hedgerows, the agroecosystem, and agricultural production itself.

This guide was designed as a practical tool to facilitate the recognition of native seeds, the identification of the optimal time for harvesting them, and the application of appropriate treatments to maximize germination rates. With this information, producers will be able to actively contribute to a more sustainable and efficient agricultural model, in harmony with the biodiversity of the surrounding environment.

6.2 Some examples of habitat creation

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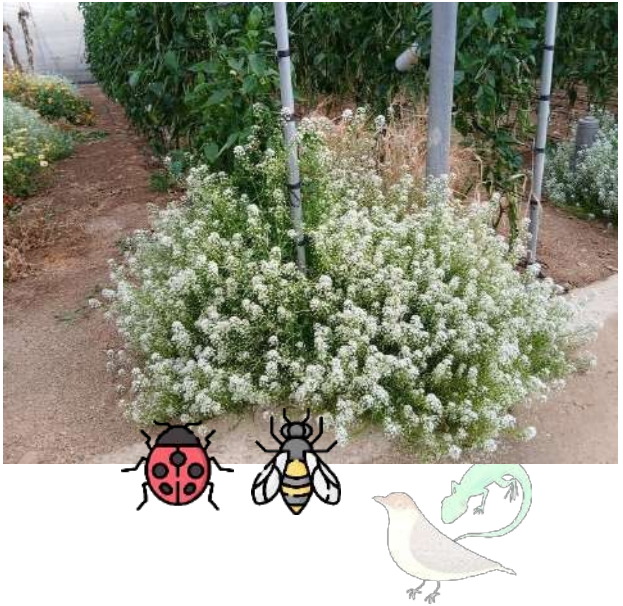
Lobularia maritima Crucifer

A small, perennial plant, up to 30 cm tall, woody at the base when mature, composed of many stems with grayish-green to silvery leaves, no more than 4 cm long. Fragrant flowers with 4 white petals, 2–3 mm long.

Grows in sandy areas on beaches, consolidated dunes, and scrublands not far from the coast.

	E	F	M	A	M	J N	J L	A	S	O	N	D
Blooming												
Harvest												
Sowing												



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Lobularia maritima Crucifer





Fruits and seeds: fruits arranged along an axis, which open into two valves, leaving a membrane in the center and containing one seed in each valve. Seeds are ovate, sometimes with a narrow wing.

Harvesting: pick the fruit-bearing branches and crush them on a sheet of paper.

Propagation: by seed.

Treatment: no pre-germination treatment is necessary.

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Albaida: *Anthyllis cytisoides*

Legumes

A medium-sized perennial with hairy branches at the tips. Pubescent leaves with three leaflets, grayish-green in color, which sometimes fall in summer. Distinctive flowers, grouped in spikes, with a papilionate corolla and yellow petals.

Grows on very dry soils and under conditions of extreme aridity.



	E	F	M	A	M	J N	J L	A	S	O	N	D
Blooming												
Fruit												
Sowing												

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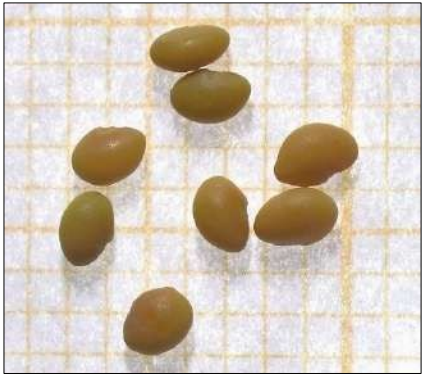

Fruits and seeds: brown, smooth, obovoid pods containing 1–2 seeds inside.

Harvest: pluck the inflorescences to obtain small legumes, which are kept whole. Monitor the pest rate in advance.

Propagation: by seed.

Treatment: remove seeds by mechanical scarification

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Cretan lavender: *Lavandula dentata* Labiatae

A perennial, aromatic plant of the Lamiaceae family, which typically reaches a height of 50 cm and has a robust, bushy growth habit. Its leaves are opposite, lanceolate, 1.5–3.5 cm long, with serrated or lobed margins, green on top and white underneath. The inflorescence is arranged in whorls of 6–10 violet-purple flowers.

It grows in dry shrublands, on stony, preferably calcareous substrates.



	E	F	M	A	M	J N	I L	A	S	O	N	D
Blooming												
Harvest												
Sowing												

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Fruits and seeds: its fruits are small, elongated nuts,







protected by the calyx**.**

Harvesting: the entire inflorescences are cut and then crushed to extract the seeds.

Propagation: by seed.

Treatment: no pre-germination treatment is necessary

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Deerhorn sea lavender: *Limonium sinuatum* Plumbaginaceae

A medium-sized perennial with a basal rosette of wavy leaves covered with rough hairs. Hermaphroditic flowers, grouped in spikelets with a persistent purple calyx and cream-colored petals.

Grows well in sandy, well-drained soil along roadsides. Also grows in coastal salt marshes.

	E	F	M	A	M	J N	I L	A	S	O	N	D
Blooming												
Harvest												
Sowing												



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Fruits and seeds: The fruit remains protected by the spiny calyx and contains a single seed, which is very deep, conical, and dark in color.

Harvesting: Cut the entire inflorescences and then break them apart. Sow without separating the seeds.

Propagation: by seed, without the need to separate them.

Treatment: no pre-germination treatment; germination can be improved by soaking them in water for 2–3 hours beforehand

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Lobularia: *Lobularia maritima* Crucifer

A small plant up to 30 cm tall, perennial, woody at the base when mature, composed of numerous stems with grayish-green to silvery leaves, no more than 4 cm long. Fragrant flowers with 4 white petals 2–3 mm long.

Grows in sandy areas on beaches, consolidated dunes, and scrublands not far from the coast.



	E	F	M	A	M	J N	J L	A	S	O	N	D
Blooming												
Harvest												
Sowing												





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Fruits and seeds: fruits arranged along an axis, which open into two valves, leaving a membrane in the center and containing one seed in each valve. Seeds are oval, sometimes with a narrow wing.

Harvesting: pick the fruit-bearing branches and crush them on a piece of paper.

Propagation: by seed.

Treatment: no pre-germination treatment is necessary.

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Beach daisy: *Asteriscus maritimus* — Compositae

A woody shrub with prostrate stems and elongated, dark green leaves covered with fine hairs.
Composite flowers with intense orange-yellow petals.

Grows on sandy or stony soils. Tolerates high levels of sunlight, strong winds, and saline soils.



	E	F	M	A	M	J N	J L	A	S	O	N	D
Flowering												
Harvest												
Sowing												

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Fruits and seeds: produces pubescent, wingless achenes with a short pappus consisting of scaly bracts.

Harvesting: the entire flower heads are harvested, which are then peeled using scissors or a sharp object to extract the seeds.

Propagation: by seeds or cuttings from young shoots.

Treatment: no pre-germination treatment is necessary

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Creeping Rosemary: Rosmarinus officinalis prostratus — Labiatae

Perennial shrub with a prostrate habit. Aromatic, linear to lanceolate leaves, dark green in color, with a woolly underside. Bilabiate flowers, ranging in color from purple to white.

Grows mainly on calcareous, well-drained soils. Very drought-tolerant.



	E	F	M	A	M	J N	I L	A	S	O	N	D
Blooming												
Harvest												
Sowing												



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Fruits and seeds: The fruit is a cluster of four seeds per flower, although not all may ripen. The seeds are elongated or elongated-ovoid, brown, and smooth. **Harvesting:** The flowering branches are squeezed and then crushed to extract the seeds.

Propagation: Propagated by seeds or cuttings.

Treatment: No pre-germination treatment is necessary.

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7. GLOBALG.A.P CERTIFICATION STANDARDS (OVERVIEW)

7.1 INTRODUCTION TO GLOBALG.A.P

- A private organization that sets voluntary standards.
- Product certification.
- Composed of: producers + supermarkets + certification bodies







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EXAMPLES OF PRODUCERS AFFILIATED WITH GLOBALG.A.P



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EXAMPLES OF RETAILERS AFFILIATED WITH GLOBALG.A.P



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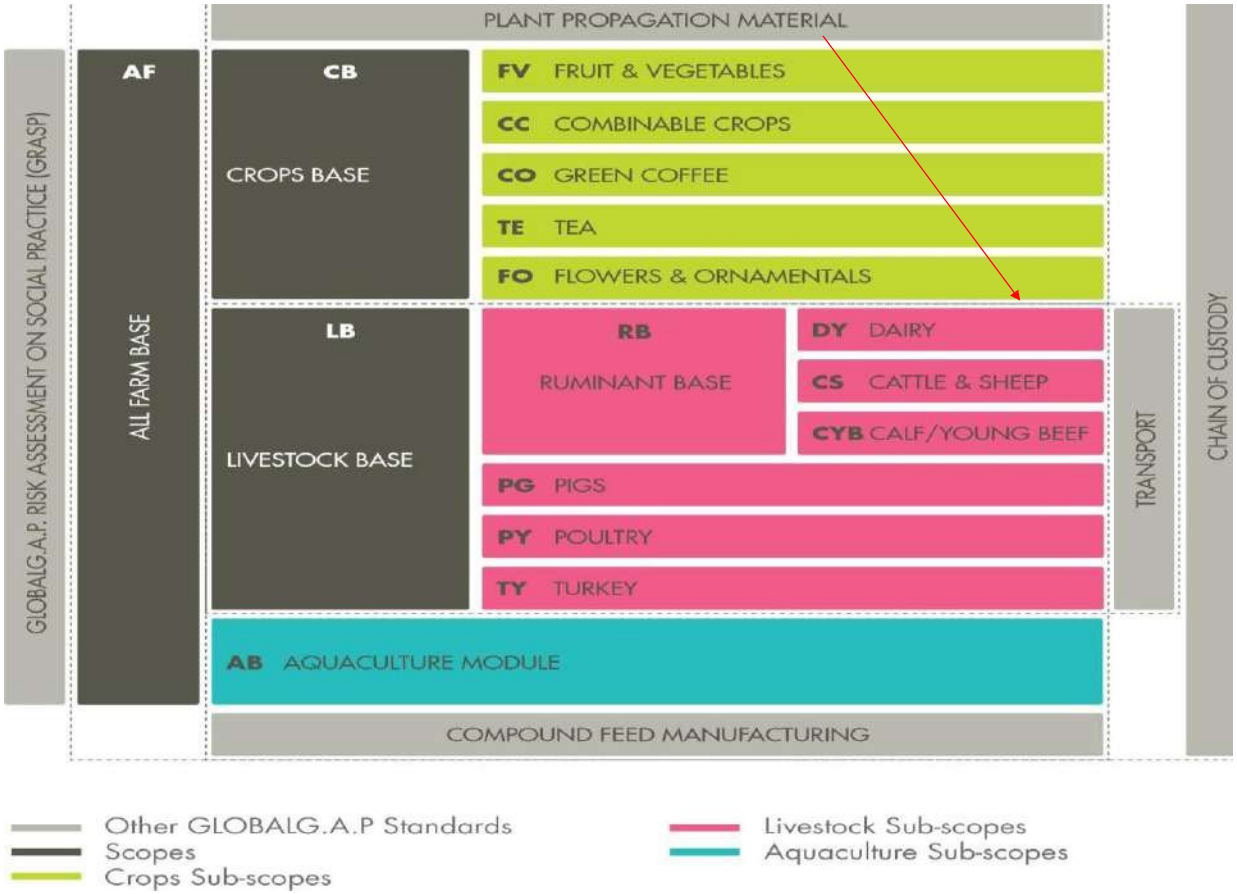
STRUCTURE OF THE GLOBALGAP PROTOCOL



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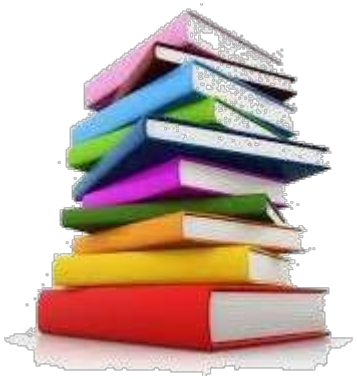
DOCUMENTS REQUIRED FOR CERTIFICATION:

- **GENERAL REGULATIONS**.
  - Part I: The Certification Process
  - Part II: Quality Management System
  - Part III: Rules for Certification Bodies



- **SUBLICENSE AGREEMENT.**
  - Commitment to continuously comply with certification requirements.
  - Commitment to update information and commitment to pay fees.
- **CONFORMITY CRITERIA CONTROL POINTS CHECKLIST**
- **NIG (National Interpretation Guide).**

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7.2 DEFINITIONS



Producer: A natural or legal person who bears legal responsibility for the production processes and products in the relevant field, marketed by such persons or companies.

Unit: A production area owned or leased and managed by a legal entity, where the same resources (water, labor, equipment, etc.) are used.

A site may contain several areas that do not come into contact with one another, and more than one product may be produced in each area.



A site cannot have both certified and non-certified crops.

These may be owned or leased (lease agreement: indication
the fact that the owner has no responsibility, influence, or decision-making authority regarding production operations).

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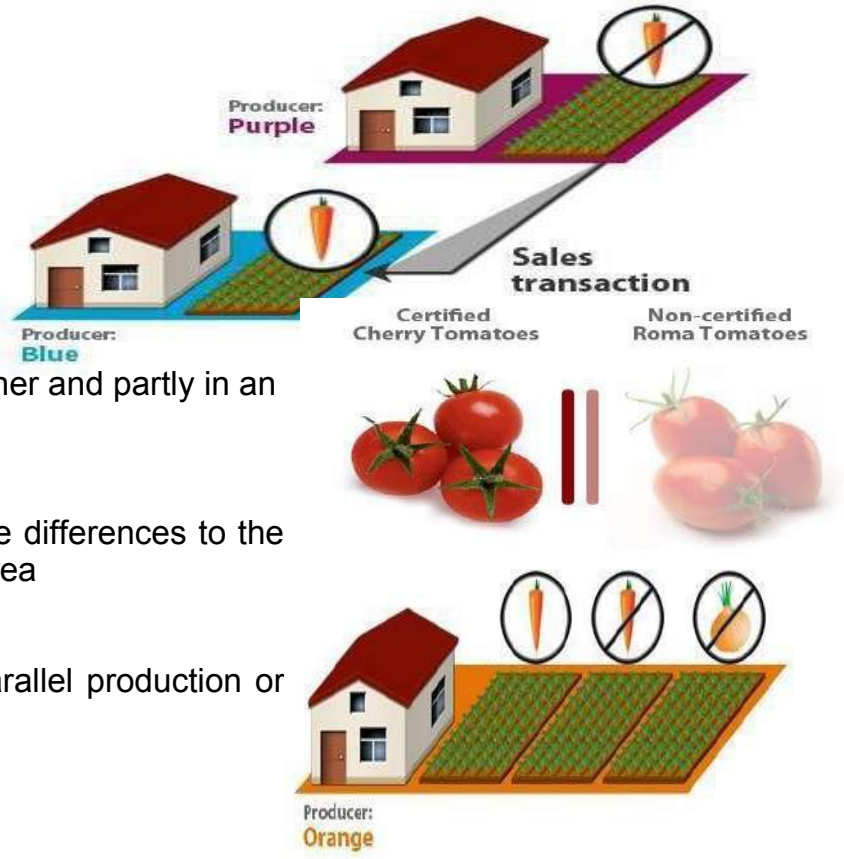
Parallel Ownership (PO): A manufacturer that purchases non-certified products

Parallel production (PP):

A situation in which an individual producer or a group of producers produces a product partly in a certified manner and partly in an uncertified manner.

Parallel production of a product that exhibits distinct and visible differences to the average consumer is possible within a contiguous production area

In the case of producers with multiple farms registering for parallel production or ownership, each farm must be registered as a separate UNIT.



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PACKAGING UNIT (PHU): Facilities where products are handled.



- Included in the scope when the product is handled

  while in the producer's possession.
- In the case of subcontracting, if the packer is certified for the same product, the control body may accept the certificate
- If the **food** production unit (PHU) already holds a **food safety certificate** recognized by GFSI, the control body may accept this certificate, although the GLOBALG.A.P. inspector **must** still **verify segregation and traceability** (as well as **post-harvest treatments,** if applicable).

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7.3 CERTIFICATION PROCESS.

- Registration:
  - Do not certify the same product with different CBs.
  - Do not certify the same product under different options.
  - Do not register production units or group members in another country.
  - Products included in **the GLOBALG.A.P. product list.**
  - GLOBALG.A.P. certification does not cover the capture of wild animals, capture fishing, or harvesting from the wild.

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CERTIFICATION OPTION 1

	Initial assessments	Subsequent assessments
Self-assessment	Entire scope. All locations.	Entire scope. All locations.
External organizing committee	Announced inspection. All areas. All locations.	Announced inspection. All areas. All locations. Unannounced inspection at 10%.





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INITIAL CERTIFICATION INSPECTION

- Each production process must be fully evaluated before certification is granted.
- A product that has not yet been harvested will not be included in the certificate.
- The applicant must maintain records:
  - from the date of registration and
  - for a period of at least 3 months prior to the first inspection.
- Producer Transfer: Switching from one certification body (CB) to another, or from the IFA GLOBALG.A.P. standard to a modified and approved checklist or to an equivalent system (or vice versa), is NOT considered an initial inspection, but a follow-up inspection.

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ISSUANCE OF THE CERTIFICATE

Type of Requirement	Percentage of compliance
Major	100
Minor	95
Recommendations	0

Option	Calculate %
1 without QMS	Manufacturer
1 with multiple locations and QMS	Per production unit
2	Per manufacturer

- **STRUCTURAL NON-CONFORMITY (1/3 of all non-conformity cases for the same requirement)**
- **NON-CONFORMITY ≠ NON-CONFORMITY ≠ CONTRACTUAL NON-CONFORMITY**

SANCTIONS

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WARNING

- Any NC.
- At AINI: If not resolved within 3 months,→ AINI.
- Follow-up: Resolve within 28 days or the status will be “open non-compliance.”

SUSPENSION

- Failure to resolve the non-compliance within 28 days.
- **Serious threat** to food safety, workplace safety, the environment, consumers, and/or product integrity.
- Applied by the manufacturer or the general practitioner (self-declared suspension).
- **Scope:** product-specific and/or manufacturer-specific.
- Rectification within 12 months or revocation.

CANCELLATION

- Fraud.
- Unresolved suspension.
- **Scope:** All products and producers, and a 12-month suspension of the GLOBALGAP CERTIFICATE

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GLOBALGAP CERTIFICATE

- The GLOBALG.A.P. certificate may only be issued to **the legal entity** making the application.
- The trader's name may be mentioned on the certificate, but only with the following statement: "May be marketed exclusively through XYZ."
- A certificate **is not transferable** from one legal entity to another when locations change legal entities. In such cases, a full inspection is required. The new legal entity must receive a new GGN.
- The certification cycle is **12 months**, subject to the penalties and extensions described above.

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CERTIFICATE RENEWAL



- Apply at least one month in advance.
- Maximum 4 months.
- Pay the registration fee.
- Reinspection during the extension period.
- Changing the OC is not permitted.

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8.4 PRODUCTION

ANNEX ALL AGRICULTURAL HOLDINGS (AF)

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AF1.1.1: “ ” Identification “ ”:

- **Field marker.**
- **Map in the notebook.**



AF 1.1.2: Farm log. AF

1.2.1: Risk assessment.

AF 1.2.2: Risk management plan.

Step 1: Identify potential physical, chemical (**including allergens**), and biological hazards. The plan does not need to include environmental risks. These are covered in AF 7.1.1s

Step 2: Determine who/what could be affected/injured and how Step 3: Assess

the risks and decide on precautionary measures

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AF 2.1: All records are available and retained for 2 years.

AF 2.2: Self-assessment (does not apply to general practitioners).

AF 2.3: Corrective actions. AF 3.1: Assessment of hygiene-related risks.

AF 3.2: Hygiene standards:



- Hand washing.
- Covering wounds.
- Prohibition of eating, drinking, and smoking.
- Reporting infections.
- Wearing appropriate clothing.
- Reporting any product contamination due to contact with bodily fluids

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AF 3.3: Annual written and verbal training on hygiene (including for the manufacturer and manager).

AF 3.4: Compliance with hygiene standards

AF 4.1 Health and Safety:

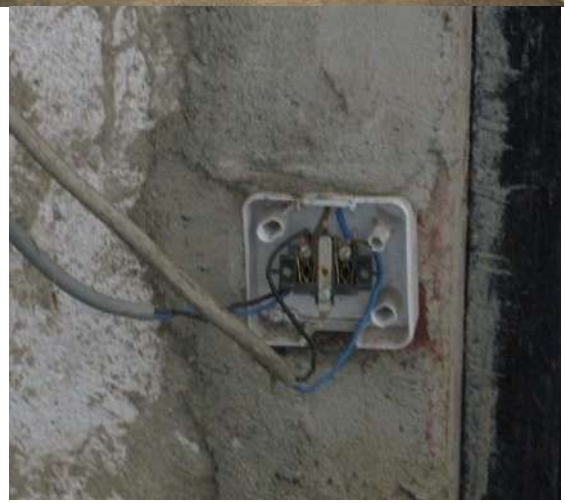
-Risk assessment.

- Health and safety standards.

-Health and safety training.

AF 4.1.2 Farm infrastructure, facilities, and equipment must be **constructed and maintained** in such a way as to minimize risks to workers.





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AF 4.2: Training:

- Records:
  - Topics covered.
  - Trainer.
  - Course date.
  - List of participants.

- Training for applicators.

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- **AF 4.3: First Aid**:
  - Procedure for responding to accidents and emergencies.
  - Location on the map.
  - Contact person.
  - Emergency phone numbers.
  - Identifying risks using signs.
  - Access to safety data sheets.
  - First aid kit.
  - Person trained in first aid.

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- **AF 4.4: PPE: Personal Protective Equipment**
  - Availability of PPE (spare mask).
  - Cleaning of PPE.



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AF 4.5: Worker well-being:

Identification of health and safety responsibilities. Documented meetings between management and workers:

- Annual.
- Health and safety.

Access to:

- Food storage area.
- Sink and drinking water.
- Suitable accommodation.
- Safe transportation to and from the construction site.





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AF 5.1 Subcontractors:

- Subcontractor assessment .
- The inspection body may verify the assessment of subcontractors on-site and issue a letter of compliance:
  - Date of assessment.
  - Name of the inspection body.
  - Inspector’s name.
  - Subcontractor identification.
  - List of fire safety measures inspect



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AF 6.1 Identification of waste and containers.

AF 6.2.1 Waste management plan. AF 6.2.2 Clean and tidy construction site.

AF 6.2.3 Diesel and oil tanks (spills). AF 6.2.4 Disposal of wash water.

AF 6.2.5: Collection and disposal of water from:

- Washing of application equipment.
- Washing of personal protective equipment.
- Washing tanks.

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AF 7.1 Environmental conservation management plan.



AF 7.2 Maintenance of non-productive areas.

R. AF 7.3.1 Energy consumption monitoring.

AF 7.3.2 Energy efficiency plan.

AF 7.3.3 Inclusion in the plan of measures to minimize energy consumption from non-renewable sources.

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AF 7.4.1: Water collection and recycling measures.



AF 8: Complaints.

AF 9: Product recall. List of customer phone nu and email addresses.

AF 10: Food protection. AF 11:

GLOBALGAP status. AF 12: Use

of the logo.

AF 13: Traceability.



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AF 14: Mass balance.

AF 15.1: Food Safety Policy Statement.

- Reflects the commitment of management/the owner.
- **Renewed annually** for each new certification cycle AF

16.1: Food fraud assessment.

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AF 16.2: Food Fraud Mitigation Plan.

Food fraud: placing food products on the market to obtain economic gain with the intent to deceive the consumer. Examples:

- Relabeling expired products.
- Replacing products with cheaper ones that are not visually distinguishable.

False claims regarding the origin of products

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PRODUCTION

ANNEX CULTIVATION BASE (CB)

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CB 2.1.1: Compliance with legislation regarding plant material purchased in the last 24 months.

- Document that includes, at a minimum:
  - Name of the variety, lot, and supplier.
- Use of registered varieties: cpvo.europa.eu (Community Plant Variety Office), at:
  - monitoring compliance with health and safety requirements (phytosanitary passport, seed packaging, etc.)
  - prevention of fraud through the provision of essential information

CB 2.2: Seed Treatment / Nurseries.



Does not apply to those certified

GLOBALGAP PPM

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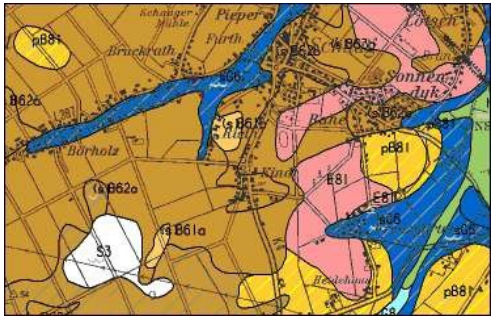
CB 2.3: Genetically Modified Organisms CB 3.1:

Soil management plan (fertilization):



- Analysis and/or,
- Specific literature.

CB 3.2 Soil types at each site must be identified (R) CB 3.3 Annual crop rotation is practiced, which can be verified by consulting the rotation records for the past 2

years

CB 3.6: Analysis of organic fertilizers or knowledge of recognized values.

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CB 3.4 Techniques are used to improve or maintain soil structure and prevent soil compaction. For example:

- deep-rooted green manure crops
- drainage
- avoiding plowing between rows
- use of low-pressure tires **CB 3.5**



Cultivation techniques designed to minimize soil erosion (caused by water or wind). For example: soil cover or mulching, tilling perpendicular to the slope, drainage, sowing grass or green manure, planting trees and shrubs at the edge of the field, etc.



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CB 3.7. **Records of sowing/planting density and date** must be kept.

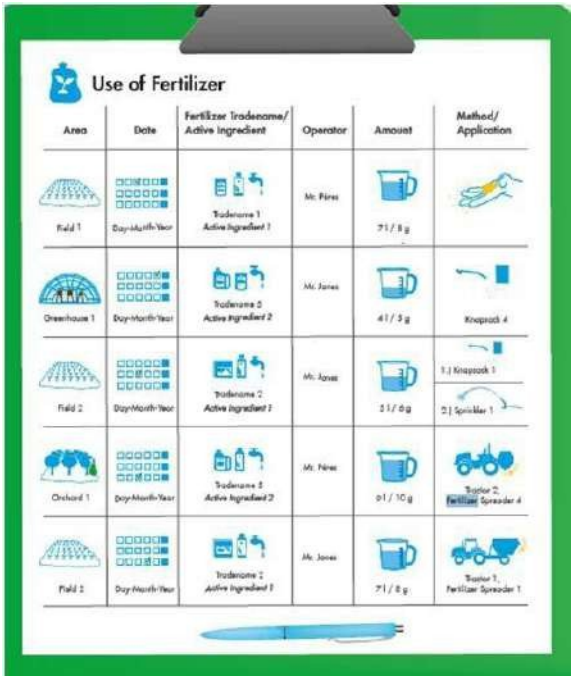
CB 4.1: Fertilizer application:

- Training of technicians.

CB 4.2: Fertilizer application records:

- Parcel/lot reference.
- Date of application.
- Fertilizer type.
- Amount applied.
- Application method.
- Person(s) applying the fertilizer.





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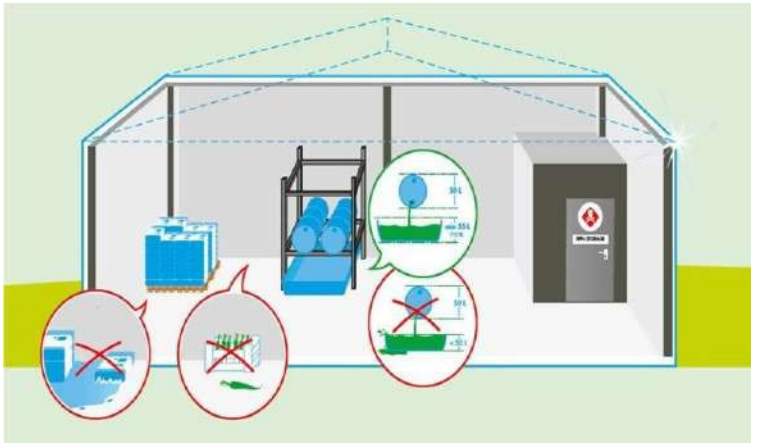
CB 4.3: Storage of fertilizers:

- Separate from plant protection products (physically).
- Covered, clean, and dry area.
- Measures to prevent spills.
- Keep separate from harvested products.





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CB 4.3.7: Fertilizer inventory:

- Update within one month of stock movement or;
- Calculate based on supply records.



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CB 4.4 Organic fertilizers:

- Prohibition on the use of treated and untreated sludge.
- Risk assessment:
  - Type of organic fertilizer.
  - Processing method used to produce the organic fertilizer.
  - Microbial contamination (pathogens harmful to plants and humans).
  - Weed/seed content.
  - Heavy metals.
  - Time of application and contact with the plant.





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CB 4.5 Inorganic fertilizer:

- Technical data sheet (N-P-K) for all fertilizers applied in the last 2 years.

CB 5.1.1: Use of equipment to calculate irrigation needs (rain gauges, drainage trays, tensiometers, etc.).



CB 5.2.1: Annual water risk assessr

- Water source.
- Distribution system.
- Water uses.

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CB 5.2.2: Water management plan:

✓ Photos/drawings.

- Location of water sources.
- Route of the water supply system.
- Permanent installations (wells, floodgates, reservoirs,

✓ Definition of maintenance.

✓ Training of maintenance personnel.

CB 5.2.3: Water consumption records. Updated monthly.

- Date
- Cycle duration
- Actual or estimated flow
- Volume (per cubic meter of water/irrigation unit)

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CB 5.3.2 Assessment of risks related to water consumption prior to harvest:



- Identification of water sources and historical results (if applicable).
- Irrigation methods
- Crop phenology
- Direct contact of irrigation water with the crop
- Crop characteristics (and growth stage)
- Purity of water used in plant protection applications: effect of minerals dissolved in water

CB 5.3.3 Water used in pre-harvest activities is analyzed at a **frequency** commensurate with the risk assessment. **Written procedure** for water analyses conducted during production and harvest stages.

- Sampling **frequency**
- **Who, where, and how** samples are taken
- **Type of** analysis
- **Acceptance criteria**

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CB 5.3.4: Water analysis in a laboratory accredited according to ISO 17025 or authorized by the competent authorities.

CB 5.4.1 Permits for water abstraction.

CB 5.4.2: Compliance with specific restrictions regarding water source authorization through usage records

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CB 5.5.1 Sites with seasonal water availability must have **water storage facilities** to ensure water supply for future periods when availability is reduced.

- Legally authorized
- In good condition
- Fenced/enclosed to prevent accidents



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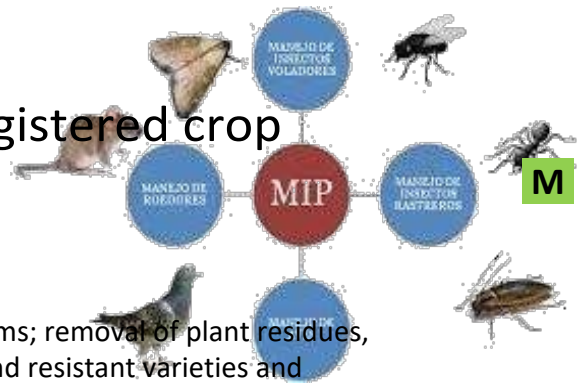
CB 6. MIP: demonstrate two activities for each registered crop



- Disease and pest prevention
  - Crop rotation, fallow, solarization, practices to promote beneficial microorganisms; removal of plant residues, appropriate irrigation methods and/or use of fertigation, selection of suitable and resistant varieties and rootstocks; ideal density.

- Observation and monitoring.
  - Identify which pests, diseases, and weeds need to be controlled and why.
  - Determine how they should be controlled (direct observation of the main parts of the plants, traps, indicator plants, etc.).
  - Use the action thresholds for relevant pests, diseases, and weeds to determine whether intervention is necessary.

- Intervention.
  - Removal and isolation of infested leaves, fruits, or plants; vacuuming of pests; weed removal; biological control; use of natural products (soaps, pyrethrins, azadirachtin, oils); chemical products.

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CB 7.1 Selection of plant protection products:

- List of plant protection products.
- Use products authorized for plant protection.
- Keep receipts.

CB 7.2 Technical training. Official certificate.

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CB 7.3: Plant protection application records:



- Crop.
- Application site.
- Justification.
- Technical authorization.
- Trade name and active ingredient.
- Amount applied.
- Equipment.
- Date and time of application completion.
- Safety interval.
- Weather conditions
- Operators must be identified (there may be more than one).
- Measures to prevent drift onto neighboring lands.
- Communication with neighbors.
- Measures to prevent dispersion from neighboring lands:
- Vegetation screens.





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CB 7.5 Management of excess mixture.

- Slag remaining after processing or residues from tank washing are managed so that neither food safety nor the environment is compromised
  . Records are kept.



CB 7.6 Residue analysis:

- MRLs must be established.
- Risk assessment regarding compliance with MRLs in the country of destination.
- Action plan in case of MRL exceedance.

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CB 7.6.3: Risk assessment to determine the risk of exceeding MRLs.

The analysis will not be necessary if:

- the 4-year history does not indicate MRL exceedances.
- PFs are not used or are used in minimal quantities.
- Pesticides are not used near the harvest period.

The risk assessment must be verified by an independent third party.

CB 7.6.4 The results of the analyses must be traceable to the producer and the specific location from which the sample originated.

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CB 7.7 Storage of PPPs:



-Plants in original packaging.

- Sturdy structure, suitable for temperature conditions, ventilated.

-Natural or artificial lighting, separate from other items.

-Shelves made of non-absorbent material, with a spill containment sy

-Restricted access.

- Powders above liquids.

- Procedures to follow in case of accidents and emergencies.

-Equipment for operator accidents (first aid kit, clean water source).

CB 7.7.13: Inventory updated within one month of receipt or calculated based on procurement records.

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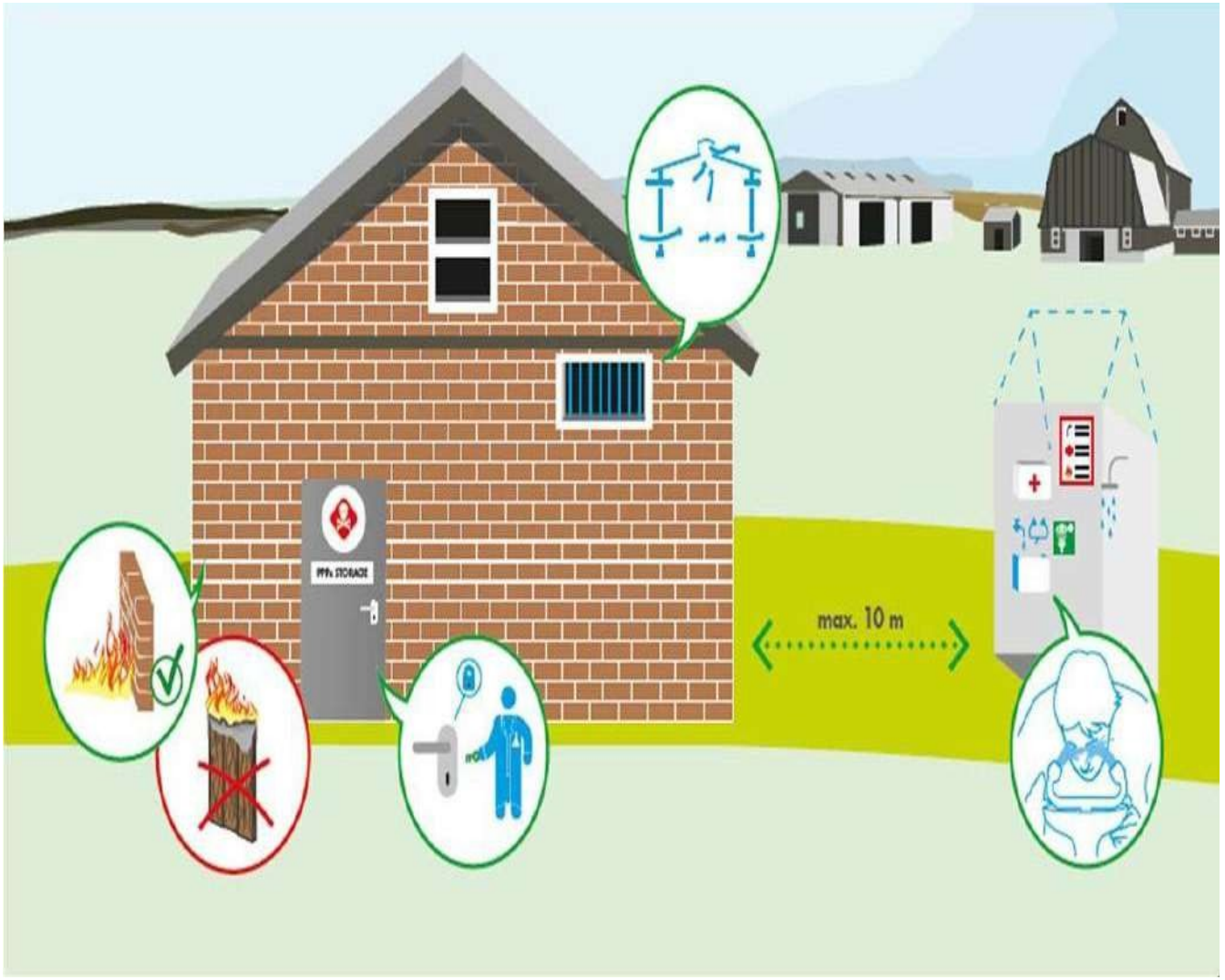

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CB 7.7 Storage of PF:

-Seeds in original packaging.

-Solid structure, suitable for temperature conditions, ventilated.

- Natural or artificial lighting, separate from other equipment.

-Shelves made of non-absorbent material, with a spill containment system.

-Restricted access.

-Powders above liquids.

-Procedure to follow in case of accidents and emergencies.

- Equipment for operator accidents (first aid kit, clean water source).

CB 7.7.13: Inventory updated within one month of receipt or calculated based on supply records.

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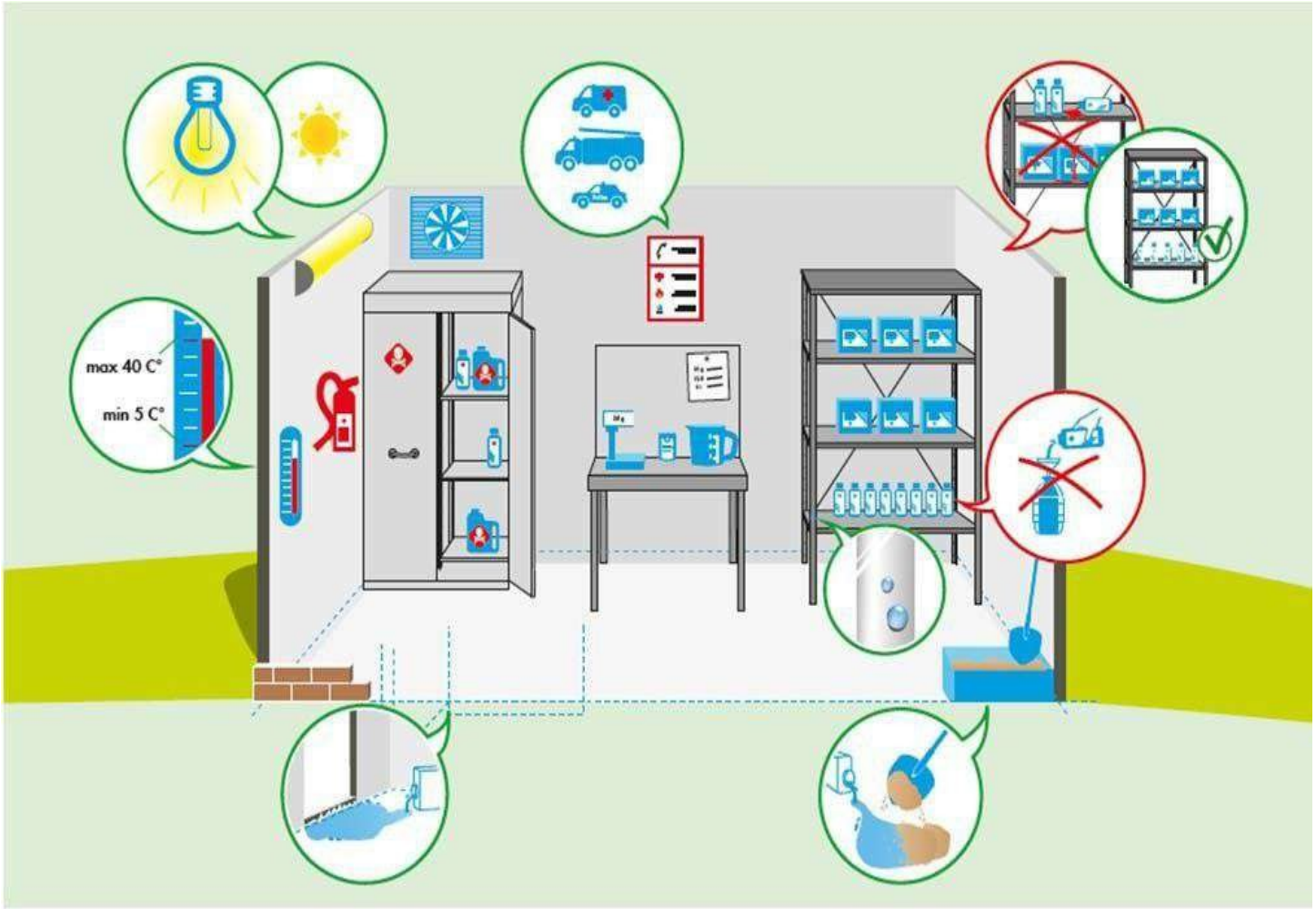

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CB 7.8.1: Medical examinations are provided to personnel who request them.

CB 7.8.2 Procedures governing re-entry intervals.

CB 7.8.3: Transport of PF within the farm is carried out safely.



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CB 7.9 Empty plant protection containers:

- **application equipment via** triple rinsing or **a pressure system**.
- Do not reuse.
- Store away from crops and packaging materials, with permanent labeling, under lock and key, and with restricted physical access.
- The management system prevents human exposure and environmental contamination.





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CB 7.10 Expired plant protection products (PPPs)



- CB 7.10.1 There are **documented records** indicating that expired PPPs have been disposed of through an **officially authorized channel**. When this is not possible, expired PPPs **must be stored safely and clearly identified**. (Minor)

CB 7.11.1 The following records must be available if **homemade preparations, plant tonics, soil conditioners,** or any other similar substances are used on certified crops:

- **the name of the substance** (e.g., the plant from which it is derived), **the trade name** (if purchased), **the intended use, the date**, and **the quantity**.

If there is a registration plan for this substance (substances) in the country of production, it must be **approved**

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CB 8: Equipment.

- Annual internal inspection.

For example: Sprayer: Verification of proper operation within the last 12 months and documented by a specialized company, the equipment supplier, or the on-site technician.

- Official inspections. If an official calibration system with a cycle exceeding one year is used, the manufacturer will still need an annual internal calibration verification.







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PRODUCTION

ANNEX FRUITS AND VEGETABLES (FV)

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FV 1: To be included in risk assessment AF 1.2.1, microbial contamination through:

- The location of nearby commercial livestock farms (dust)
- Composting
- Potential sources of entry for domestic and wild animals

FV 2: Justification for soil disinfection. FV

3.2: Sterilization of substrates with PF.

- Location, date of sterilization, chemical used,
- equipment and sterilization method used,
- operator's name, and safety period before planting

FV 3.3: The naturally occurring substrate originates from unprotected areas.

FV 4.1.2: Microbiological analysis of the water used in the pre-harvest stage, in accordance with the frequency established by the risk analysis (Annex FV1). The analysis is performed as close as possible to the application site.

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FV 4.1.3: If water quality is not adequate

?



E. coli > 1000 CFU/100 ml

- Treat before use.
- Avoid contact with the product.
- Observe the interval between application and harvest.

FV 4.1.4: Accredited (17025) or authorized laboratory.

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FV 4.2 Application of organic fertilizers

Fresh, untreated organic fertilizer should be worked into the soil **before planting.**

- at least 6 months before harvest (the harvestable part of **crop that comes into contact with the soil)**
- at least 3 months before harvest (the harvestable part **NEVER comes into contact with the soil)**
- The period between the use of organic fertilizers derived from compost and harvest does not compromise food safety.

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8.5 HARVESTING AND HANDLING FV5

FV 5.1.1: Hygiene risk assessment:

ACTIVITIES COVERED	Covered items
Harvesting	Physical contaminants
Transport	Chemical contaminants
Handling + post-harvest treatments	Microbiological contaminants
Personnel	Body fluids
	Communicable diseases

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FV 5.1.2: Hygiene procedures and instructions

For the collection and post-collection process based on risk assessment

FV 5.1.3: Compliance with hygiene procedures .

- Designation of a person responsible for implementing hygiene procedures (for all operators and visitors).
- Protective clothing in accordance with the risk assessment (FV 5.1.1), which must be cleaned, maintained, and stored effectively.
- Visual evidence shows that there have been no violations of hygiene procedures and instructions.

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FV 5.1.4: Annual hygiene training. FV

5.1.5: Posters displaying hygiene rules.

FV 5.1.6: Prohibition on eating, drinking, or smoking.

FV 5.2.1: Access to sinks:

- Soap.
- Towels.
- Drinking water (or alcohol-based hand sanitizer).
- Near restrooms.





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FV 5.2.2: Access to restrooms during harvesting

- Within a reasonable distance from the workplace (500 m or 7 min).
- In areas not prone to flooding.
- Away from waterways, wells, ponds, etc.

FV 5.2.3: Access to restrooms for handling:

- Unscented soap.
- Water for hand washing and drying supplies.
- Wash your hands before starting work and after any absence.
- No direct access to the handling area.



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FV 5.2.4: Collection containers intended exclusively for this purpose.

CLEANING AND DISINFECTION PLAN
for containers and tools.

FV 5.2.5: Appropriate changing rooms. FV 5.2.6: CLEANING AND DISINFECTION plan for vehicles.

FV 5.3.1: Drinking water

(except for blueberries)



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FV 5.4.1: Protected harvested product.

If the product is stored for a short period of time on the farm, food safety requirements must be followed

FV 5.4.2: Records regarding the cleaning of storage and handling areas.

FV 5.4.3: Appropriate packaging.

FV 5.4.4: Removal of packaging waste from the site.

FV 5.4.5: Storage of cleaning products.

FV 5.4.6: Products authorized for use in the food industry.



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FV 5.4.7: Equipment in good condition FV 5.4.8: Non-compliant products are stored in designated areas.

FV 5.4.G: Shatterproof or protected lamps.

FV 5.4.10: PC glass and hard plastics. FV 5.5.1: Temperature and humidity control.







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Applicable to field handling and at the handling center, as well as to storage/refrigeration.



FV 5.6.1: Pest control system.

FV 5.6.2: The system is effective. FV 5.6.3:

Records of control inspections.



FV 5.7.1: Potable water for washing.

FV 5.7.2: If recirculation is used, the water is filtered, and the pH and any contamin
measured.

FV 5.7.3: Accredited laboratory for water analysis.

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FV 5.8: Post-harvest treatments:

- Follow the instructions on the label.
- Registered in the country of use.
- Updated list.
- Training of persons recommending use.
- Drinking water.
- Product storage.
- Records of treatment.

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Strategies to combat unfair practices regarding horticultural cooperative products sold directly to consumers and through distribution networks (PART 3)

Specifications for greenhouse producers



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8. GUIDE TO COOPERATIVE MANAGEMENT

8.1 BASIC OPERATIONAL PRINCIPLES OF INTRODUCTION:

Cooperativism offers new business management models with specific characteristics in various areas: organizational, social, labor, accounting, tax, etc. These aspects require a level of specialization and knowledge that is not always adequately addressed by members or by entrepreneurial groups taking on the challenge of launching a cooperative project. Therefore, it is particularly important to have support materials that facilitate a rigorous and judicious approach to the various areas of cooperative management, especially those that, due to their technical complexity and degree of specialization, present greater difficulties.

8.1.1 SOCIAL AREA

Who can be a member of a cooperative?

A cooperative is made up of its members, at least two in number, who may be individuals or legal entities from the public or private sector. To become a member of a cooperative, natural persons must meet the established legal requirements, such as being of working age, holding a work permit in the case of foreign nationals, and complying with the provisions of the bylaws, including subscribing to the mandatory contribution to the share capital.

What does it mean to be a member of a cooperative?

Being a member of a cooperative means actively participating in the management and decision-making of the cooperative. In return, members make commitments, such as financial contributions and participation in the cooperative's activities and responsibilities. In a worker cooperative, in addition to being a member, you also perform professional activities in exchange for compensation.

Types of Members

There are several types of members, depending on the type of cooperative:

- Active members (in worker cooperatives).
- Consumer members (in consumer cooperatives).
- Service provider members (in service cooperatives).
- Active members (in cooperatives that are not worker cooperatives, such as agricultural cooperatives, processing cooperatives, etc.).

What rights do members have?

Members have the right to participate in commercial and corporate activities, to elect and be elected to positions within corporate bodies, to make proposals, and to participate with voting rights in the adoption of resolutions. They also have the right to receive the information necessary to exercise their rights and fulfill their obligations, as well as to receive a share of the cooperative's surplus.

How is information managed within a cooperative?

Information within a cooperative must be clear, frequent, and accessible to all members. It is important to have mechanisms such as meetings, bulletin boards, emails, and technological systems to facilitate the exchange of information.

What are a member's obligations?

Members have several obligations, such as actively participating in the cooperative's activities, paying the agreed-upon dues, attending general assembly and board meetings, and complying with the decisions adopted. Additionally, they are not permitted to engage in activities that compete with those of the cooperative without the appropriate authorization.

What do I need to do to become a member?

To become a member of a cooperative, you must submit a written application to the administrative body (the Board of Directors or the sole administrator). The application will be evaluated in accordance with the requirements set forth in the cooperative's bylaws. Once admitted, you must make the appropriate capital contribution and pay the admission fee, if applicable.

When does membership end?

A member may cease to be a member for various reasons: voluntarily, if they no longer meet the requirements for membership, or if the cooperative decides to expel them for a valid reason. In all cases, the procedure set forth in the cooperative's bylaws must be followed.

What happens if I don't follow the rules?

If a member fails to follow the rules established by the cooperative, a system of sanctions may be applied in accordance with the bylaws. Violations are classified as serious, very serious, and minor and may result in

financial penalties, suspension of membership rights, or even expulsion from the cooperative.

Can a member be expelled from the cooperative?

Yes, expulsion is an extreme measure taken in cases of very serious misconduct. Expulsion must be approved by the Board of Directors and may be challenged before the general meeting or the competent court.

What happens to members who do not participate?

Participation is mandatory within the cooperative. Members who do not participate without a valid reason may be sanctioned, as their inactivity can jeopardize the cooperative's viability.

What happens when conflicts arise among members?

Conflict is an inherent part of active participation. Although conflict is not inherently negative, resolving it cooperatively can strengthen group cohesion. Active listening, positive communication, and a focus on finding solutions are essential for conflict resolution.

8.1.2 ORGANIZATIONAL STRUCTURE

What are the governing bodies of a cooperative?

A cooperative consists of its members, numbering at least two people, who may be individuals or legal entities, public or private (with specific characteristics for each type of cooperative). In accordance with the principles of equality and democratic management, each member has one vote, regardless of the capital they contribute (with some exceptions regarding weighted voting in agricultural, maritime, and service cooperatives, as well as in mixed worker cooperatives, where members who contribute capital also have voting rights). The highest expression of equal participation that defines the cooperative is found in the general assembly. All members are called upon to participate, and attendance is mandatory, unless there is a justified reason for absence. At the general meeting, members exercise their right to express their opinions and decide on the matters under discussion.

What is a general meeting, and what decisions are made there?

The general meeting is a gathering of all members of the officially established cooperative, with the purpose of adopting resolutions on matters within its jurisdiction, as established by law and the bylaws. It is a forum for debate and decision-making that binds all members, both those present and those absent. The assembly may discuss any matter of interest to the cooperative, provided it is included on the agenda, but it may not make decisions on matters falling within the competence of other bodies of the cooperative. Any decision made on these matters is null and void unless ratified by the assembly.

What are the differences between an ordinary meeting and an extraordinary meeting?

Meetings, depending on the matters to be discussed and the frequency with which they are convened, can be classified as follows:

- Ordinary meetings (held annually).
- Extraordinary meetings (held at intervals determined by the topics to be discussed). Depending on the type and form of the call, ordinary or extraordinary meetings may take the following forms:
- Universal general meeting (requires the presence of all members and their agreement regarding the meeting and the items on the agenda, as well as the signing of the minutes by all).

How is a meeting conducted?

To organize a meeting, whether ordinary or extraordinary, it must be officially convened in accordance with the provisions of the bylaws and applicable cooperative legislation. In the case of universal general meetings, prior notice is not required, provided that all members are present or represented and unanimously decide to grant the meeting the status of a universal general meeting.

What is the administrative or governing body, and what functions does it perform?

The governing body of cooperatives consists of the so-called administrative body, which may be a board of directors or a person holding exclusive administrative authority (an option reserved for cooperatives with fewer than 10 members). In addition to managing the cooperative, it is responsible for its administration and representation, in accordance with the provisions of the law, the bylaws, and the general policy established by the general meeting.

What is the basic organizational structure of a cooperative?

A cooperative has both a social and a business side. The former includes the governing bodies: the board of directors, the financial auditor, the appeals committee, the legal advisor, and, above all, the general assembly. In the latter, the business organizational chart is similar to that of any other company, depending on the activity in which

the cooperative operates, although, as a rule, cooperatives tend to have a more horizontal structure and a distribution of functional responsibilities.

How are roles and responsibilities distributed?

The functions and responsibilities within the cooperative are directly linked to its needs and to the members' skills, abilities, and attitudes. It is necessary for members to collaborate by participating and getting involved in the decision-making process and in the management of the cooperative enterprise, as they share common goals, mutual trust, and a shared business vision.

What are internal regulations and what are they for?

These are internal documents that supplement and elaborate on the provisions of the bylaws. Their existence is voluntary, and they can cover any aspect the cooperative wishes to formalize in writing, although they generally address organizational and labor matters. Their minimum content must include a brief introduction explaining why they were drafted, as well as aspects related to the organization of processes, working conditions, compensation, and disciplinary procedures.

How are decisions made in the cooperative?

Within the cooperative, there are two main areas of decision-making: those related to social matters and those related to commercial matters. Important decisions regarding social matters are made by the general assembly, which delegates to the administrative body decisions related to the governance and management of the cooperative, such as preparing annual accounts, admitting and expelling members, and imposing sanctions when necessary.

8.1.3 EMPLOYMENT

Under which contribution scheme should members of a service cooperative be registered?

A service cooperative consists of individuals or legal entities engaged in commercial or professional activities who benefit from services provided by the cooperative, such as joint purchasing, joint sales, or shared services. Members of this type of cooperative have a client or supplier relationship with the cooperative, not an employment relationship. Depending on the activity, members must contribute to different schemes. For example, in agricultural cooperatives, contributions are paid into the special agricultural scheme; in maritime cooperatives, contributions are paid into the special maritime scheme; and in service cooperatives, contributions are paid as self-employed individuals if they are sole proprietors.

Under which contribution system should members of a consumer cooperative be registered?

A consumer cooperative consists of individuals who purchase goods and services for their own consumption and that of those with whom they live. In this case, members have a customer relationship, not an employment relationship. Activities within the cooperative may be carried out on a voluntary basis by members or by salaried staff or active members.

Under which contribution system should members of a workers' cooperative register?

Members of a workers' cooperative may choose to contribute to the general social security system or the special system for self-employed workers, depending on their activity. It is important that all members choose the same system. After five years, they may change the system if they wish, by amending the cooperative's bylaws.

What labor rights do members have?

Active members have several labor rights recognized by law, such as the right to receive an advance from the cooperative, which cannot be less than the minimum wage. They are also entitled to social security benefits, depending on the chosen system, as well as to vacation time, weekly rest periods, and other working conditions established by law.

What are the members' professional obligations?

Members have several professional obligations, such as participating in the cooperative's activities, refraining from activities that compete with the cooperative, maintaining confidentiality regarding confidential workplace information, and complying with workplace health and safety regulations.

What labor regulations must members comply with?

Members must comply with applicable labor regulations, such as the Galician Cooperatives Act, which governs members' employment relationships. The cooperative's bylaws must also address labor-related matters, such as work schedules, breaks, vacations, and rest periods.

Are members entitled to unemployment benefits?

Active members who contribute to the general social security system are entitled to unemployment benefits under the same conditions as employees, in situations such as dismissal, reduced working hours, or cessation of business.

Are members entitled to reductions in their social security contributions?

Members may be eligible for various reductions and incentives on social security contributions, such as the flat-rate contribution for self-employed workers or reductions for hiring people under 30 or people with disabilities.

Is it possible to work part-time in a cooperative?

In worker cooperatives, it is possible to work part-time, provided that this reflects the reality of the work and that the work schedule and salary are accurately reflected in the cooperative's agreements.

Are members required to join the sectoral collective agreement?

Members of a workers' cooperative are not required to join a sectoral collective bargaining agreement, as they are not employed by others. However, if so decided at the cooperative's meeting, they may join a sectoral collective bargaining agreement.

8.1.4 TAXATION

What tax regulations apply to cooperatives?

Cooperatives are required to fulfill their tax obligations just like any other company. However, due to their nature, they are subject to specific tax regulations. Law No. 20/1990 of December 19 regulates the tax regime for cooperatives, with the aim of promoting the cooperative model. In addition, they must comply with general and specific tax regulations, depending on the activity they carry out (corporate income tax, VAT, personal income tax, etc.).

What are the main tax obligations of a cooperative?

Cooperatives must comply with the same tax obligations as other companies. This includes paying taxes such as property transfer tax and stamp duty at

upon incorporation, followed by registration in the business registry and obtaining a VAT number, among other things. In addition, they must file VAT returns, submit withholding tax returns for income tax, and pay advance corporate income tax.

What are the main tax obligations of members?

Depending on the type of cooperative, members have different tax obligations. In service cooperatives, if members invoice or purchase products from the cooperative, they will need to comply with the corresponding tax obligations. In consumer cooperatives, members typically have no tax obligations, unless they receive dividends or interest on their capital contributions. In worker cooperatives, members must report income earned from work and any other income derived from cooperative activities.

What is a protected cooperative, and what are its advantages?

Protected cooperatives are those that meet the requirements set forth in Law 20/1990 and do not present any grounds for losing tax protection. These cooperatives benefit from tax advantages, such as exemptions from property transfer tax and stamp duty (ITPAXD) and from income tax.

What is a cooperative with special protection, and what benefits does it offer?

Cooperatives with special protection are those that meet specific requirements, such as worker cooperatives, agricultural cooperatives, and cooperatives for the joint use of land, among others. These cooperatives benefit from additional tax advantages, such as special income tax rates, exemptions on the purchase of goods, and reductions in property tax.

What are the reasons for losing tax protection?

There are several reasons why a cooperative may lose its tax protection, such as failing to establish mandatory reserve funds, distributing non-distributable reserve funds among members, or conducting non-cooperative operations without properly accounting for them. Tax protection is also lost if the cooperative conducts an excessive volume of transactions with non-members or fails to comply with the established limits for hiring salaried employees.

Income Tax in Cooperatives

Income tax in cooperatives has certain specific features, particularly due to non-cooperative activities. Cooperatives must account for cooperative and non-cooperative results separately, as cooperative results have a reduced tax base and benefit from tax advantages, such as a 50% reduction in the tax base for specially protected cooperatives.

Tax-Related Issues

There are specific tax situations that cooperatives must take into account, such as the periodic dues of consumer cooperatives, which may be subject to or exempt from VAT, depending on whether they are related to the provision of services. In addition, cooperatives must ensure they comply with the taxation of allowances and travel expenses, as well as contributions for self-employed workers, when these are borne by the cooperatives.

8.1.5 ACCOUNTING

What type of accounting must cooperatives maintain?

Cooperatives must maintain orderly accounting records appropriate to their activities. The Commercial Code stipulates that all business entities must maintain adequate accounting records to record transactions in chronological order and to prepare balance sheets and inventories. The administrative body, such as the board of directors, is responsible for keeping the cooperative's accounting records up to date and for preparing the annual financial statements.

Are there differences between the accounting practices of cooperatives and those of other companies?

Although there are similarities in accounting, such as the use of standard accounting rules and similar principles, cooperatives have specific regulations that must be taken into account when preparing their accounts. Order EHA/3360/2010 regulates key aspects for cooperatives regarding their accounting.

What is equity in cooperatives?

In cooperatives, equity consists of capital contributed by members, reserve funds, and retained earnings from previous fiscal years. The cooperative's capital

can be classified as equity or liabilities, depending on the conditions set forth in the articles of incorporation.

Can a cooperative's capital increase or decrease?

A cooperative's share capital consists of members' contributions, which may be mandatory or voluntary. Capital can be increased through new contributions or reduced through members' withdrawals, while always maintaining the established minimum capital.

What are reserve funds in a cooperative, and how are they accounted for?

Reserve funds in a cooperative are used primarily to strengthen and guarantee the cooperative's solvency. There are mandatory funds, such as the mandatory reserve fund and the training and promotion fund, which must be used in accordance with the law.

How are positive or negative results distributed?

A cooperative's positive results are distributed among the mandatory reserve funds, the training and promotion funds, and the cooperative's profit, which is distributed among the members. In the event of losses, these are first offset against the voluntary reserve funds and then against the mandatory funds.

What type of accounting records must a cooperative maintain?

In addition to corporate records (such as the minutes book and the membership register), cooperatives must maintain accounting records, such as the inventory and balance sheet register and the journal. These records must be certified before or after use and submitted annually for registration and certification.

What is provisional accounting and what is it used for?

Provisional accounting is used to estimate the cooperative's future revenues, expenses, and cash flow. This tool enables informed decision-making regarding investments, new projects, or potential liquidity issues.

8.2 FORMS FOR DEVELOPMENT OF AGRI-FOOD BUSINESS

8.2.1 FIRST STEPS TOWARD INTERNATIONALIZATION

Introduction

When discussing internationalization or export activity, we find a multitude of definitions depending on the author, but to cite one of the best definitions,
"Export activity consists of a process of shipping goods or providing services to various markets on a regular basis, as a result of an active trade policy, with the primary objective of ensuring that goods are shipped or services are provided on time and as agreed, as well as that the agreed price is collected (Arias: 2008).

This definition clearly excludes sporadic sales or so-called passive exports, which consist of a company selling to a foreign buyer who happens to visit its premises and take the product with them, personally handling the transport and all necessary formalities.

It should be noted that internationalization goes through several phases, initially involving only occasional exports or imports. These one-off transactions are usually preceded by a phase of regular internationalization activity, which ultimately leads to internationalization—a steady flow culminating in the establishment of subsidiaries, including production subsidiaries.



A company's internationalization does not depend on a single order, but rather on its ability to maintain a steady flow of business. It is another avenue for growth for the company, although it involves taking on new risks that we are not accustomed to in the domestic market and that force us to be more competitive. It is not a

that responds to specific situations; the internationalization of a company requires a medium- and long-term vision and a clear, well-defined strategy.

Internationalization provides Andalusia with a strong boost thanks to the wide range of opportunities it offers. It is an economic phenomenon resulting from the adaptation of Andalusia's entrepreneurial and cooperative fabric to a more global and flexible business model. This adaptation stems from the necessity imposed by a constantly changing, dynamic, global, and extremely demanding technological market.

Between January and June 2024, Spanish exports of goods reached a record high, exceeding 286 billion euros, with significant year-over-year growth driven by sectors such as food, beverages, and tobacco, consumer goods manufacturing, as well as a sharp increase in EU destinations such as Portugal and France, and non-EU destinations such as the United Kingdom and Morocco, with the agri-food sector also showing great dynamism.

Key figures on exports from Spain (January–June 2024)

- **Total exports**: Goods exports totaled 286.805 billion euros, the second-highest figure on record for this period.
- Growth: Exports rose by 2.7% compared to the same period last year, according to December 2024 data, performing well relative to other European economies.
- **Notable Sectors**
- Food, beverages, and tobacco: These made a positive contribution, recording record-high exports throughout the year.
- Consumer goods: These also made a significant contribution to growth.
- Agri-food and fisheries sector: It grew by 4.4%, exceeding 39 billion euros, with a record trade balance.
- **Destinations and markets**
- European Union: It consolidated its position as the main destination (61.8% of the total), with record figures in countries such as Italy, Portugal, and Poland.
- Destinations outside the EU: Increased by 2.4%, with record levels in the United Kingdom, Morocco, Turkey, and Mexico.
- **Autonomous Communities:** Castile and León, the Canary Islands, and the Balearic Islands recorded the most notable growth in exports.

This highlights the importance of internationalization for Andalusian agri-food cooperatives as a guarantee of their own future. They must rise to this challenge and include it as a new objective in their strategic plan. In this way, cooperatives will achieve the stable and permanent flow that will earn them the status of internationalized enterprises, since to date most of them have been linked to the foreign market through exports.

Assessment at the start of the internationalization process

Once we understand what internationalization can mean for our cooperatives and considering the 2021 data on exports from our autonomous community and our sector, we can state that any enterprise intending to begin exporting will need to follow a process that starts with an initial engagement with export activities.

To begin the process, we need an initial diagnostic analysis that answers the question: are we ready to internationalize our cooperative? To do this, we will assess the surrounding environment, analyze the sector in which we operate and our internal situation, as well as the resources available to the company.

The answers to these questions could help us form an idea of our cooperative's starting point if we intend to market our products outside the domestic market.

WHERE TO?

If we have a clear idea of the direction our cooperative should take, whether **it involves it is advisable to focus on foreign markets** or, on the contrary, if we still have a long way to go in the current market and, for now, it is advisable to continue as we are.

CAN WE DO IT?

WITH WHAT PRODUCT/SERVICE?

Through a more detailed analysis of our company, which will show us whether **we have the** right **resources** and products to secure a competitive advantage beyond our domestic market.

DO WE WANT TO DO IT? WHAT DO WE WANT TO

The company must assess its export potential and determine whether it possesses the necessary attributes or conditions: organizational and management capacity, analysis of production capacity, competitive strategy, or the capacity for rigor and compliance, etc. Is this a necessity for the company or a way to continue growing? Try to identify **the reason for internationalization.**

WHEN? WITH WHOM?

HOW WILL WE PROCEED?

Is **this the right time** for the cooperative to go global? Do we know how we'll do it? If we don't have the necessary resources, how will we obtain them? Finally, do we have a team sufficiently prepared to operate in a foreign market, or should we look for a specialized team?

To conduct the initial assessment, we can rely on the assistance of experts who, thanks to their experience in the field of exports, will support us in the internationalization process, providing the cooperative with a vital source of highly reliable and trustworthy information. Through its programs, the institute can provide us with all kinds of data and reports to guide us in conducting the initial assessment.

In any case, it should be noted that a thorough analysis and the development of an internationalization plan do not guarantee the success of the process, but they can prevent significant mistakes. Furthermore, they allow the company to base its actions on its own potential, to leverage the strengths at its disposal, and to strengthen itself in the face of the obstacles it encounters within its organization.

The importance of this process is so great that we can say that a company that dedicates part of its time and resources to identifying its strengths in exporting, as well as detecting areas that need improvement to overcome difficulties along the way, could find the element that sets it apart from the competition, even creating a competitive advantage.

COMPETITIVE ADVANTAGE

TECHNICAL DEFINITION:

A competitive advantage is any characteristic of a company, a country, or an individual that sets it apart from others, placing it in a relatively superior position in the marketplace. In other words, any attribute that makes it more competitive than others.

Source: https://economipedia.com/definiciones/ventaja-competitiva.html

Reasons for internationalization: internal and external

There are multiple theories regarding the reasons behind the internationalization of our companies, all of which stem from the analysis of individual actions. Therefore, we can state that the process of internationalization is not the result of a single reason, but rather of a combination of internal and external factors.

This leads us to ask questions such as:

Why do do do are the the advantages of internationalization?

In short, what are the internal and external factors that drive a company to direct its efforts and resources toward internationalization?

INTERNAL MOTIVES	
Expanding its scale to achieve productive efficiency	Accessing the international market
Seeking resources	Countries attractive due to natural resources, labor specialization, etc.
Achieving higher profitability	Relocating production activities to other countries that offer them competitive advantages. Outsourcing
Diversifying the global threat	A new business model that allows for capitalizing on new opportunities and mitigating threats
Leveraging the company's competencies and tools	Identifying the company's strengths in terms of resources and capabilities to be applied in its strategies
Acquisition and sales costs	Reducing these costs by integrating operations in other countries

EXTERNAL MOTIVES	
Demand from other countries	When your product or services are in demand in other countries
International consumer habits	Adoption of new habits, similar to those in our country
Market life cycle	Seeking out other developing markets or markets that are not stagnant
Gaining technological advantages	Acquiring foreign technology that does not exist in the country of origin
Legal barriers	To avoid high import tariffs

Regardless of each company's reasons, internationalization will make it more competitive, allowing it to operate in increasingly complex and demanding markets. It is a matter of "be competitive or die trying."

Barriers to internationalization

In contrast to these factors that drive internationalization and its benefits, there are various types of obstacles. These range from psychological barriers, such as the fear of failure, to more objective obstacles, such as the difficulty of securing financing.

Our ability to overcome these barriers will determine the success of our cooperative's internationalization process. Classification of the main barriers to internationalization:

PRODUCTION STRUCTURE

- Low volume
- High cost of product adaptation Difficulties in complying with production regulations

ADMINISTRATIVE

- Lack of flexibility
- Difficulties in accessing financing Low profitability
- Complicated bureaucratic procedures High risk of non-payment

HUMAN RESOURCES STAFF

- Management team not very involved
- Lack of specialized staff Lack of language skills Management is too busy

MARKETING AND

- Large number of competitors
- Dissemination, promotion
- Distribution system
- High transportation costs
- Intermediaries
- Non-existent information system

8.2.1.1 IDENTIFYING THE EXPORT POTENTIAL OF THE COOPERATIVE/VILLAGE

Is your cooperative ready to export?

To answer this question and determine whether our cooperative is ready to begin exporting, we need to take a moment to think calmly and set aside any pressure.

The first step is to identify the reason or reasons why we believe entering the foreign market could benefit our cooperative. However, if the reason is simply to

If we want to solve our problems in the domestic market, we should give up on internationalization. It will only bring us problems, and we will be doomed to failure.

To begin the internationalization of the business, the intention of a cooperative member or the board of directors is not enough; we must consider many other aspects.

Our products must be well-defined in the current market, have a strong brand presence and image, and be both attractive and easy to understand.

We must not rush; we need to have a detailed understanding of all aspects of our export initiative, from financial and commercial considerations to the company's history. Selling a product without having it available is a common mistake.

Make sure you have the necessary investment and be willing to allocate significant resources to exports. Promoting our products abroad is not cheap, and we must be aware that, especially at the beginning, a significant financial effort will be required.

Be open to embracing other cultures, adapting to the laws of other countries, and their customs and preferences.

Let's have the right staff—people who are motivated and free to take on these new roles, well-trained, and, of course, fluent in foreign languages.

Self-Assessment Test

The idea of exporting has been introduced in many companies as a duty, an obligation we must fulfill if we want our company to continue and survive. To a large extent, this idea is the result of market globalization. Exporting has become a trend that some companies follow without stopping to think, which can lead to senseless and irreversible financial losses.

We would be making a serious mistake if we decided to promote our business in foreign markets to solve the difficulties we face in the domestic market.

Exporting is not the solution to our problems; it is the natural path our cooperative must follow to grow and evolve.

For all these reasons, it is important to have a clear assessment of our company to determine whether we are ready to commit to this project, whether we need to modify our structure, build our team, hire specialized staff, etc. The organizational structure must be adapted to the needs of the process.

As mentioned earlier, despite conducting a thorough assessment and implementing a structured and detailed internationalization plan within our company, we may still make mistakes and fail to achieve the expected success; however, this analysis will help us avoid errors, prevent threats, and capitalize on opportunities.

The results of the following test can serve as a good starting point to help us make the important decision of whether to enter the foreign market or wait until we are ready to do so.

SELF-ASSESSMENT QUESTIONNAIRE ON INTERNATIONALIZATION		YES NO
INVOLVEMENT OF THE MANAGEMENT TEAM	Is the board of directors and the management team committed to taking the step toward the internationalization of the cooperative/SAT? Are they committed to investing time and effort in reaching out to other countries? Has internationalization been included as an objective in its strategic plan? Is the management team willing to allocate a portion of its financial resources to internationalization?	
THE RIGHT TEAM	Does the cooperative have staff who are fluent in one or more foreign languages? Do you have staff who can be seconded or who can devote a significant portion of their time to export activities? Is your company's staff prepared to engage in international trade activities? Could you train your team in international trade?	
EXPERIENCE	Have you ever tried to enter a new international market? Have you ever conducted an international transaction? Was it a satisfying experience? Do you have your own sales network? Do you sell on the domestic market? On the regional market?	
THE PRODUCT	Does your product have competitive advantages abroad? Does your product need to be modified in any way to be launched on the foreign market? Is it an expensive product to transport to other countries? Could you meet demand in foreign markets without neglecting domestic demand? Does your product have any restrictions?	
TECHNOLOGY	Does your company have an online presence? Does your cooperative have a website? Is your website available in other languages? Do you have your own email address?	
INTERNATIONALIZATION PLAN	Has the domestic market become too small for further growth? Does the cooperative have a strategic plan to achieve internationalization and optimal positioning? Are you aware that you need to develop a long-term plan, that internationalization is not an immediate process? Have you set reasonable goals?	
INFORMATION SOURCES	Do you have sufficient information resources to successfully complete the internationalization process? Are you willing to learn about another culture? Are you familiar with the available public sources of information? Are you aware of prices in other markets?	

Results of the self-assessment test for internationalization

IS YOUR COOPERATIVE READY TO EXPORT

More than 15 positive answers

Congratulations, there is no doubt that your cooperative is ready to embark on the adventure of internationalization. Perhaps you have already made a few sporadic exports, and the test results indicate that you have the necessary resources to do so. Perhaps you have a product that is of interest to other markets, a team sufficiently prepared to carry out this mission, a comprehensive sales and marketing network, or a solid financial foundation. One thing is certain: international markets are waiting for you!

IT'S STILL TOO EARLY TO EXPORT

Over 15 negative responses

You may be on the right track, but your cooperative needs to work on certain aspects for international expansion. Some team members may need additional training. Your product may require some modifications to make it attractive enough for other markets. You may need external funding to support this new project, or you simply can't reach a consensus on this within the team. Take some time to think it over. If you decide to proceed with exporting, you should address these or other issues so that you can enter new markets. If you reject this idea, you can reconsider it in a few years.

YOU ARE VERY CLOSE TO EXPORTING

Uncertain result: 15 positive responses and 15 negative responses

You are at a crossroads between deciding to internationalize your cooperative or continuing in the domestic market. There are still a few details to iron out, but you are very close to achieving your goal. Give yourself a little more time to analyze the situation and decide whether to invest resources in exporting or to abandon this plan and opt for expanding the business in the current market. Make a decision now!

Once the results of the self-assessment questionnaire are known, if they are positive and indicate that we are ready to internationalize our cooperative, it would be time to start working toward our new goal.

If, on the other hand, the results show that we are not yet ready, we need time to address the shortcomings and try again later, if we still intend to export our products.

Now that we know the cooperative has export potential, the next step is to identify which variables will work in our favor and which will have a negative impact on the company in terms of exporting.

Identifying factors that favor and hinder exports. PESTEL Analysis

The PESTEL analysis (an acronym for Political, Economic, Social, Technological, Environmental, and Legal) is a technique that helps us identify the determining factors that will benefit the cooperative in its export activities, as well as the obstacles that will hinder its efforts to market products in foreign markets.

This involves identifying the advantages offered by each of these variables so that we can benefit from them, as well as detecting the threats that may influence the development of our export business.

P	POLICY	What is the political situation in our country, and how might it affect the industry?
E	ECONOMY	What are the predominant economic factors?
S	SOCIETY	How important is culture in the market, and what are its determining factors?
T	TECHNOLOGY	What technological innovations might emerge and affect the market structure?
E	ENVIRONMENT	What are the environmental concerns within this industry?
L	REGULATIONS	Is there current legislation regulating the industry, or could changes to these regulations arise?

From a perspective closer to the cooperative, we also propose analyzing variables such as demand, competition, suppliers, and influencing factors, which we could more easily control by promoting change, if necessary.

Therefore, we must study the following variables, based on the data we already have, and assess economic conditions before choosing to enter a particular market.

DEMAND

If there is external demand for our products, can we meet that demand without
abandoning the domestic market? How will our domestic customers react to the cooperative's new situation? (distrust of the services received so far)

COMPETITION

What is the situation with our competitors? Is there a risk of losing domestic market share? Would it be possible to form an alliance with them to export? Can we rely on
competitors who are already exporting?

SUPPLIERS

Do our current suppliers have sufficient supply capacity? Do they offer the quality required by the foreign market? Can they adapt to our new needs?

ADVISORS

Is our current distribution chain ready to serve the foreign market? Or, on the contrary, should we consider a new solution?
Is it possible to reach an agreement with our current suppliers, or should we
enter into agreements with others who are more specialized in the new market?

A recent factor influencing the current economic environment of our companies—and one we must take into account—is the transformation that the COVID-19 pandemic has brought to this environment.

As a result of the strict measures imposed by all governments following the emergence of the virus, economic damage and, above all, uncertainty and a lack of confidence in approaching new markets have left their mark on the economic fabric. However, in some countries, monetary policy has been relaxed, and we can benefit, for example, from interest rate cuts.

It is important to have information on demographic changes and new trends, as these aspects will help us develop strategies aimed at reducing costs.

Another aspect that has come to light with the pandemic is that well-being has become a priority for people. The same is true for our employees. We must rely

on them and know if they are willing to embark on this adventure, offering them a sense of security, continuity, and empathy. But we must also convey to them that we need them to be flexible and accept this new challenge.

Analysis of our cooperative's strengths and weaknesses regarding exports

Continuing this analysis, which is based on the cooperative's current position and aims to prepare it and anticipate potential advantages and difficulties, we will now examine the internal factors that can affect the internationalization process: the characteristics of the resources at our disposal, our competencies and skills, or our shortcomings, for example.

POTENTIAL WEAKNESSES	POINTS	ELEMENTS TO ANALYZE
VALUE CHAIN		• Production capacity and manufacturing process efficiency • Age of facilities and equipment • Manufacturing process • Quality control • Supply of raw materials and finished products • Availability and quality of the workforce • Labor relations and the work environment • Workplace safety • Inventory control
HUMAN CAPITAL		• Internal structure and organization • Quality of the management team • Experience of individuals in key positions • Training • Assessment of employee motivation • Team performance levels • Absenteeism and staff turnover rate • Internal communication • Information and management systems • Ability to fulfill plans (organizational efficiency) • Ability to formulate improvement proposals • Individuals' skills, versatility, and compatibility
FINANCIAL STRUCTURE		• Profit • Cash Flow and Liquidity • Dividends • Short- and Long-Term Debt • Arrears and average collection and payment periods • Assets • Equity • Cost structure and competitiveness • Performance • Return on capital (ROI and ROE) • Productivity
MARKETING AND SALES		• Company image and the image of products and brands • Product quality and acceptance • Product and market life cycle • Pricing policy and competitiveness • Effectiveness of external communication • Sales network and distribution coverage • Customer service and after-sales services • Customer portfolio • Compliance with deadlines and quality standards • Distribution capacity • Market information system
RESEARCH, DEVELOPMENT, AND INNOVATION		• Technological level • Innovation capacity • Existing patents • Engineering • Success of launched products • Ability to adapt to new technologies • Versatile experience • Ability to meet deadlines, budgets, etc.

8.2.1.2 MARKET RESEARCH AND SELECTION

Selecting the market or markets we will target when we first embark on an internationalization process is no easy task. In fact, we could say that it is one of the most important parts of our Internationalization Plan, and, as we have already mentioned, it is a complex and costly undertaking.

In an environment like ours, where changes are constantly occurring, where we must respond to the market with great urgency, and where competitors are advancing rapidly, companies must have a thorough understanding of their potential markets. The fastest and easiest way to conduct market research and selection is to hire a specialized external consulting firm to provide us with all the information we need. Objectively speaking, this represents a high cost for the organization, and only multinationals in the consumer goods, services, and other sectors can afford it; the rest usually do it with their own resources. Therefore, it is important to have professionals within the company with up-to-date knowledge, as information becomes outdated incredibly quickly.

Next, we will analyze the research process and the sources of information we can consult to develop the research process and subsequently select the market or markets we will target.

First, we will examine some of the secondary data sources available to us. Market studies, which can be found or requested online, are extremely useful for this purpose:

icex.es	ICEX Spain Export and Investment is a national public entity whose mission is to promote the internationalization of Spanish companies and foreign investment.
mapa.gob.es	Studies and Publications: Publications, Libraries, Media Library, Photo and Video Archives, Archives.
expoort.es	Search through over 60,000 market studies; specify the country of origin, the product (name or HS code), and the destination country where you wish to export or import. Expoort helps you access immediate information so you can make faster decisions.

ipex.es	Our mission at IPEX is to lead the economic internationalization of the Castilla-La Mancha region and to promote the social and institutional internationalization of a competitive and open economy, which has a large number of companies that export and establish themselves in our region.
camara.es	The Spanish Chamber of Commerce is a public-law corporation whose purpose is to represent, promote, and defend the general interests of Spanish companies. It also represents and coordinates the regional Chambers of Commerce.

Market Selection

An internationalization strategy also involves making a decision regarding two key elements: the selection of international markets and the selection of entry modes (De Villa, 2016).

Choosing international markets involves identifying the markets where the company will conduct sales or operational activities, not only to attract new customers but also to benefit from potential advantages that can be gained by transferring certain processes in the value chain to other locations.

How can a company approach the process of selecting its international markets?

Inevitably, the selection of international markets is directly linked to the strategic analysis that companies undergoing internationalization must conduct in search of low-risk markets and maximum long-term profit.

Therefore, we can state that any cooperative directing its efforts toward internationalization is required to decide on its target market or markets, based on the attractiveness of each market and the competitive advantage it holds in each of them.

Once we have clarified these aspects and gained some knowledge of the sector in each of the international markets, we must evaluate and classify them according to

certain weighting criteria. Based on all this information, we will be able to shortlist several potential markets and, through a rapid elimination process, subsequently select the target market or markets.

Some of these weighting criteria are:

- Product characteristics
- Import restrictions
- Geographical proximity
- Export volume per market
- Free trade agreements
- Language
- Market size, etc.

Another source of information where we can find data such as the volume of exports for each market is the Chamber of Commerce website, which has several databases accessible using each product's tariff code, classifying the information by number of transactions, value, or weight.

- aduanas.camaras.org

- IPEX provides us with an annually updated list of actions to be taken in various international markets.

- ipex.es/actions/

Market Selection Table

We have multiple concepts, tools, and models to strengthen the decision-making process related to international market selection. To name just a few:

- Ansoff Matrix
- The CAGE Model
- Porter's Five Forces or the Diamond Model
- Resource and Capabilities Theory
- PESTEL Analysis (which we've already covered)

However, without a doubt, an indispensable and extremely useful tool that will help us select our target market is the Market Selection Table. When developing this table, we must include as many factors as possible to help us evaluate the opportunity of introducing our products into each preselected market.

It presents potential markets as candidates for further in-depth analysis, using macro-level indicators to eliminate those markets that do not align with the company's objectives (e.g., market size, growth rate, degree of compatibility between consumer preferences and the product, competitive rivalry, etc.). Thus, foreign markets are evaluated based on one or more criteria, and those with the highest scores are selected.

Within this narrower list of countries, we must also evaluate the sector's attractiveness to reach a final decision regarding the market that best aligns with the company's objectives and available resources. Wealth, size, and ease of access could be criteria used to select the target market.

How do you create a market selection table?

Selecting countries. We will use an Excel table that initially lists several countries suitable for marketing. The number of countries will depend on each company, though it is advisable to choose at least three. This initial selection is entirely subjective, based on criteria such as affinity with the country, a shared language, proximity, or simply because we like it.

Selection Criteria. Here we will determine the key variables that can influence the internationalization of our cooperative. These must be variables that can be applied to any of the countries we previously selected. As can be seen in the table created for the black garlic candies, a total of eleven variables were defined, but we can include as many as we deem necessary.

Percentile. In this column, we will assign a value to each selection criterion based on how important we consider it to be for our company. The final sum of these values must be 100, since we are dealing with percentages.

Rating. Each country will now have a column for a rating from 1 to 5, where 1 represents the least important and 5 the most interesting for our company in the context of launching our products in that country. For example, if we look at the scoring column for France, we see that it was given a 5 for the required investment, since it requires a smaller investment and is therefore more interesting for the cooperative. However, it was given a 2.5 for the purchasing power of French consumers, because we believe that, since it is not a high-priced product, this will not influence its purchase.

Note: To calculate the score, which will constitute the final value on which the choice of destination country or countries will depend, we will multiply the percentile by the score assigned to each variable and divide the result by 100. For example, if we use the same categories for France as a reference, we will obtain a score of 0.5 and 0.4, respectively.

CRITICAL VARIABLE	%	GERMANY		FRANCE		Sea		PORTUGAL		ITALY		UAE		JAPAN		USA	
		P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N
Consumer purchasing power	15	3.5	0.5	2.5	0.4	3	0.5	0.5	0.1	1	0.2	4	0.6	1.5	0.2	4.5	0.7
Investment required to enter the market	10	3.5	0.4	5	0.5	4	0.4	5	0.5	4.5	0.5	2	0.2	2	0.2	2	0.2

Ultimately, the final result for each country will be the sum of the scores obtained for each of the critical variables. In this case, France would rank first as the country toward which we should direct our commercial efforts, followed by Germany in second place.

When making the final decision, we should not rely exclusively on this table as the sole deciding factor, although it is very useful and one of the most valuable tools. However, our team of professionals should be the ones to make the final decision, taking this criterion and other equally valuable criteria into account.

It is important to clarify that, although the numerical score for each of the countries presented in the table constitutes the selection criterion, we must be aware that the mere

failure to meet even one of the criteria most relevant to us and our company can be so significant from a qualitative standpoint that it leads to the elimination of that country as a potential market.

As mentioned above, the cooperative may decide to begin its internationalization in one or more markets simultaneously, depending on its individual interests.

When entering the international market, it is advisable to select a single country as a first step if we do not yet have the necessary experience and resources. In any case, we could reserve the second and third countries on our list as future markets to be addressed in subsequent interventions.

Target Country Analysis

We have analyzed all the collected information, evaluated the market selection table, and finally chosen the target country.

Now is the time to be much more thorough. We need to have as much information as possible about the country we are about to target. The more information we have at our disposal, the less likely we are to make mistakes and, above all, the more precise we will be in achieving our international goals.

Example of a country fact sheet: Germany

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República Federal de Alemania

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1. DATOS BÁSICOS

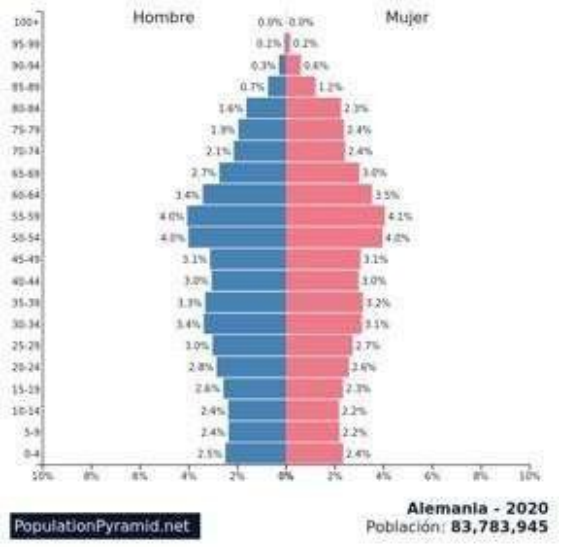
1.1. Características generales

Nombre Oficial: República Federal de Alemania
Superficie: 357.020,70 km2. La mayor distancia de Norte a Sur es de 876 km en línea recta, y de Oeste a Este de 640 km.
Límites: La República Federal de Alemania está situada en el Centro de Europa. El país tiene fronteras con Francia, Suiza y Austria por el sur; Bélgica, Holanda y Luxemburgo por el oeste; Dinamarca por el Norte y Polonia y la República Checa por el este.
Población: 83,2 millones habitantes.
Capital: Berlín (3.669,491 habitantes).
Otras grandes ciudades son: Hamburgo (1.8 mill. hab.), Múnich (1.5 mill. hab.), Stuttgart (620.445 hab.), Francfort (747.848 hab.), Colonia (1.0 mill. hab.), Düsseldorf (642.304 hab.), Hannover (556.695 hab.), Essen (590.611 hab.), Leipzig (601.668 hab.) y Dresde (554.649 hab.).
Idioma: Alemán.
Minorías: Alemania reconoce las siguientes minorías: Minoría de habla danesa en el norte de Schleswig-Holstein, Minoría de habla frisón en el noroeste de Schleswig Holstein y Baja Sajonia (Nord- y Ostfriesland), Minoría de Sintis y Romas nacidos en Alemania, Minoría de Sorabos, que viven en Sajonia y Brandemburgo (Ober- und Unterlausitz).
Moneda: la moneda oficial es el Euro.
Religión: No existe una religión oficial y la población se divide entre el Norte y Este protestante y Sur y Oeste católicos. Según la Oficina federal de Estadística, en 2018, de los poco más 83 millones de habitantes, 23 millones serían católicos, y 21 millones evangélicos. La siguiente religión en número sería la musulmana, con el 5% de la población.
Forma de Estado: República parlamentaria federal. El Jefe del Estado es el Presidente Federal elegido por la Asamblea Parlamentaria, órgano constitucional que se reúne exclusivamente a estos efectos. El Presidente Federal asume funciones representativas y como guardián de la Constitución ejerce un papel de moderador de la vida política. El Poder Ejecutivo es ejercido por el gobierno federal, presidido por el Canciller, único miembro del Gobierno elegido por el Parlamento, y que sólo responde y da cuenta de su gestión ante el Parlamento.
Estados federados (Bundesländer): Como República Federal está integrada por los siguientes Estados Federados: Baviera, Baden-Württemberg, El Sarre, Renania-Palatinado, Hesse, Norte de Renania del Norte-Westfalia, Turingia, Sajonia, Baja Sajonia, Sajonia-Anhalt, Brandemburgo, Mecklemburgo-Pomerania y Schleswig-Holstein. Existen además tres Ciudades-Estado: Berlín, Hamburgo y Bremen.
Fuentes: Banco Mundial, UNDP, destatis.de

1.2. Geografía

Su relieve es muy montañoso en el sur (Alpes) con la montaña más alta "Zugspitze" (2962m) en la frontera con Austria. También se alternan zonas llanas y montañosas, distribuidas por su territorio, como el Harz, el Erzgebirge, Taunus, Eifel, etc. La variedad del territorio se refleja también en una amplia diversidad de flora, con especies propias de regiones marítimas, de llanura y de especies alpinas. Es un país muy rico en todo tipo de bosques y de vegetación. El río más largo es el Rhin (Colonia, Düsseldorf). Los otros grandes ríos son: Elbe (Dresde/Hamburgo), Meno (Francfort), Spree y Havel (Berlín), Isar (Munich), Neckar (Stuttgart)





OFFICE OF DIPLOMATIC INFORMATION

http://www.exteriores.gob.es/documents/fichaspais/alemania_ficha%20pais.pdf

BASIC DATA FOR THE COUNTRY FILE

BASIC DATA

- Official Name
- Flag
- Capital
- Citizenship
- Language
- Currency
- Religion
- National holiday
- Standard time

DEMOGRAPHY

- Population
- Population density
- Ethnic origin
- Urban population
- Population growth rate
- Birth rate
- Age structure
- Median age
- Life expectancy
- Infant mortality

ECONOMY

- Total GDP
- GDP per capita
- Real GDP growth rate
- Working-age population
- Current account balance
- Means of transport
- Export and import products
- Export destinations and imports
- Exchange rate

GEOGRAPHY

- Geographical location
- Borders
- Area
- Climate

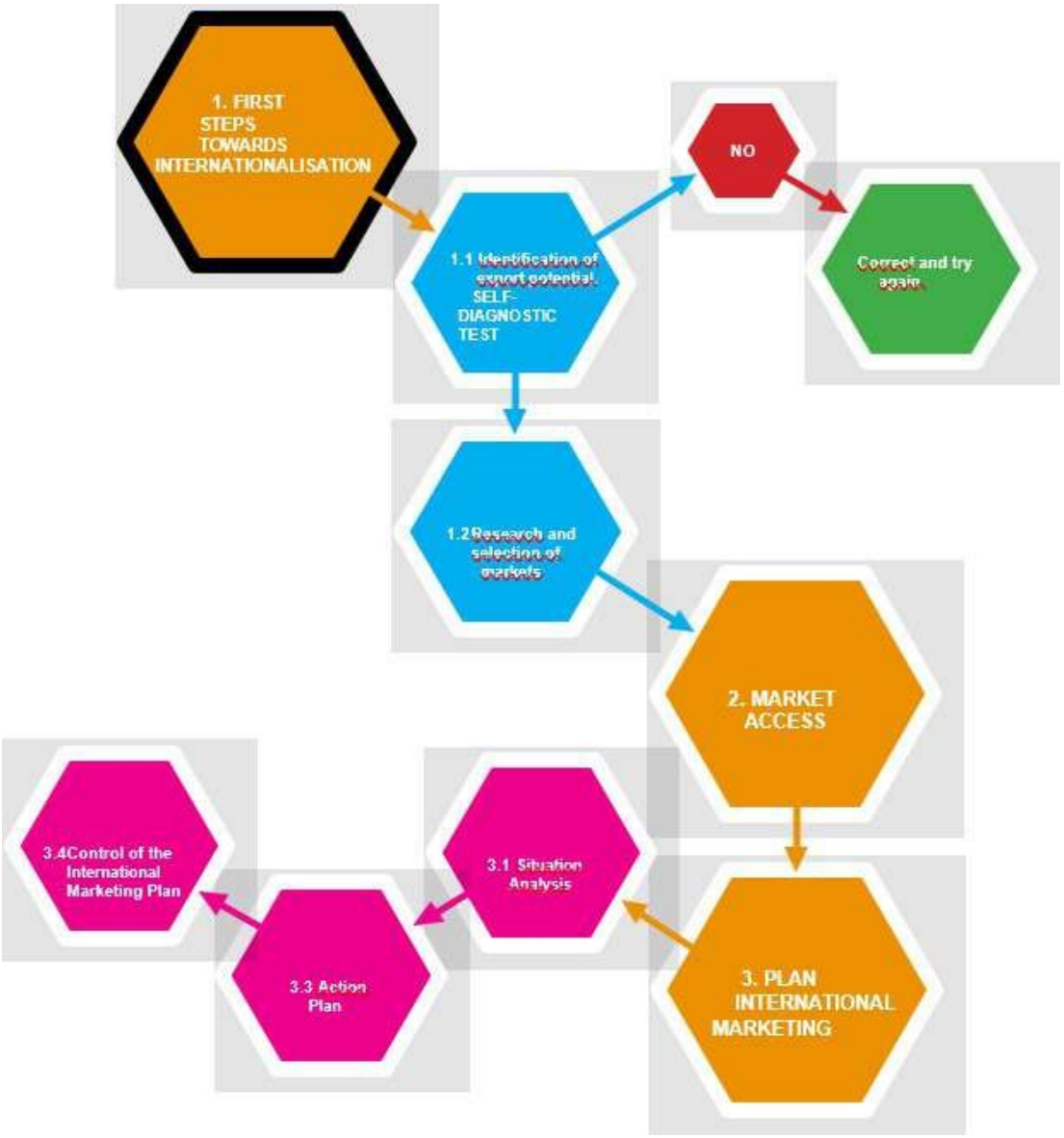
POLITICAL ORGANIZATION

- Form of Government
- Executive power
- Legislative branch

ADMINISTRATIVE ADMINISTRATIVE AND TERRITORIAL

- Political and administrative organization
- Territorial organization

OUTLINE: MARKETING PLAN



8.2.2 MARKET ACCESS

Given the wide variety of situations a company faces when deciding to enter foreign markets, we ask ourselves questions such as:

What is the best possible marketing strategy, given the product, the customer base, and the available resources, both human and material?

What commercial implementation structures exist in each market that allow for maintaining the product's presence?

What is the most suitable logistics solution for each product and each final destination? What is the

best solution for successfully distributing the product?

To answer these and other questions, when selecting methods for entering foreign markets, we must consider a range of factors affecting the company: its resources and capabilities, the objectives and strategies we aim to achieve, as well as the situation of the target markets.

Therefore, to a large extent, how a company enters foreign markets is limited by its capabilities in terms of the availability of its financial and technological resources, as well as its organizational and management capacity.

Thus, financial resources significantly limit the company's operational opportunities in international markets due to the investment requirements they entail.

The cooperative's technological resources also determine how it enters foreign markets, given the loss of control this may entail for the cooperative.

Similarly, the enterprise's capabilities also represent a dividing line in the organizational sphere, due to the complexity of the structure resulting from the move toward internationalization.

There is a direct relationship between business experience in the field of internationalization and the choice of entry methods that involve greater control and commitment.

The strategic objectives set by the company would be another influential factor in deciding how to access international markets. Thus, organizations seeking to sell their production surpluses in foreign markets would take very different actions than those taken by companies seeking to differentiate themselves through technological innovation or to compete on the basis of costs.

8.2.2.1 DEPENDING ON THE NATURE OF CONTROL

Regarding the characteristics of target markets, these are not the only factor determining the choice of one market over another, but they do influence the decision regarding how to enter these markets. Variables such as language, market size, experience in the target country, and cultural or demographic similarities will determine the choice of market entry strategy.

Now that we have covered this brief introduction, let's analyze the ways to access markets, depending on the nature of control exercised over the distribution channel, evaluating the advantages and disadvantages of each.

Direct Export

This provides the company with sufficient control over the markets. The company sells directly to end customers in foreign markets through its own sales representatives and maintains its own commercial network, such as commercial subsidiaries and sales branches. Online sales are also considered.

In this way, these activities will be integrated into its organizational structure, which is a major advantage in terms of obtaining useful information to improve current and future strategic business decisions.

On the other hand, for the exporting company, this will mean an increase in the risk it must assume, as it will be necessary to allocate a greater volume of resources to the internal development of its commercial expansion activities.

Indirect Export

Indirect exporting involves hiring an intermediary to manage the various stages of the international operation when selling the product to other companies. Among other things, the intermediary's functions include customer selection and negotiation, physical distribution of the product, pre-sales and post-sales services, etc.

This form of export involves the lowest risk and requires the fewest resources in the internationalization process. Another advantage is the flexibility it offers the company.

On the other hand, the main disadvantages for the exporting company are its dependence, to a greater or lesser extent, on the intermediary, limited knowledge of export activities and the markets in which it operates, as well as the lower sales potential the company can achieve, since this depends on the intermediary's level of involvement.

An example of indirect exporting is the use of a trading company, which, for many firms, is often the first step toward establishing a presence in foreign markets. This type of intermediary typically operates in sectors with standard, low-cost, high-volume products, such as agriculture. The advantages of this type of export include, for example, the support of someone with a high level of expertise in logistics, financial management, and customs procedures.

Other forms of indirect export include purchasing agents and export companies.

Arranged export

This type of arrangement involves the company sharing commercial control with third parties. These channels constitute an intermediate form of foreign sales, situated between indirect and direct exports, since, in these cases, the company does not conduct its international operations entirely on its own, with part of the activity being transferred to its partners.

Consequently, these measures contain elements that could be considered typical of indirect methods of marketing our products abroad, but they are complemented by direct strategic actions, meaning they rely on the implementation of certain company elements within its territory of operation.

Practical reality reveals the existence of various subtypes of entry modes, which are sometimes difficult to define because there are overlaps between them. This table presents a classification based on some of the most commonly used arrangements.

INDIRECT EXPORT	DIRECT EXPORT	CONCERTED EXPORT
COMMERCIAL COMPANIES: Marketing companies Trading companies Purchasing agents	DIRECT SELLER IMPORT AGENT AND DISTRIBUTOR IMPORTER COMMERCIAL SUBSIDIARY SUBSIDIARY PRODUCTION	COMBINED TRANSPORT EXPORT CONSORTIUM EUROPEAN ECONOMIC INTEREST GROUPING (EEIG) STRATEGIC ALLIANCES JOINT VENTURE FRANCHISE

Finally, we must mention the possibility of establishing a permanent presence in the target country. This could involve commercial establishment, by setting up a headquarters in the destination country and production in the home country, or production in foreign markets, which involves investment-driven exports, turnkey plant exports, business cooperation, and opening a production center abroad.

“The choice of entry mode aims to define the mechanism for entering the selected international market.” Frynas and Mellahi (2011)

The exporting company’s decision to choose one of the above solutions will also depend on fiscal, financial, legal, or organizational considerations, which must be studied and specified for each market.

Therefore, in short, we can say that each form of market access has advantages and disadvantages. The company must decide which one is most suitable for it, taking into account primarily:

- Control: the desire to influence decisions, systems, and operations.
- Resource allocation: the dedication of assets to specific uses that are now fixed or difficult to reallocate without incurring significant costs.
- The risk involved in each of these.

8.2.2.2 DEPENDING ON RESOURCE ALLOCATION AND THE RISK INVOLVED

These three factors, which often go hand in hand, are important in selecting the entry mode because, to gain control, the company must allocate resources, responsibility, and a significant investment of time to enable international management. The higher the level of control and resource allocation, the greater the risk if the market in which it currently operates fails.

The answers to these two questions will serve as a good starting point for a company seeking to determine its market entry strategy:

What degree of control do you intend to exercise over export operations? What level of

resource allocation are you willing to commit to?

Exports

This is one of the most common and simplest methods, adopted by small and medium-sized enterprises, and involves the physical transfer of goods from a company to the international market. It can be carried out directly or indirectly, with or without intermediaries. It is usually carried out initially to neighboring countries, taking advantage of cultural similarities and to reduce transportation costs.

The main reasons companies export are:

- To gain international experience.
- To expand their sales.

Contractual Agreements

This refers to certain types of contracts between a company and an agent, licenses, and franchises. Through these, products are manufactured or sold in international markets, which assume the risks and provide the necessary investments.

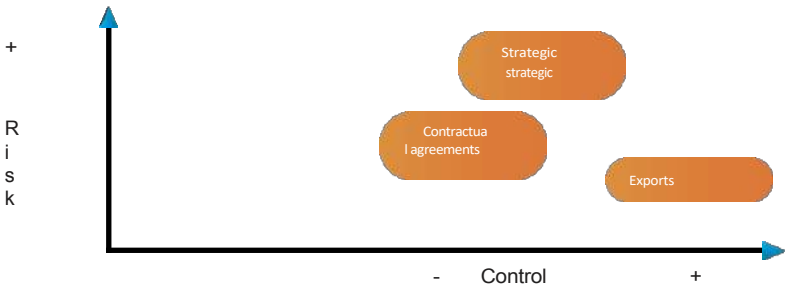
Through licensing, the home company grants the foreign company the right to use a production process, a patent, a trademark, etc., to sell a product. This involves a certain degree of risk for the company but a lower commitment of resources.

International franchises represent an organized structure based on a contract for entering new markets. Through this contract, the franchisor transfers an already developed business concept to the local company in exchange for a payment. The franchise contract requires a certain commitment in terms of resources and also involves a certain degree of risk.

Strategic alliances

Strategic alliances are often formed between a foreign company and a local one, allowing them to share risks and resources in order to facilitate learning and capacity building (De Villa, 2016).

They are considered an appropriate way for a company to enter a market, allowing it to overcome cultural barriers and learn from its partners in the host country how to operate locally. Many of the failures of alliances can be attributed to a lack of compatibility or trust issues, and the commitment of resources to the new company is too great; however, the risk of losing competitive advantage or other associated factors is minimal.



8.2.3 INTERNATIONAL MARKETING PLAN

The global environment has undergone significant changes. We live in a globalized world where developed countries have fallen behind less developed countries, narrowing the gap between them. The new situation caused by the COVID-19 coronavirus is bringing about significant changes that are already influencing markets.

We can also mention the scenarios generated by countries with political instability, which, at certain times, force neighboring countries to tighten their borders, complicating the movement of goods and exports between them.

When events such as those mentioned above occur, the rules established in international trade are often modified.

Consequently, companies already operating in these markets and those planning to do so face an environment full of threats and opportunities, making it necessary to develop a detailed international marketing plan that allows us to be competitive while generating value for the customer.

The international marketing plan is an essential document that any company intending to market its products abroad must develop. It is a strategic tool included in the company's overall strategic plan. It integrates and coordinates all the tools that contribute to achieving the strategic objectives set by the company.

Important aspects, such as selecting target markets and choosing the appropriate entry strategy for each market, are detailed in the international marketing plan, which allows us to plan the company's growth, reducing risks and costs, while identifying our need for adaptation.

Based on this definition, we can state that the international marketing plan must be presented in a written document that formally reflects its entire content and analysis, to facilitate the implementation and evaluation of the actions taken to achieve the established objectives.

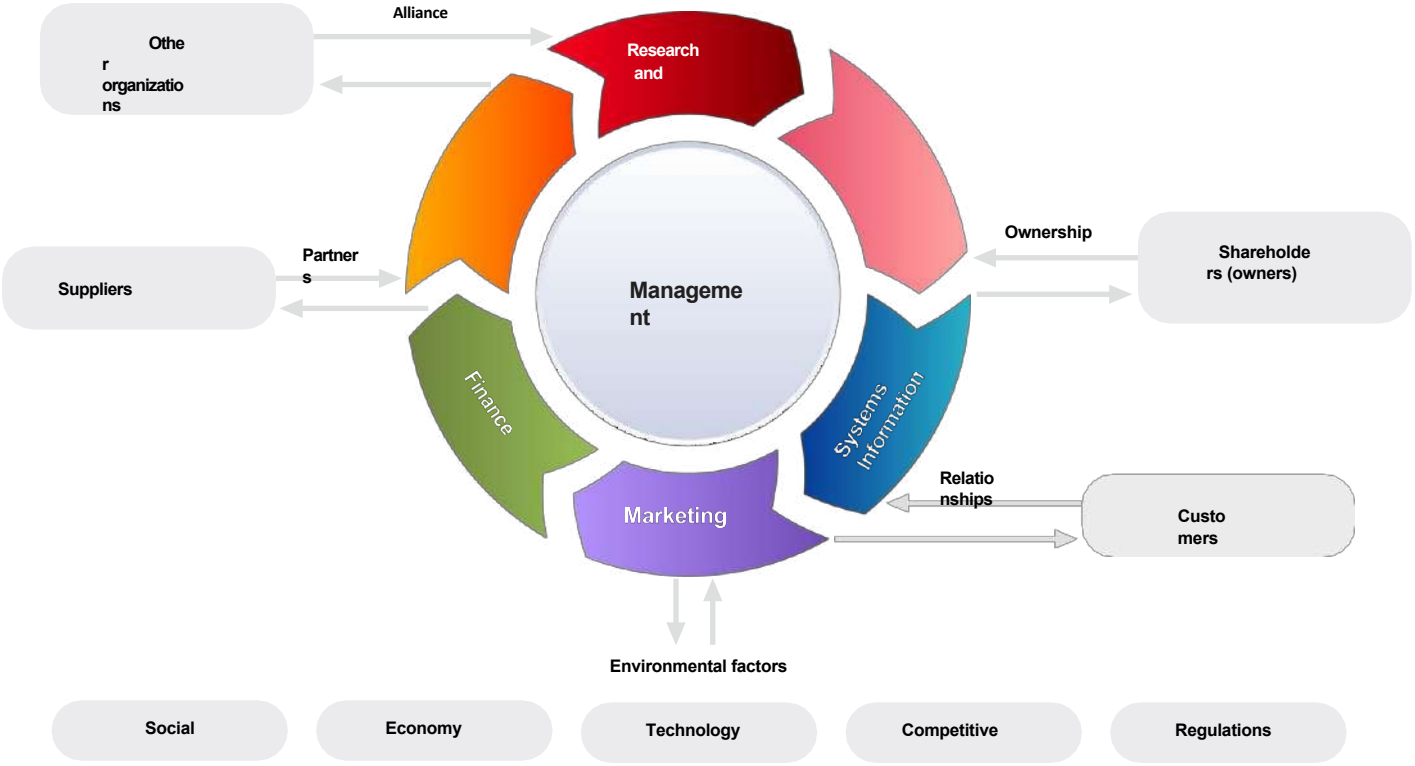
The implementation of the international marketing plan has two fundamental purposes:

- The internal purpose, which consists of the organization's planning regarding the actions that must be taken to achieve commercial and marketing objectives. In short, it is a guide that rationally directs the organization's operational functioning.
- External purpose: putting it on paper will be extremely useful when it comes to attracting external financial resources or justifying and obtaining support from the cooperative's members.

Objectives of the International Marketing Plan

International marketing planning aims to achieve the following objectives:

1. Understanding the cooperative's environment. The influence of the macro- and micro-environment on the future development of our organization's activities, as well as the resources at our disposal.
2. Support for management control. So that the cooperative can anticipate the issues affecting it in each target market.
3. Communicating the scope of the established objectives. To ensure that those involved in the organization understand and take ownership of their responsibilities and duties.
4. Fundraising. External financial support is a key factor in success, especially for smaller companies.
5. Optimizing the cooperative's limited resources. With all the necessary information at hand, the company will be able to set priorities regarding the actions essential to its development.



Developing an International Marketing Plan

When we begin to develop our international marketing plan, these four questions can help us define each of its stages:

WHERE ARE WE?

SITUATION ANALYSIS

Start by analyzing the environment around you, in an effort to identify our internal and external situation regarding
internationalization, using reliable sources.

START

DEFINITION OF INTERNATIONAL MARKETING STRATEGIES

Based on the information obtained, we aim to define the position we wish to achieve.

HOW WILL WE GET THERE?

ACTION PLAN

The action plan defines the steps that must be followed to achieve the objectives set out in the strategic plan. We can say that the action plan is a structured guide for tracking tasks.

WHO WILL IMPLEMENT IT?

ARE WE ON THE RIGHT TRACK?

MARKETING PLAN REVIEW

This final phase involves implementing our plan. To do this, we must define the tasks, managers, and responsibilities of each party involved. We must establish

8.2.3.1 SITUATION ANALYSIS

Where are we?

Situation analysis is the starting point of any international marketing plan. It answers the question: where are we?

What is our cooperative's strategic position relative to the market or markets we have selected?

In this case, we should conduct an individual analysis for each of the markets we will target. Once all this data has been obtained, we must analyze it and transform it into useful information for decision-making.

To carry out this task in an organized manner, we will examine the company's internal and external aspects in depth.

Internal Analysis

This fundamental analysis aims to gather quantitative and qualitative data about our organization. To do this, we must first define the cooperative's philosophy.

Mission, vision, and values

Identifying these terms will help us define our corporate identity: who are we?; the goals we have set for ourselves: who do we want to be?; and the principles upon which our cooperative's culture is based: what values do we hold to achieve this?

It is important to consider this reflection at the beginning of the internal analysis because, although at first glance it may seem irrelevant from a marketing perspective, it will serve as the foundation upon which the goals and strategies we establish will be built.



MISSION

What do we do?

What is our business?

What do we do?

What is our purpose? Who is

our target audience?

What is our geographic scope of operations?

What is our competitive advantage? What

sets us apart from our competitors?



VISION

What do I want to achieve?

Where do I want to be in the future?

What could I introduce to the company that I am not currently doing?

Who will I be doing this for?

Will I target a different type

of customer?

Will I expand my scope of business?

What resources or qualities will I need in the future to achieve this?



VALUES

Who are we?

What are our ethical business principles?

What do we believe in?

Once these three variables have been defined, we can create our company profile—our introductory statement that clearly and simply reflects our mission, vision, and values—in the language of the target country and in a memorable way, so that it sets us apart from our competitors.



[redacted]

COMPANY PROFILE

HISTORIA

Fue en La Mancha, en 1962, cuando Hersilio García Baquero empezó a elaborar con la leche de sus animales de manera artesanal unos pocos quesos al día.

*A mediados de los 70, nació nuestro primer centro de elaboración de **Alcázar de San Juan**, donde aún hoy, elaboramos quesos, con las mismas técnicas **artesanales** y la **receta de siempre.***

*En el **2005** abrimos un nuevo centro en **Toro (Zamora)** por la gran calidad de la leche de esta zona, algo que nos importa mucho ya que la selección de la mejor leche fresca y su recogida a diario es una de las claves para hacer un gran queso. También hemos aprendido a hacer **queso gallego**, de la mano de los mejores, en nuestro centro de Lugo, Palas del Rey, en el que desde 2013 elaboramos **quesos de Tetilla y Arzúa-Ulloa** con los **Maestros Queseros** expertos en ellos y en sus peculiaridades.*

MISIÓN

Somos una **marca** orgullosa de nuestros orígenes, de nuestro nombre... Nos gustan las cosas bien hechas y trabajar cada día pensando en nuestros clientes. Hogares de los **cinco continentes** disfrutan de nuestros quesos. Por su sabor, su naturalidad y su calidad nuestros productos son cada vez más reconocidos a nivel internacional a través de **multitud de premios**. Somos el fabricante de queso manchego más premiado del mundo.
Estos premios no hacen más que reconocer la constancia y el tesón de una marca donde la calidad, la pasión por lo bien hecho y la satisfacción de los consumidores están por encima de todo.

VISIÓN

En García Baquero buscamos fomentar una cultura empresarial de respeto hacia el entorno, garantizando el **desarrollo sostenible** del territorio y asumimos el compromiso de ofrecer nuevas soluciones que contribuyan a la correcta dieta de los consumidores, desarrollando productos expresamente dirigidos a atender a aquellos colectivos con unas necesidades especiales (nuestra gama de productos Sin Lactosa, Reducidos en Sal, bajos en Materia Grasa....) y dando entrada a nuevas variedades y **denominaciones de origen** de acuerdo a las nuevas tendencias de consumo.

***García Baquero es el primer fabricante de quesos de España y tercero de Europa.** Exportamos a más de 60 países Hemos incrementado la producción en un 28,5%, hasta las 388.000 toneladas, y las exportaciones un 111%, hasta las 80.500 toneladas.*
*García Baquero es líder del sector nacional del queso de la **denominación de origen manchega**.*
*La empresa **produce su propia leche,** para depender menos de las oscilaciones de precios del mercado. También lo hacemos porque para obtener un queso de altísima calidad resulta imprescindible disponer de las mejores materias primas.*

Practical exercise conducted by students in the professional certification course in international marketing and sales. 2018

Target Audience

What characteristics do the people in each of our target markets have? To implement an effective international marketing strategy, it is essential to understand our potential customers and establish various segmentation criteria and strategies for the new markets we will target.

Understanding the population's tastes and preferences, consumption habits, and specific needs will allow us to estimate how profitable marketing our products in that specific market could be.

There are four types of segmentation strategies:

1. The undifferentiated, mass-market segmentation strategy.
2. Although the company is aware of the different segments of its market, it decides not to target any of them specifically.
3. Differentiated segmentation strategy. The company identifies and selects two or more specific market segments and launches a different marketing campaign for each of them.
4. Personalized segmentation strategy. The company strives to create personalized campaigns or products for a specific market segment. This is the most commonly used strategy today, involving the design of campaigns with personalized messages to reach specific segments of commercial interest.
5. Concentrated segmentation strategy. The company identifies several segments but decides to focus on only one of them, usually because it lacks sufficient resources to address multiple segments.

Economic Analysis

To obtain a wealth of information about the cooperative's commercial performance in each market, we must analyze the profits generated by our sales, both overall and by product line. We need to determine the life cycle of each of our products, understand the profits each generates, and estimate the sales we could achieve for each of them in the international market.

Comparing these results with those from previous years will be extremely helpful in this process.

Marketing Activities

What marketing actions has the cooperative undertaken? What has the competition done? In terms of policies regarding product, price, promotion, and distribution, or aspects such as positioning. This analysis will provide us with insights into our marketing approach, which we can apply, in whole or in part, to the international market. Another frequently used strategy is comparing with competitors' actions, known as benchmarking, a continuous process in which the products, services, or work processes of leading companies are taken as a reference, compared with those of one's own company, and then improvements are developed and implemented.

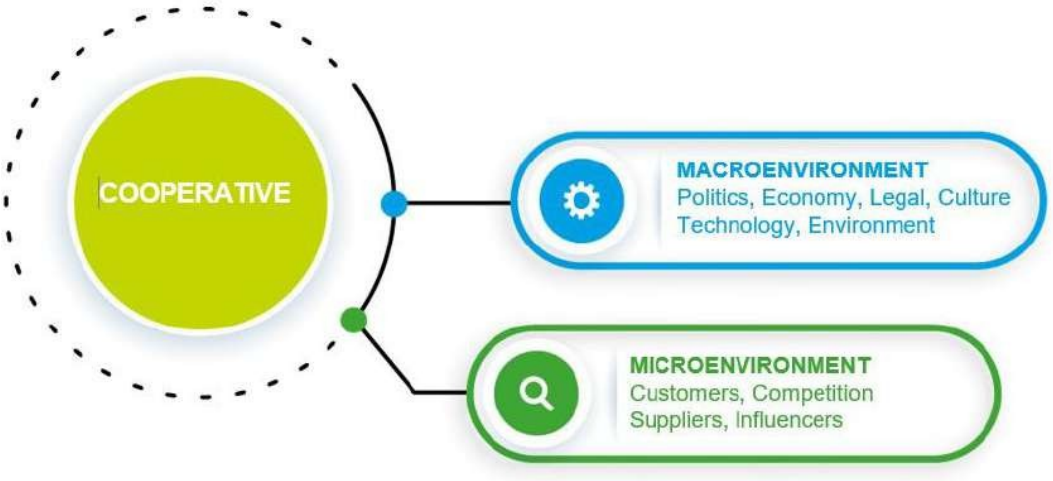
It's not about copying what your competitors do, but rather about learning what the leaders do, so you can implement these practices in your company and improve upon them. If we take as a reference those who excel in the area we want to improve and study their strategies, methods, and techniques—so we can then refine and adapt them to our company—we will achieve a high level of competitiveness.

External Analysis

We will try to see where the sector is heading, the characteristics of the surrounding environment, and international market trends.

Environmental analysis

At this stage, we will examine both the macroeconomic and microeconomic environments, gathering internal information based on our own data and collecting external information from other sources (chambers of commerce, IPEX, ICEX, etc.) that provide relevant data on target markets.



Sector Analysis

This analysis will help us identify the sector's main characteristics, its behavior toward its members, the level of competitiveness, the usual distribution channels, its marketing system, etc.

Market studies, which can also be found on the websites of our external information sources, are very useful at this stage.

Market analysis

This is the most complex part of the study. Economic success depends largely on this analysis, or at least, thanks to a good market analysis, business failures can be minimized.

If we understand how the market we are targeting works, our company will be able to operate in it and will even give us an idea of how the target audience will respond to our products in that country.

In turn, we will identify the opportunities and risks for the cooperative in this new market, which will increase the chances of creating a successful business model.

Evaluating the results. SWOT analysis

Once all this information has been gathered, the question is: How will we use it?

We should compile it and translate it into a model that details the results, in order to arrive at a clear and concise assessment.

To identify the opportunities and threats in the target market or markets, as well as the strengths and weaknesses of our cooperative in the face of this new challenge.

From the external analysis of the macro-environment and micro-environment, the market, and the sector, we will identify the opportunities and threats that cannot be controlled by the company but that have a direct influence on its development.

However, the opportunities and weaknesses of our cooperative, which stem from the internal analysis, can be controlled by us.

SELECTED MARKET	
THREATS	**OPPORTUNITIES**
What obstacles do we face?	What opportunities are available to our cooperative?
What are our competitors doing?	What trends are we seeing in this market?
Do we have financial resource issues?	What technology could be useful to us?
Could any of these hinder the internationalization of our cooperative?	What regulations and political factors could work in our favor?

COOPERATIVE /SAT	
WEAKNESSES	**STRENGTHS**
What should the cooperative or SAT improve?	What are our main strengths?
What are we doing wrong?	What do we do best?
What should we stop doing?	What key resources do we have access to?
What is our greatest weakness, according to ?	What are our strengths, as seen by external stakeholders?
What factors could reduce sales or success in that market?	What factors help us make a sale?

8.2.3.2 DEFINING STRATEGIES FOR THE INTERNATIONAL MARKETING PLAN

Where do we want to go?

According to Kotler (1992), planning consists of "deciding today what will be done in the future." It refers to achieving the desired future and the steps necessary to reach it.

We must understand strategic planning as the establishment of the necessary and effective means of action to be implemented in one or more international markets. Without the proper development of this purely managerial function, our cooperative would be lost, without a direction to follow.

Therefore, it is extremely important that the strategic plan be integrated into our company's business plan, which includes the economic-financial plan, its organizational functions, and its strategies, in order to achieve its objectives by fulfilling its mission and realizing its vision. At this point, we must understand that the development of the strategic plan focuses on the medium and long term.

The requirements that a strategic plan must meet are:

1. It must be quantitative; once the objectives to be achieved have been defined, they must be translated into figures.
2. It must be personalized, specifying exactly which person will be responsible for each task.
3. It must be descriptive, detailing each task as precisely as possible.
4. Finally, it must be time-bound, setting exact deadlines and dates for the completion of each task.

A periodic review will be conducted to verify that the established tasks are being carried out effectively.

8.2.3.2.1 THE OBJECTIVES OF STRATEGIC ANALYSIS

Together with the strategies, which we will analyze later, the objectives form the core of strategic planning. They answer the question: What do we want to achieve?

Once the situation has been analyzed, the first effective step in developing an international marketing plan is to set objectives for each of the international markets we intend to target.

We must not confuse objectives with the ultimate goal, which is associated with the growth of our company and marks where we want to see our products in the coming year. For example, we might say that our ultimate goal could be to establish a presence in the French market.

On the other hand, objectives are the targets we must achieve to reach the ultimate goal. Increasing brand awareness would be an example of an objective for a company whose ultimate goal is to establish a foothold in a specific market, such as the French market.

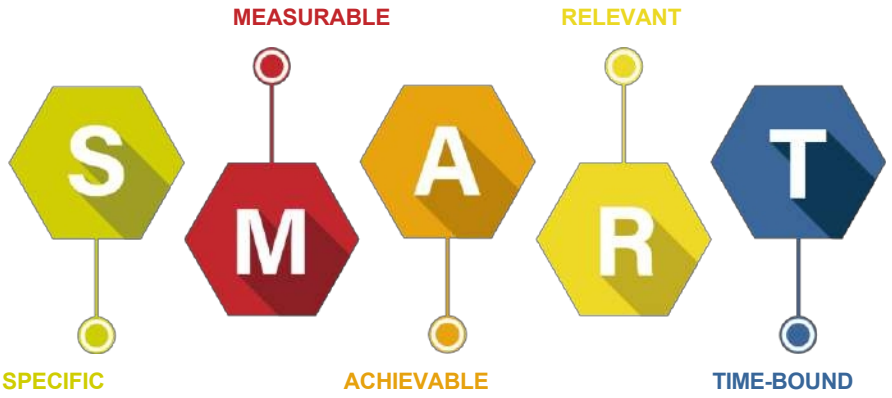
It should be noted that there are two types of objectives when it comes to achieving a goal:

1. Qualitative objectives. These aim to achieve a certain image and market positioning and are subjective and less tangible in nature. Despite this, they are just as important as quantitative objectives, and their results can be observed in the medium and long term.
2. Quantitative goals. These are easier to express in concrete figures (revenue, market share, reach, engagement, etc.). Their results can be observed in the short term.

It is important to note that qualitative and quantitative objectives are closely interlinked, and achieving one facilitates the other and vice versa.



It is also important to know that a marketing objective must follow the SMART formula (in a smart way), meaning it must be specific, measurable, achievable, relevant, and time-bound:



- **Specific**, unambiguous, and focused on a single aspect, because the more specific we are, the more precise our objectives will be.
- **Measurable**: objectives that aim to achieve quantifiable results. We cannot know if we have met the plan's objectives unless we can measure them. We must also ensure that we can obtain this figure from a specific source; otherwise, the established objectives would be useless.
- **Achievable**: a goal that is perfectly feasible under current conditions. The goals we set must challenge the cooperative, generate expectations, and require effort on our part, but at the same time, they must be attainable. A growth goal, for example, must be consistent with past achievements.
- **Relevant**: it must align with the business's overall objectives. The objectives of the international marketing plan must serve as the means to achieve the primary goal we have set for ourselves. It is of no use to us to pursue an objective that deviates from the ultimate goal or that does not lead us toward it.
- **Time-bound**: they must be limited to a specific time frame. If we do not want our objectives to lose focus over time, we must set a deadline for their achievement.

Generally, for the objectives set in the marketing plan, the deadline is the same as that of the document itself, which is usually from January 1 to December 31. Therefore, we should achieve our objectives before the end of the year, unless we set a different date.

8.3.3.2.2 CAME ANALYSIS

The CAME analysis is the ultimate business tool for strategic decision-making. It allows us to identify the strategies to follow in our expansion plan using the information obtained from the SWOT matrix. Thanks to these two closely related techniques, we will be able to make the most appropriate decisions for our company.

CAME is an acronym derived from English, where C stands for Correct, A stands for Adapt, M stands for Maintain, and E stands for Explore.

The interpretation of the CAME analysis is, therefore, that weaknesses must be corrected, threats must be addressed, strengths must be maintained, and opportunities must be exploited.

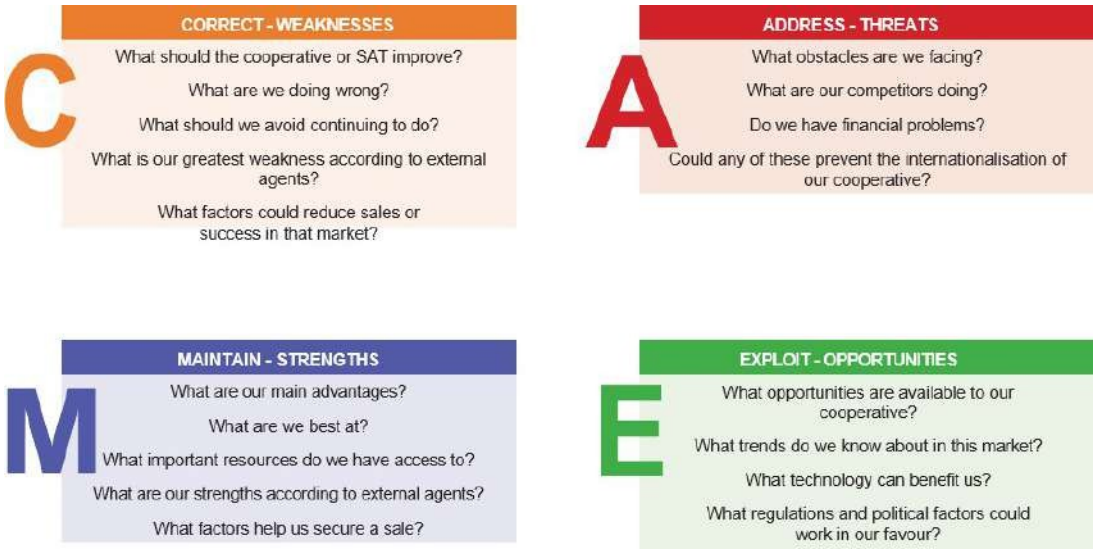


What questions should we ask ourselves, then?

Whether our company's internal STRENGTHS will allow us to take advantage of the OPPORTUNITIES in our environment and cope with the THREATS that lie ahead.

Whether our internal WEAKNESSES will prevent us from coping with current or future THREATS, or whether we will be unable to capitalize on the OPPORTUNITIES that arise.

In times like these, with the Covid-19 pandemic or even during periods of crisis, the combination of these two tools (SWOT-CAME) is perfect for taking a step back, analyzing, and realigning our strategies according to new needs.



CAME Strategies

Therefore, by combining our variables—weaknesses, threats, strengths, and opportunities—we can create four types of strategies: offensive, survival, defensive, and reorientation.

1. **Offensive strategies.** Also regarding market attack and positioning, these are based on leveraging our business's strengths, capitalizing on the opportunities offered by this new market we are targeting. In this case, having something that sets us apart in that specific market will help us achieve rapid positioning.
2. **Survival strategies.** Refusing to acknowledge the threats posed by a new market is a common mistake. Establishing a survival strategy means addressing these threats while preventing internal weaknesses from multiplying.
3. **Defensive strategies.** If our business is well-established and we have significant strengths to help us face future competitors, we should implement defensive strategies. Through these strategies, we maintain our strengths and use our competitive advantage or advantages to address threats that arise in the market.
4. **Reorientation strategies.** Sometimes, our company may need a change of direction, which may even involve a radical change in its business model. To do this, we must opt for a reorientation strategy that takes advantage of

opportunities in this new market, after addressing the weaknesses that led to the current business situation.

It is now up to the cooperative's supreme decision-making body, as the body responsible for the business, to determine the most appropriate strategies for expanding its operations in the selected market or markets.



Marketing Mix Policies

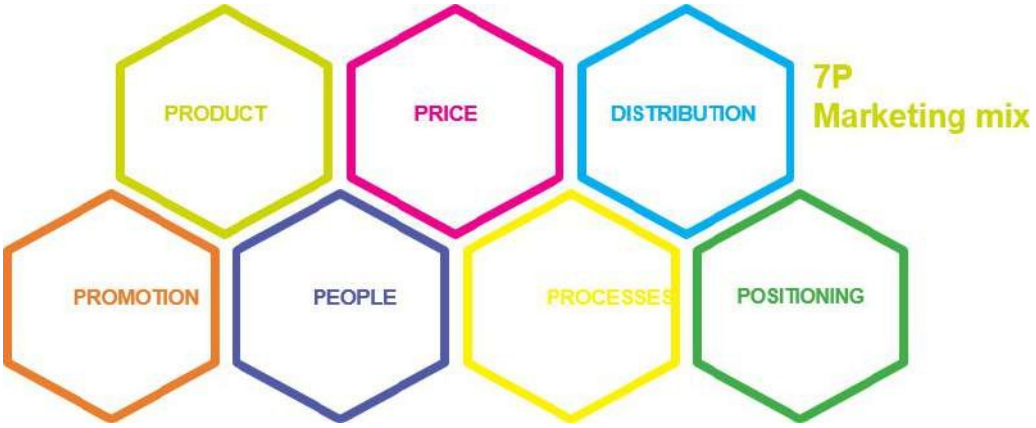
The marketing mix is the most extensive part of the International Marketing Plan.

According to Kotler and Keller, "The marketing mix is the set of controllable variables that a company can use to influence the buyer's response." It is important to note the temporal difference between marketing strategy and the marketing mix. While the former has a long-term vision, the marketing mix operates in the short and medium term.

The elements that make up the international marketing mix, also known as the 4 Ps, which we will study in relation to our target markets, also originate from English:

Product, Price, Place, Promotion

As a result of the constant evolution of marketing and to develop strategies that adapt to new consumer needs, the term "4 Ps" has undergone a change, and many authors now refer to **the** "7 Ps," adding the elements **"People," "Processes," and "Physical Environment"**



Once the concept of the marketing mix has been defined, it is time to decide on the tactics to be used for each of its components.

The International Product

The company's objective should be to provide the product that best suits the needs of potential customers, in line with our target audience. Therefore, it is extremely important that products be developed in accordance with the needs of customers in each market.

Questions that will help us analyze the product policy:

- What product lines will we market, and what specific products?
- What is changing?
- What new products should be added?
- What brands should we use?
- What packaging should we use?
- What labels?
- What warranties and after-sales services will we offer?
- When should we enter the market, given the product's international life cycle?

To conduct a more comprehensive analysis, we will consider the product's attributes, which are simply the sum of a series of physical characteristics, such as functional characteristics, physical and technical composition, quality, and design.

However, the product also has external attributes, such as packaging, containers, and labeling, as well as intangible attributes, such as the brand, the "made in" effect or country of origin, and, where applicable, warranty and customer service.

INTRINSIC ATTRIBUTES	EXTERNAL ATTRIBUTES	INTANGIBLE ATTRIBUTES
Composition	Packaging	Made in...
Quality	Packaging	Warranty
Design	Labeling	Services Offered

Intrinsic characteristics

When we talk about intrinsic attributes, we are referring to the physical or technical characteristics of our product. These characteristics depend directly on each company's production capacity, as well as on each client's requirements regarding design, quality, or materials in each market. At this point, we must make decisions regarding the standardization or adaptation of our product, for example, whether a quality certificate is required in that market.

External attributes

External attributes can play an important role in marketing, such as product packaging, wrapping, and labeling. Adapting these attributes involves a significant economic cost. In some markets, adaptation may be minimal, but in others it requires considerable effort. In general, when making decisions regarding packaging, we must meet the requirements of the various stakeholders involved in the product's commercial process, while complying with the legislation in force in each country.

The FOUR functions that product packaging and wrapping must fulfill are: protection, promotion, size, and shape.

PROTECTION	Geographical distance Storage Distribution and transport Climate
PROMOTION	Consumer habits Materials Colours
SIZE	Consumption habits Purchase frequency Income level
SHAPE	Efficiency Handling Aesthetics

When it comes to labeling, language is the first aspect to consider, as some countries require that information appear in the local language or in specific languages. This is the case in Canada, which requires labeling in English and French. Labeling legislation is very specific in each country, including regarding the required information, so we must examine each case individually.

Intangible attributes

These refer to attributes such as the brand, the “Made in…” effect, the warranty, and the services we offer.

If we’re looking for a way to differentiate ourselves from competitors, the warranty can be one of them. It’s an important promotional tool, especially when we want to reinforce the quality of our product. We need to consult the applicable legislation and decide whether to maintain the warranty from the country of origin or adapt it to the regulations of each target country.

We will add value to our product through services, as customer service is a decisive factor when it comes to choosing our product. Examples of services include technical consulting, after-sales service, delivery times, etc. The company must decide which services it will manage directly and which it will need to outsource.

BRAND AND “MADE IN... SPAIN”

The image of the country of origin or the national brand can change over time. Furthermore, perception can vary from one market to another and have a different impact depending on the sector in question.

In general, we can say that applying the “Made in Spain” label to our products adds value, as we enjoy a positive brand image in most foreign markets, and we should take advantage of this intangible asset and leverage it to benefit our products.

Similarly, when deciding on our brand name, it is advisable to conduct preliminary market research. Recommendations are that it should be easy to remember and

and not have negative connotations in the countries where we operate.

We must also decide whether to implement a brand strategy, developing one for each market (for better international product recognition), or whether to use the same brand across all countries.

Adapting the product to the international market

Another decision the company must make is whether to adapt its product to the tastes of the target market. This adaptation can range from minor modifications to offering a new and different version of the product, when differences between consumers in both countries are significant or when required by law.

Conversely, if the decision is made to standardize the product, it is because there is a high degree of homogeneity in consumer tastes and demand.

The most advisable option for companies is to adopt an intermediate strategy, but it is true that most of them still do not consider the possibility of adapting their products to market demand, which constitutes a fundamental error in their commercial strategy.

International Pricing

Price is the only variable in the marketing mix that directly generates revenue. It allows companies to react quickly to market changes and, above all, to competition, as it has an immediate effect on consumers. Furthermore, price has a clear impact on a company's sales and profitability.

On the other hand, given the association between price and quality, price has a direct influence on the product's image and brand perception.

- What aspects should an international pricing policy address?
- What are the determining factors we should consider when setting prices in foreign markets?
- What type of strategy will we use?
- Will we standardize prices or choose to adapt them to different markets?
- Is our international pricing policy consistent with our positioning strategy?
- How will we coordinate prices internationally across countries, and how will we manage internal transfer prices?

Key Factors in International Pricing

Factors that determine prices for foreign markets include those we consider in the domestic market (costs, demand, competition, etc.), as well as other factors such as business objectives, international positioning, and each country's regulations. To these variables, we must add logistics and distribution costs, as well as the costs incurred by intermediaries who may be involved in each transaction.

Therefore, when setting an international price, we must consider:

1. Factors controllable by the company

These include costs, business objectives, and the marketing mix.

Analyzing the company's costs is essential for setting a price in the international market, as export costs are higher than those in the domestic market, which do not include customs duties, intermediary fees, international shipping, etc.

Similarly, our company's internationalization objectives influence pricing. These objectives will depend on long-term goals, such as maximizing profit in the shortest possible time, or short-term goals, such as achieving economies of scale, for which we might set a lower price.

If we consider other variables in the international marketing mix, we would say that there must be consistency among them. An example of this is the price-quality ratio: if there is a balance between the two, we have a quality product at a reasonable price and will not create confusion in the market.

2. Factors Related to Foreign Markets

Consumers in each international market may perceive the same product differently. Legal restrictions, exchange rates, and competition are factors that affect us in foreign markets.

To give an example related to competition, we can get an idea of the degree of influence on prices by noting that the fewer the differences between our products and those of our competitors, the more significant our prices will be relative to our competitors' prices.

Regarding the country of origin, we have already noted that the “made in” label is usually a positive attribute for the product, but we must take into account that, in certain markets, this could mean exactly the opposite, so we should know how much consumers in that country would be willing to pay.

An example of this is wine zoning, which occurs with certain designations of origin that, due to their inherent characteristics, convey mistrust toward their products, thereby devaluing their price.

3. Factors related to the product life cycle

Depending on the product life cycle of our product in the target country, we will need to apply one marketing strategy or another. Therefore, it is important to know whether our product is in the launch phase or is already mature, as this will determine the price we will set in that market. For example, a product in the introduction phase, with few competitors, will allow us a higher margin when setting its price in that market, or a product that is in decline in our country—a “dog” according to the BCG matrix—could be a “star” product in another country.

4. Comparative Factors

Taking into account factors such as domestic market price, future production capacity, tariffs set by trade blocs, etc., could help us set the price based on similar locations, always keeping potential differences in mind.

Strategies for setting an international price

When setting the price at which the product intended for export will be sold, the company has several options:

1. Setting the international price based on competition

In this case, the company must analyze the competitive structure of the market, as well as the selling prices of its main competitors, which the company will use as a reference. This pricing method is widely used by SMEs and some larger companies when they want to enter markets with many competitors.

Its prices should be similar to those of competitors, taking into account any changes they make to their own prices. If the company decides to set its prices higher than those of competitors, it will need to add value to the product to differentiate it.

2. Setting international prices based on demand

When setting international prices based on demand in the respective market, we must conduct a thorough analysis of our potential customers. This allows the company to understand consumer preferences in each market and the price they are willing to pay for a specific product. A useful way to determine these variables is to conduct a price test, although, in some markets, determining the potential price of the product is very costly.

Another option would be to modify the product by reducing costs, in cases where we are trying to enter markets with consumers who have limited purchasing power.

3. Setting the international price based on costs: the COSTING strategy

This is a system that sets prices based on the total costs of the product in each market. Here, we must take into account both direct and indirect costs—for both production and marketing—and add a profit margin.

This method is typically used when the company lacks in-depth knowledge of the foreign market and represents the simplest way to set prices. We must consider numerous factors, which we have already discussed in previous sections, such as customs duties, Incoterms, product adaptation costs, insurance, intermediaries, etc.

4. International pricing based on market price: the pricing strategy

This method involves determining the product's price based on a market-defined price. When calculating this price, international logistics costs must be deducted, resulting in a reference price in the country of origin.

The objective set by companies when adopting this pricing method is to become more competitive in international markets.

Currently, this pricing method is the most widely used in international trade. The main difference from the cost-based pricing strategy is that, while cost-based pricing involves adding costs until the final price is reached, pricing is the reverse process, starting from the market price to determine the base price.



COST CALCULATION	PRICING
Method applied due to a lack of medium-sized enterprises	Method used by small and small and medium-sized enterprises
Total international costs + Sales margin	Competitive price based on demand

International price standardization

This refers to the decision a company must make regarding whether to set an identical price for all international markets or to differentiate it based on each market.

Despite the complexity of setting a standardized price, some companies prefer this option, overcoming differences in transportation or marketing costs and adding a differential cost for each market.

However, pricing theory suggests that better results are achieved by applying a price differentiation strategy, adapting the price offered to the specific characteristics of each market. We can say that this is the most commonly used strategy, and it is common to find companies that manage multiple prices for the same product depending on the market, resulting in a different positioning in each market.

In many cases, our companies achieve high margins, reaching as much as 70% or 100% in countries such as Japan. This makes it necessary for the company to place greater emphasis on coordinating international prices across countries.

International Distribution

Just as with the other elements that make up the international marketing mix, the company must answer questions regarding international distribution, such as:

- What is the best marketing strategy given the company's product, customers, and available resources?
- How should distribution channels be selected and managed in each market?
- What are the existing sales structures in each market?
- What is the most appropriate logistics approach for each product in international markets?

Selecting the right distribution channels for each market can be a key factor in successfully marketing a product.

To select and manage the distribution channel correctly, we must gather as much information as possible about the distribution chain, its size, market share, etc. It is necessary to understand the maturity of the channels, consumer purchasing habits, infrastructure, etc., as well as the characteristics of the agents in

distribution chain: size, organization, market share, or the products distributed, for example.

There are three basic distribution options: the long channel, the short channel, and the direct channel.

Long distribution channel

This is the channel most often used by companies with limited market knowledge, limited resources, and no physical presence in the foreign market.

This distribution channel has multiple levels of distribution and involves several intermediaries before reaching the end customer. As a result, we lose control over the sale, but in return, we benefit from the intermediary's expertise.

Within long-distance distribution, we can distinguish between the traditional long-distance channel (Figure 1) and specialized long-distance channels (Figure 2).

Traditional long-distance distribution channel



Specialized distribution channel



Short distribution channel

Through this channel, we can distribute directly, eliminating an intermediary from the chain, as is the case with the classic short channel.

This model is widely used for exports within the European Union, as an importer is not required for intra-Community transactions, which facilitates access to the end customer.

There are different types of short distribution channels, including the classic short channel, the integrated channel, and the specialized short channel.

As mentioned above, there are various types of short distribution, such as the classic short channel, the integrated channel, and the specialized channel, through franchises.

SHORT-TERM DISTRIBUTION CHANNEL



SPECIALIZED SHORT DISTRIBUTION CHANNEL



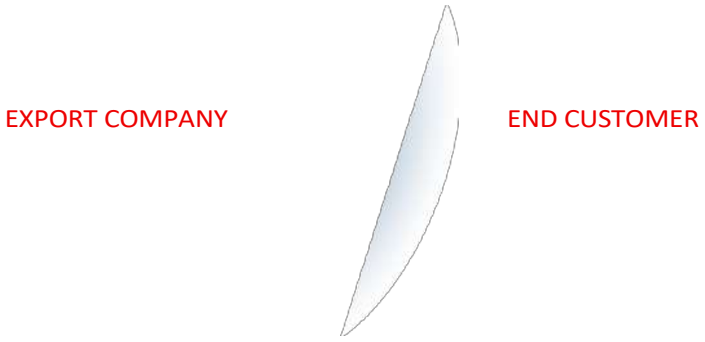


Using a short distribution channel and eliminating the wholesaler will result in savings for the company, while also giving it greater control over the consumer. However, this will require greater availability of resources and logistics capacity.

Direct distribution channel

The company sells directly to the end customer; there are no intermediaries, and this channel is widely used for marketing large-scale equipment. It is used much less frequently for consumer goods due to the inconvenience of requiring significant logistical capacity.

Distribution through this channel allows us to eliminate intermediaries' markups and, most importantly, to have direct contact with the end customer. However, as mentioned, the company requires a complex marketing system, particularly for consumer goods.



Operating Methods

Now that we have clarified the types of distribution channels in relation to the company's distribution policy, we will analyze the various alternatives available for promoting and establishing the company and our products in the international market. Therefore, we can consider three general possibilities:

1. Direct Export

The company decides to take control of its commercial operations by integrating this activity into its own structure. This eliminates intermediaries and establishes direct contact with the target audience. Some of the most commonly used direct export methods are:

- **Commercial subsidiaries**: The company becomes so involved that it decides to establish a new company or acquire a local company. However, its strategic objectives depend on the parent company in all respects. The greatest advantage of a subsidiary is the perception of greater involvement by the parent company in that market.
- **Sales subsidiaries**: Like subsidiaries, these are dependent on the parent company, with the difference that, in this case, a new company is not established; the subsidiary is a secondary unit of the parent company and also maintains its own accounting records.
- **Online sales**: These offer the manufacturing company an excellent opportunity to market its products directly to the target audience via the internet at a very low cost. This channel is undoubtedly the most widely used and the one experiencing the greatest growth due to its numerous and constantly evolving formats: websites, online marketplaces, social media, apps, etc.

2. Indirect export

When deciding to engage in this type of export, we must be aware of the significant loss of control over distribution decisions, as others will be the ones in direct contact with the entire supply chain and even the end customer. Among the methods of indirect export, we can mention:

- **Trading company**: These are entities specialized in commercial intermediation in foreign markets. They handle all the steps necessary for the successful execution of the export process, starting with conducting a

study of our products in the selected markets to minimize risks. In this way, we benefit from their experience applied to marketing mix strategies, although certain discrepancies may sometimes arise.

- **Commercial agent**: This can be an individual or a legal entity with market knowledge and, typically, an existing client portfolio. The agent acts as a link between manufacturers and wholesalers and retailers, specializing exclusively in a specific part of the marketing process, for which they receive a commission or a percentage of the sales generated.

3. Organized export

Finally, we can discuss mixed methods or concerted export, which combine the two previous methods, seeking to capitalize on the positive aspects of each. Thus, in this system, we find measures typical of indirect foreign marketing methods, complemented by direct actions that bear our company's signature. The most commonly used methods of concerted export might include:

- **Piggyback:** The name comes from the English expression meaning "to carry on one's shoulders." It refers to a type of international commercial cooperation agreement, essentially based on a company seeking to enter a foreign market using the distribution network of another company already established in that market, in exchange for a commission. The main advantages are low-cost access to an existing distribution network, the benefit of the image and experience of the company providing the distribution channel, as well as time savings in terms of market knowledge. However, the company does not fully develop its international operations, as it cedes a portion of them.
- **Export Consortium**: This involves entering into commercial collaboration agreements between domestic companies in the same sector or those manufacturing complementary products. Among the most obvious advantages of this method are the centralization of logistics and distribution, the possibility of joint recruitment of human resources, and the establishment of a common pricing policy. All these actions will contribute to the success of a simultaneous expansion.
- **Strategic Alliances**: It is increasingly common to form international alliances with companies in complementary sectors. We must be aware that, at present, there are few companies capable of covering all links in the chain, especially given the trend toward a global and fragmented market. We should also highlight the significant reduction in risks within the distribution channel, as well as the opportunity to enter into commercial agreements with suppliers or even international customers, which this type of alliance offers.

- **Joint Venture**: Also known as a risk-sharing partnership. This is a commercial agreement for joint investment, for a limited period, between two or more partners who contribute funds. The objective is to develop a business or enter a new market by sharing efforts, responsibilities, and risks. This type of agreement is typically entered into when a very large investment is required; the companies do not lose their identity, and the rights and obligations of each are clearly defined. Advantages include greater competitiveness, easier entry into new markets, and easier access to financing.
- **International franchises**: The franchisor transfers its rights to the franchisee so that the latter can market its products and brand. In this type of agreement, rights are transferred, usage limitations are established, procedures, techniques, and even the brand's culture are shared, and training and technical assistance are provided for the transfer of knowledge.

The establishment of international franchises is based on much stricter and more restrictive collaboration agreements, as it involves intangible and organizational elements that are easier to imitate in the future.

International Promotion

The goal of international promotion is to increase sales in international markets. To this end, tools are used to raise awareness of the company's products and to stimulate consumers' desire and need to purchase. These strategic tools must be perfectly coordinated with marketing mix strategies, and the company must again decide whether to adopt a global promotion strategy or one tailored to each market.

Depending on the various objectives, the company must identify which are the most profitable in each destination and take into account that they may be eligible for assistance programs from public agencies, such as IPEX, ICEX, EXTENDA, etc., which provide the company with broader knowledge through a wide variety of activities, such as: technical information days, trade missions, international trade fairs, prospecting visits, etc.

When defining its international promotion policy, the company must answer the following questions:

- What are the most effective promotional tools in each situation?
- Which international trade fairs are the most important for companies in my sector?

- What level of reach and credibility do the various advertising channels have?
- What is the recommended tone or style of communication?

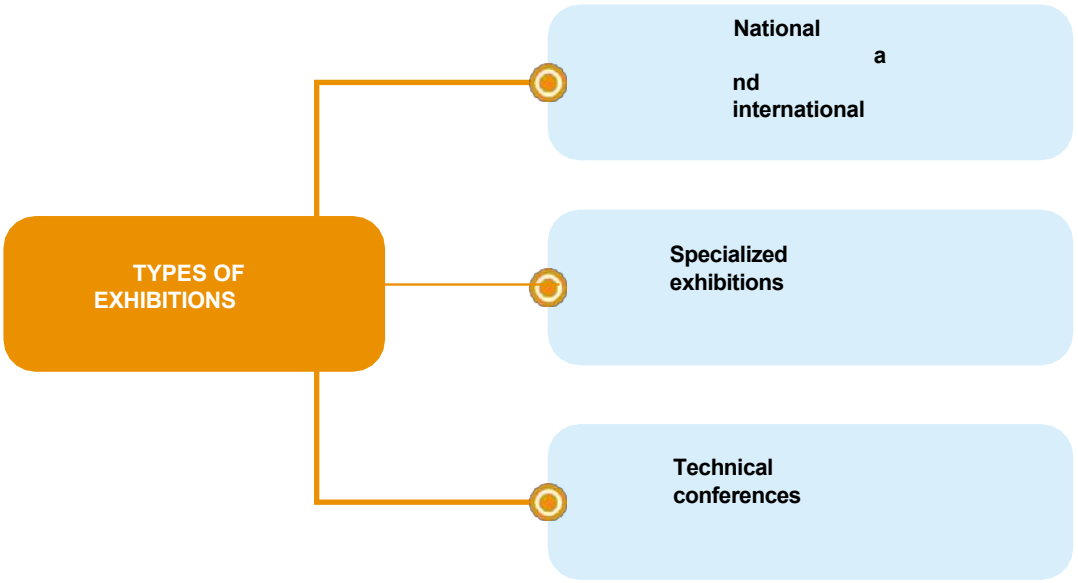
Given that there are numerous international promotion tools available, it is necessary to identify and select those most suitable for our company in the target market. In any case, “export promotion services do not automatically lead to an increase in the company’s sales” (Gençtürk and Kotabe, 2001).

We can make this selection based on the target audience—that is, general programs, sector-specific programs, or individual programs—depending on the company’s size, the type of assistance, or the form of market entry. In this section, we highlight two of the most important:

International Trade Fairs

International trade fairs are a valuable tool for marketing, promotion, sales, and market research. They serve as an exceptional commercial showcase and an important means of communication, as well as an excellent promotional tool, since they bring together supply and demand in a single location for several days, making them a highly effective way to explore and enter new markets. The company has the opportunity to showcase its products, publicize its prices, and introduce its sales team, among other things. The main advantages of participating in a trade show are:

- Customers come to see the company and listen.
- We can establish important contacts.
- We can highlight what is essential.
- It is a first direct presentation, a first point of contact.
- You can meet a maximum number of customers in a minimum amount of time, etc.



Since it is impossible to attend all trade shows, we need to select those relevant to our interests and prepare thoroughly for them, which is no easy task. It is advisable to create a checklist so that no detail is overlooked.

Some of the most important international trade fairs, which usually bring together the leading companies in the sector, are:

INTERNATIONAL TRADE	SECTOR	LOCATION
World Bulk Exhibition	Wine	Netherlands
Vinitaly	Wine	Italy
ProWine	Wine	China
Biofach	Organic products	Europe, also after continent
Foodex Japan	Food and Beverages	Mihama (Japan)
Alimentaria	International Exhibition of food and beverages and catering services	Barcelona (Spain)
Wop Dubai United United Arab Emirates	Fruits and vegetables	Dubai (Emirates)
Fruit Logística	Fresh produce, services and logistics	Berlin (Germany)
SIAL PARIS	Agri-food sector	Paris (France)
Anuga	Agri-food	Cologne (Germany)

Trade missions

Trade missions are typically organized with the aim of stimulating trade between countries. Official bodies seek to mobilize markets and companies to increase exports.

Trade missions take the form of coordinated visits supported by various institutions in the participating countries, allowing a group of companies from the same country or region to travel to a specific market, where they meet with distributors and potential customers. This provides an excellent opportunity for businesses seeking to enter new markets. They can also be organized by businesses as a private initiative.

These trade promotion activities include information sessions, seminars, factory visits, individual or face-to-face meetings, receptions, and official dinners, and they often receive public funding, which makes them even more attractive since it covers part of the costs.

Participation in a trade mission must be properly planned by selecting the activities and visit schedule of greatest interest to the company and preparing a comprehensive schedule of working meetings.

The benefits of participating in a trade mission include:

- Access to relevant and up-to-date information
- Establishing personal contacts
- Assessing opportunities
- Analysis of potential demand
- Understanding the market environment
- Possible conclusion of contracts

Types of trade missions

Generally, there are three types of trade missions: direct, reverse, and market prospecting.

DIRECT MISSIONS	Several companies belonging to the same sector or to several sectors travel to a country to explore its market and make personal contact with potential customers.
REVERSE TRADE MISSIONS	Potential customers travel to another country to visit the facilities of the companies involved.
MARKET PROSPECTING MISSIONS	These can be carried out directly by representatives of sectoral associations or organised by an organisation. They involve travelling to another country to gather first-hand information about its markets and identify opportunities in that specific market.

Participation in a trade mission must be carefully planned, by preselecting the activities of greatest interest to our company and organizing a work schedule that is as comprehensive as possible. The success of a mission will be measured by the volume of sales achieved, the sales potential identified, and the representation agreements discussed or concluded.

International Communication and Advertising

Implementing a successful communication strategy in each market involves considering and managing important factors, such as:

- **The language** must be accurately translated and must have the appropriate tone and style. We must avoid literal translations and strive to convey a message using the expressions and idioms used in that country, while also aiming to persuade through the message we communicate.
- Pay special attention **to the cultural aspects** of the target country. We must pay special attention to the cultural values of society, which are sometimes highly local in nature. Religion, for example, or humor can have a very strong impact on the audience in a particular country, but may be offensive in other markets.

- Pay attention to the **aesthetic** aspects of that market. We're referring here to design, symbols, colors, etc., because using an inappropriate symbol or a color with a certain connotation can change consumers' impression of our product or company. One example is the "OK" hand gesture, which is widely used in many countries but is considered racist in others.
- **The social structure** established in the target country. Social classes, the age of individuals, and family structure vary from country to country, so we must adapt the message and communication style to each market. The presence of women and the role they play in a given society influences us when we design the message to be conveyed or choose the means of communication.
- **Political and legal aspects** in each country. These have a significant influence on products subject to strict public controls, such as pharmaceuticals or alcoholic beverages. These limitations are an unavoidable factor in our communication strategy.

International advertising plays an important role in the global market. Here, we can distinguish between offline advertising—that is, advertising through traditional media outside the online environment—and online advertising, which uses the internet to reach the target audience.

When developing an international advertising strategy, we must take into account the objectives we are pursuing in each market when:

1. Selecting the appropriate media.
2. **Defining** the message we want to convey.
3. **We choose** the agency or agencies we will work with.
4. And the **budget** we have available.

We must be aware of the communication channels available to us, which vary from country to country, to ensure that our campaigns are as effective as possible. We will choose either mass media or more specialized channels to target a specific audience.

To this end, it will be very helpful to maintain close contact with local distributors and understand the penetration rate of each communication channel in the respective market.

Digital marketing plan: website, social media, smartphones, e-commerce, etc.

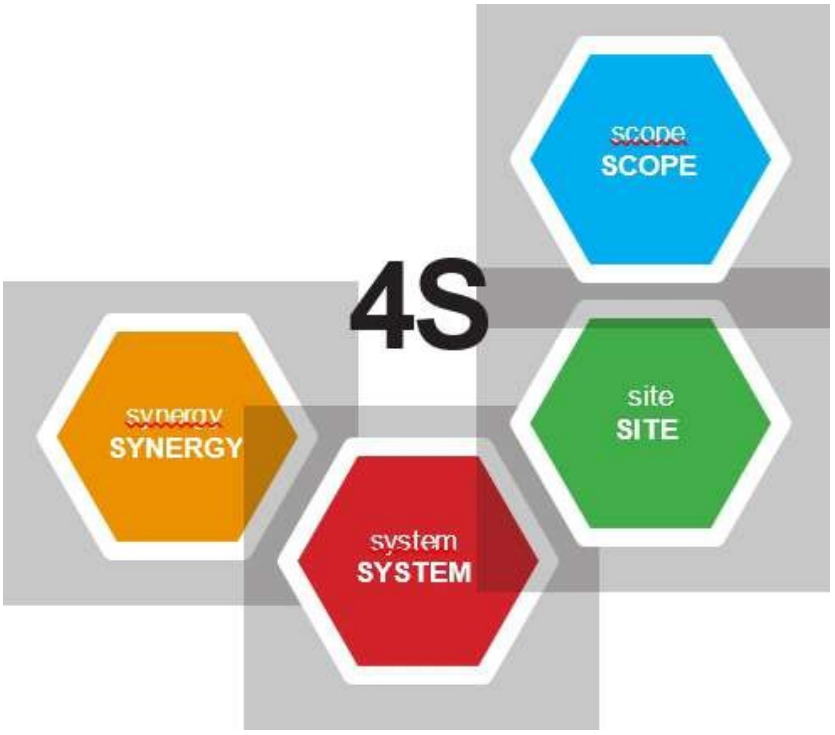
An online presence is no longer an option but a necessity for any company seeking to expand internationally. Therefore, it is essential to develop and implement a digital marketing plan, which requires the same process outlined in the international marketing plan.

The digital marketing plan is the document in which the company sets its online goals and strategies, incorporating each of the tools that the internet and new technologies make available to us.

In short, it involves applying traditional marketing principles and integrating them with new technologies, which are constantly evolving.

The 4S Method for the Web Marketing Plan

This is currently the most widely used methodology for developing an online marketing plan. It consists of the 4 S's, which are based on the following steps:



Purpose: This involves determining the strategic variables on which our online presence is based, as well as the marketing objectives and actions to be developed:

- Analysis of the current situation.
- Analysis of our target market.
- Setting objectives and strategies.

Website: Identifying the main operational characteristics of our website: structure, content, design, usability, and search engine optimization.

System: What technical elements are available to ensure our web presence: hardware, software, content management, and system maintenance.

Synergy: This involves leveraging our synergies by finding common ground between our offline and online strategies.

Useful tools for your digital marketing plan

CANVA	Canva is an online image editor that allows you to design high-quality visual creations. The power of this tool lies in the large number and variety of templates it offers. It is a very comprehensive and easy-to-use editor, with no need to download anything to start using it.
MOONBACK	It is a system based on recording short videos (no longer than 83 seconds) that can be sent through any channel, such as WhatsApp, LinkedIn, email, etc. We could say that Moonback is the TikTok for businesses.
HOOTSUIT	A platform that allows you to manage multiple Twitter, Facebook and other social media accounts at the same time. It also allows you to schedule tweets and shorten links.
SEMRUSH	This is software for SEO/SEM professionals that allows you to analyse and compare your data with that of your competitors. By searching their domains, you will receive information about their organic positioning and advertising expenditure.
MAILCHIMP	This is an email marketing service provider, offering an easy-to-use and accessible emailing platform.
ZOOM	This is a system for making video calls and holding virtual meetings, which you can do from your laptop, smartphone or tablet.
GOOGLE ANALYTICS	The ultimate web analytics tool, it provides aggregated information on website traffic based on audience, acquisition, behaviour and conversions on the website.

GOOGLE ADS	It is a Google service used to offer sponsored advertising to potential advertisers. Google Ads sponsored ads appear on the results page alongside natural or organic search results.
GOOGLE SEARCH CONSOLE	This is a free service offered by Google to help you monitor and maintain your website's presence in search results.
PINGDOM	This is a tool that allows you to find out the response time of your website, i.e. the time your user waits to see your website.
FULLSTORY	It provides anonymous statistics and analysis on the page so that we can optimise our website.
CLICKBANK	This website allows users to locate YouTubers, influencers, Instagrammers, bloggers, etc. who are interested in advertising your products.
BRANDBASTION	This is probably one of the best free monitoring tools, as it analyses information in greater depth and also measures influence in four categories: strength, sentiment, passion and reach.

New Information and Communication Technologies (ICT)

The growing importance of new technologies applied to international communication and promotion means that e-commerce continues to grow significantly and reach new sectors. Online sales, therefore, continue to advance in many markets, and numerous companies are now aware of the need to design multichannel strategies that seamlessly combine offline and online channels to achieve better results.

This highlights the importance of creating a corporate website that is sufficiently attractive, informative, and commercial, in the various languages of the consumers we target.

Among the key advantages of ICT for our digital marketing plan, we can highlight interactivity, segmentation capabilities, feedback, and, above all, the low cost it represents for the company. Furthermore, we should note that there are various systems for measuring results, some of which are even free, making these new technologies highly effective.

This new reality goes hand in hand with the multiple media and formats offered by both the internet and social media, which are constantly changing and adapting to new trends and needs:



On the other hand, the importance of smartphones as a means of constant interaction and communication has grown so much that many digital marketing campaigns are designed exclusively for this medium. Mobile marketing initiatives provide customers with everything they need and are typically defined as the use of wireless interactive tools that deliver personalized information to customers anytime and anywhere, creating value for all stakeholders.

Obviously, when designing its communication strategy, a company must be aware of the penetration rate of this technology in different markets.

One example is that, when implementing an SEO/SEM strategy, the language we use in voice searches is different—much more colloquial—than the language we use in text-based Google searches.

Social Media

Social media plays an increasingly important role. Having profiles on the main social media platforms and being active on them, being recommended by influencers, creating a blog, or having a YouTube channel with a certain number of subscribers are all goals of any digital marketing plan.

But be careful, because the social networks and search engines most widely used in your country may not be as popular in other countries and may even be unknown in certain international markets. For example, Google or Bing.

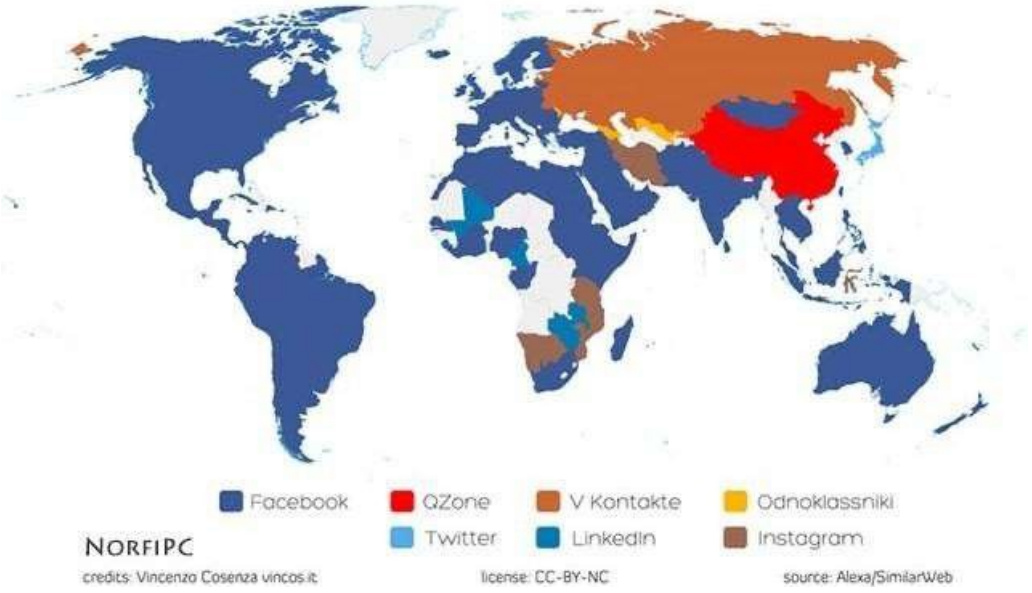
We are facing a new reality in which the opinions of people organized into virtual communities and the exchange of information among them are taking on unprecedented importance, surpassing the traditional role of corporate content. On the other hand, the so-called digital social revolution creates a need for businesses to project a positive image and maintain a good reputation on social media, while also increasing their presence on these platforms.

A presence on social media platforms such as Facebook, YouTube, or WhatsApp is a must for any company. However, it is important to conduct a study by country and, furthermore, by market segment, as a platform can have a very different influence on one market or another, as well as on certain groups of potential customers. Examples include Snapchat and TikTok.

facebook	FACEBOOK	It is the most widely used and therefore has the most users in the world. With over 2 billion active users, this website allows you to share text, photos and videos. Anyone with an email address can use it.
YouTube	YOUTUBE	It ranks second with 1.5 billion users, according to the study. By creating a profile, users can share videos on almost any topic. By creating videos with interesting content, you can generate a huge viral impact for your brand.
WhatsApp	WHATSAPP	It also has 1.3 billion users and is used to send and receive messages over the internet. In addition to text, you can send photos and videos individually and create broadcast groups, which is a very interesting communication tool.
facebook Messenger	FACEBOOK MESSENGER	This is the messaging service of the Facebook social network. This service was developed as Facebook Chat in 2008 and currently has 1.5 billion users.

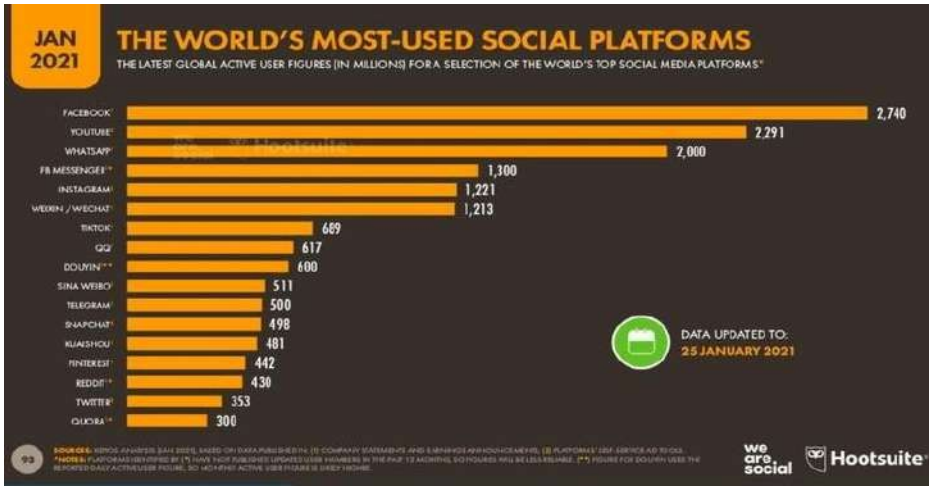
WECHAT	It competes directly with others such as WhatsApp and Line, already having more than 800 million users. One of the advantages that most users find in this application is that it respects their privacy.
QQ	This is the platform par excellence in China, where government censorship prevents access to other websites such as Facebook. It has just over 840 million users who already use this instant messaging service, in addition to other utilities, such as its own email service called QQMail, and a platform for writing blogs.
INSTAGRAM	This social network was purchased by Facebook and is used to share photos. It has a feature called Instagram Stories, which allows users to post photos and videos that disappear after 24 hours. The application now has 800 million users.
TUMBLR	This is a microblogging platform where you can create posts with photos, text, videos, links and audio. You can also follow and share content from other users or brands with whom you share interests. It is one of the most widely used platforms for disseminating content. It has more than 700 million users, according to the study.
OZONE	A social network created in 2005 and available only in Chinese. Its main users are from China, but there are also some from Kazakhstan and Russia. It has over 500 million users.
LINKEDIN	Although it is a social network geared towards the professional sphere, it remains high in the rankings and stays in the top 10 with 467 million users. It is the largest professional network in the world and currently the most successful in this sector. Furthermore, it does not appear to be on the wrong track, as it is constantly releasing new features that maintain user loyalty.
WEIBO	It is a social network used in China that has similar features to Facebook and Twitter. Weibo means microblog. It was founded by Sina Weibo in 2009. It has around 400 million users.
KONTAKTE	Kontakte is a Russian social network known internationally as VK. It is the Russian Facebook and currently has 97 million users.

Popularity of Social Media Platforms (2017)



Social performance metrics allow you to assess the degree to which the company's established goals have been met. This data is used to assess the impact of social media activity on marketing campaigns and company revenue. Social performance metrics not only help evaluate the extent to which social media goals are being met, but also provide insights into how the campaign can be adjusted if necessary.

Similarly, social metrics can provide us with a wealth of information about our audience, revealing the types of content or topics that generate the most interest, as well as helping us determine whether we are successfully building our brand image or engaging our audience. Likes, follower counts, and comments on social media are good examples of social metrics.



Marketplace

Online marketplaces are large online shopping centers where products from many brands are offered and where you can find any product, anytime and anywhere.

Online marketplaces operate in a simple, efficient, and cost-effective manner. The goal is to facilitate buying and selling for both customers and sellers.

The main advantages are:

1. These online marketplaces act as intermediaries, offering buyers the full range of products they have in stock, facilitating sellers' activities, and ensuring transaction security.
2. You can view offers from multiple sellers on the same website. This makes it easier to compare and choose the best price.
3. It is synonymous with collaboration. By promoting their products on an online marketplace, companies—whether large or small—gain more visibility and increase their sales.
4. The concept is the same as what explains the success of a physical store in a shopping mall. People may walk in to buy a product from another store, but they see the products in your window and end up buying from you as well.

Examples of such platforms include:

Amazon: Probably the most famous online marketplace in the world and the largest in many countries.

eBay: The great pioneer of the classic auction-based buying and selling system, although it also includes fixed-price sales.

Alibaba: The largest e-commerce platform in the Asian market, which in turn includes other platforms such as AliExpress. Alibaba's main advantage is that it does not charge commissions or hidden fees.

AliExpress: It has become one of the most talked-about Asian marketplaces thanks to its launch in Europe, with physical stores in Spain.

Etsy: This is the largest marketplace for handmade products, although vintage items are also sold there.

8.2.3.3 ACTION PLAN

How will we get there? "A goal without a plan is just a wish" Antoine de Saint-Exupéry

As mentioned in the previous sections, there are typically two types of marketing: strategic marketing, which focuses on the long term, and operational marketing, which focuses on the short term and represents the tactical side of marketing, responsible for implementing strategies. This is the perfect complement to any marketing plan.

Therefore, we define the company's action plan as an essential part of the strategic planning process, a management tool that organizes the actions needed to achieve our objectives by topic.

The action plan is laid out on paper and aims to break down the company's main objective into tasks organized chronologically and assigned to each responsible person, within a specific timeframe and budget.

The purpose of an action plan is to transform a goal into specific objectives, and those into reality, and its greatest enemy is a lack of specificity.

To channel our goals, we need an action plan, but that is not enough. To achieve good results, our plan must be well-designed and understood.

Here are a few questions that can help us be more precise when developing an action plan:

- What do you want to achieve?
- What will you do to achieve this goal?
- Who will support you along the way?
- When will you do it?
- How will you know when you've reached your goal?

The most complex action plan is often the one that works the worst.

It's one thing to be specific when defining our goals and the steps of our action plan; it's quite another to complicate it with unnecessary steps.

Structure of the action plan

- Detailed description of the goal to be achieved
- Steps to follow to achieve the goal
- The team responsible for each task
- Deadline for completing each task
- Evaluation and monitoring measures

The benefits of developing an action plan

Putting our tasks down on paper may seem like a waste of time at first glance, but dedicating the necessary time to develop a clear and structured action plan offers benefits such as:

- It establishes a clear direction by precisely defining the steps the company must take, when they must be taken, and the specific actions that must be undertaken.
- It fosters motivation and commitment to the project; by setting written, detailed objectives, greater team engagement is achieved.
- It enables comprehensive monitoring of the project.
- It facilitates prioritizing tasks based on the effort required for each and the impact they have.

So, when the time comes to implement the strategies, we'll need to assess our current resources and those we'll need in the future. An important decision to make, for example, would be to determine whether we need a national or local team in each market, or whether we should keep our human resources centralized in the country.

How to develop your action plan?

To make your action plan as structured as possible, you should follow these steps:

1. FINAL OBJECTIVE: What do you want to achieve?

There are numerous management theories, which vary depending on each company, including different models for developing an effective action plan. Some of them start directly with setting objectives, but it is advisable to begin by defining where we are and where we want to go. If we do not do this, we risk setting goals that do not align with what we truly want in the long term. We must outline and write down the goal we want to achieve; if we do not have a clear vision of what we want to accomplish, we are doomed to fail.

Once we have defined our ultimate goal—that is, the direction we want to go in, in short, the vision of our cooperative—we will need to establish the secondary goals that will help us get there.

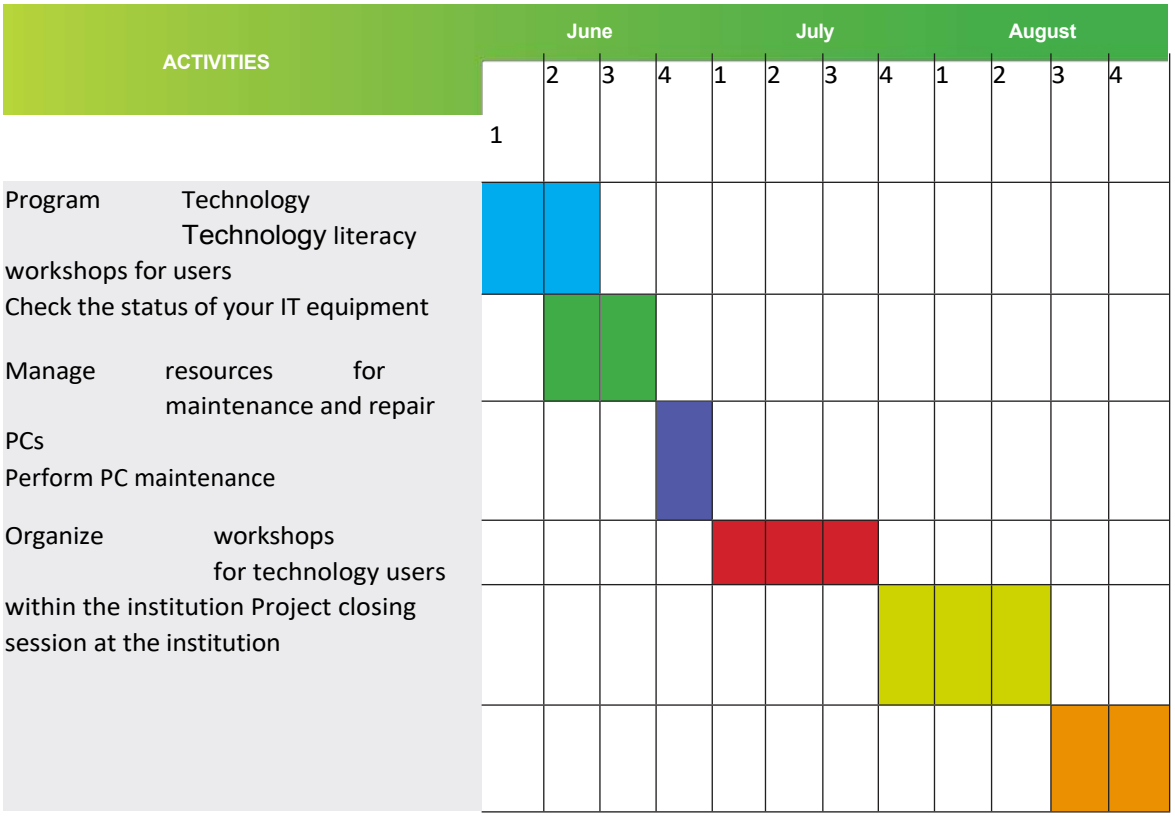
The formula we've already seen, which follows the SMART criteria (Specific, Measurable, Achievable, Relevant, Time-bound), is an essential tool for achieving our objectives, as well as our ultimate goal. Let's try to devote the necessary time to this exercise and, above all, think big.

2. TASKS TO BE COMPLETED: What will you do to achieve this goal?

The next step is to determine the actions to be taken and the tasks to be assigned to achieve each of the objectives. These should be as specific and detailed as possible and reflect each necessary step.

It's important to make a list of every action, every resource needed, the people to contact, the information you need to obtain, etc. There are many useful tools for

this purpose: Gantt charts in Excel or paid tools that also have free versions, such as Monday.com, Wrike, or Trello.



3. TEAM: Who will be supporting you along the way?

It is extremely important to be as precise as possible in this part of the plan, assigning responsibility for each task and clearly communicating how it should be carried out, to ensure that it is successfully completed. We must be as descriptive as possible and leave no doubt as to who is responsible and what degree of responsibility they have in carrying it out. It makes sense to involve the staff who are drafting the action plan as ultimately responsible.

4. TIMELINE: When will you do it?

It's time to reorganize the list by prioritizing the tasks. You may need to prioritize certain steps, as they can block other sub-steps.

Set deadlines and make sure they are realistic. Talk to the person responsible for the task to find out what their capacity is before setting deadlines.

A very useful system that helps us set priorities is Richard N. Bolles' "Instant Priorities."

It allows you to set up to ten strategic objectives, which should be evaluated by our team members using the form below.

8.2.3.4 MONITORING THE INTERNATIONAL MARKETING PLAN

How do we know if we're successful?

"An ounce of results is worth more than a ton of promises" – Mae West

Monitoring means carefully examining something to verify a specific aspect. We could say that monitoring the marketing plan is the final step of our plan, since its proper functioning and the achievement of our objectives depend on monitoring.

So, once our action plan has been implemented, we should ask ourselves:

- Are the tasks you planned being completed on time?
- Are the objectives being met?

To properly monitor our international marketing plan, we must review the results achieved, while analyzing how we managed to meet our objectives and the mistakes we made during execution, in order to take appropriate corrective measures and continue with our marketing plan.

There are three fundamental control mechanisms in the marketing plan: approval of control methods, direct and indirect supervision, and analysis of information to determine corrective actions.

As these control measures are implemented, they must be reflected in detailed reports on the progress of short-, medium-, and long-term activities, while motivating the team involved, reporting on the success we achieve, and adjusting our plan with the necessary corrective actions.

The best way to ensure that the marketing plan is implemented as rigorously as possible and achieves a higher level of effectiveness is to establish annual actions and monitor them monthly. This will give us the flexibility to avoid any deviation from the objectives set out in the plan.

International Models for Marketing Plan Control

According to Philip Kotler, there are four types of monitoring that allow us to measure the results of the actions implemented.

1. Annual plan control

This involves conducting financial analyses, sales analyses, market share analyses, analyses of sales reports by campaign, and consumer satisfaction analyses. Responsibility for carrying out this type of control lies with the management team and middle management.

2. Profitability control

At this stage, we analyze profitability by product, territory, customer base, segment, channel, and order volume. This will yield the final result indicating whether the company is generating revenue or losses. This function is typically performed by the marketing controller or marketing auditor, a professional with expertise in both finance and marketing.

3. Efficiency Control

Line and administrative staff are responsible for efficiency control. Their roles involve measuring the effectiveness of spending while evaluating the sales force, advertising, promotion, and distribution.

4. Strategic control

Senior management is responsible for conducting this type of control, with the support of the marketing auditor. Among other factors, they analyze whether the company is taking advantage of all the opportunities offered by the specific market and measure the effectiveness of the international marketing plan.

Therefore, we must be able to accurately assess the progress of our international marketing plan so that we can make the best possible decision at any given time. This involves determining how we will measure results. To do this, it is important for the action plan to define the key performance indicators (KPIs) that best help you understand the progress of your project at any given time. These are the metric variables, the strategic units of measurement within our company that influence the cooperative's profitability.

How do you develop a KPI?

If this is the first time we need to design a KPI, we'll need to ask ourselves a few questions about the factors affecting our business.

- What will we quantify?
- Why is this benchmark being measured?
- Is it an important factor for our company?
- Is it relevant for tracking the results of any specific objective?
- Who is responsible for monitoring this benchmark?
- How often should it be reviewed?

These questions will help us identify and define the most important key performance indicators (KPIs) for the company, which we will monitor and subsequently use to make the appropriate decisions.

First, we need to define the specific objective in a clear and simple way so that it is fully understood by the entire team. What measurement formula will we use? Applying mathematical logic, we will try to identify how we will obtain the data and what unit of measurement we will assign to it, for example, a percentage.

The next step is to decide how often we will measure it—monthly, quarterly, etc.—to quantify the results at a specific date we estimate.

Who is responsible for achieving each objective, and which department or staff members will be directly involved in meeting the objectives?

In this way, we can derive real and tangible metrics from each of them, which provide high value.

We must be aware that for each project, we should establish a specific key performance indicator (KPI) that depends on the industry, the established strategy, or the field of activity, for example, even though there are common objectives for each type. Thus, there are performance indicators for social media, financial indicators, and sales indicators, to name just a few.

8.2.4. GLOSSARY

Franchise Agreement: A company (franchisor) grants another company (franchisee) the right to use a specific system for marketing certain products and/or services in exchange for financial compensation, with the franchisee being required to comply with requirements regarding commercial premises, usage guidelines, and exclusivity.

Commercial agent: A company or independent professional acting as an intermediary between the brand and the distributor.

SWOT Analysis: Also known as SWOT analysis, this is a procedure that examines a company's strengths, weaknesses, opportunities, and threats. This is where the name comes from.

Arbitration: A private dispute resolution procedure in which the parties submit to the binding decision of an arbitrator or an arbitral tribunal. This is independent of the judicial system, so the explicit consent of the parties is required.

Customer service: A set of interconnected actions undertaken by a company to transform its customers from merely satisfied to long-term loyal customers.

Benchmarking: Comparing how leading companies conduct various business operations, regardless of the sector they belong to, and copying those procedures, adapting them to our reality, and striving to improve ourselves.

Business to Business (B2B): This is the acronym for business to business, which refers to business models in which the transaction of goods or the provision of services takes place between two companies (private or otherwise). Therefore, it primarily refers to wholesale trade, although it can also refer to the provision of services and the consumption of content.

Business to Consumer (B2C): Refers to the process of selling a company's products or services directly to the end consumer. These types of companies can be referred to as B2C companies.

Distribution channel: The means used to deliver products to the end consumer.

Current customers: These are customers who purchase from the company on a regular basis. These customers generate sales volume and, therefore, the source of revenue the company currently receives. They also secure market share.

Potential customers: These are customers who do not currently buy from the company but are classified as potential future customers because they have both the desire and the purchasing power to do so. These customers generate future sales volume and can therefore be considered a source of future revenue.

Competition: Rivalry between companies or products seeking to attract as many customers as possible.

International contract: An agreement between two or more parties who undertake to comply with certain obligations and rights, which also involves elements of international law.

Culture: The set of enduring values, meanings, and beliefs that characterize national, ethnic, or other groups and guide their behavior.

Market share: The proportion of the market that consumes a particular company's products or services.

Demand: The quantity of goods and services that consumers are willing to purchase to satisfy their needs at market-determined prices.

Demography: The science that studies a group of people and analyzes its size, growth, and characteristics at a given time or over a specific period.

Diversification: The expansion of a company's activities into new markets, products, or customers.

Economies of scale: A reduction in unit costs resulting from an increase in the number of units produced; in other words, costs per unit decrease as more units are produced.

Efficiency: A concept referring to the objectives set in any type of process.

Globalization: Economic, technological, social, cultural, political, and environmental changes among different countries around the world.

INCOTERMS: International Commercial Terms. These were published in 1936 by the International Chamber of Commerce to interpret the terms used in international trade. They indicate where the parties' responsibilities begin and end.

Economic indicators: A set of figures that provide information and allow for forecasting a country's economic development. This facilitates comparative analysis across different time periods.

Interests: The set of needs, concerns, objectives, and hopes that underlie a negotiation.

Internationalization: The set of activities and strategies implemented by a company in search of new markets abroad.

Bidding: Procedures for awarding public contracts, through which public sector bodies or entities announce their intention to enter into such contracts, establishing a set of conditions and criteria for selecting the winning bidder or bidders, so that companies or contractors (bidders) can submit their bids.

Margin: The amount of profit a company earns after selling goods and providing services, once all costs have been deducted.

Marketing: This is an English term; in Spanish it is called “mercadotécnica” and can be defined as a discipline that consists of selecting, attracting, and retaining customers, with the aim of satisfying their needs by adapting the product or service to them, involving both the company’s behavior and that of consumers.

Direct marketing: This tool selectively uses personalized communication channels aimed at generating interpersonal communication with customers to establish and maintain relationships over time.

Globalization: The increasing integration of societies and national economies from different parts of the world, driven by the interaction between technological advances, changes in trade, and investment policy.

Market niche: This consists of a homogeneous group of consumers with similar characteristics whose needs are not fully met, thus presenting a good business opportunity.

Marketing plan: a document that outlines all marketing-related activities, detailing the strategies and tactics for achieving previously established objectives.

PESTEL: A tool used in strategic analysis that defines a company’s environment by analyzing a set of external factors.

Productivity: A term that relates the result obtained to the resources or factors used in that process. An improvement in productivity occurs when the same result is achieved using fewer resources or when a greater result is achieved using the same amount of factors.

Substitute product: A product that can satisfy the same need as another. Thus, in the eyes of the consumer, the substitute good can replace the function of another, regardless of whether or not they are similar in terms of characteristics or price. Substitute services behave in the same way, so, for the sake of simplicity, we will ignore the difference between goods and services.

Promotion: A set of activities that communicate with the target audience and seek to influence them to purchase the products or services offered by the company.

Advertising: An impersonal, paid mass communication technique that disseminates messages to present ideas and/or encourage the purchase or consumption of a specific product.

Social media: social networks. This is a broad term that includes social networks; therefore, social media refers to all the networks and means of communication that have emerged in recent years alongside the internet. It allows users with the same motivations and goals to establish connections and relationships with one another.

ICT: Information and Communication Technologies. ICT refers to the range of technologies currently developed to enable more efficient information sharing and communication.

Technology transfer: Agreements through which a set of knowledge is transferred, regardless of whether it is protected by any legal system.

Retail: Also known as retail trade, this is the commercial activity aimed at the end consumers of a product or service. It contrasts with the concept of wholesale, which is primarily aimed at intermediate consumption.

8.2.5 WEBGRAPHY

OFFICIAL BODIES

ipex.es
aeade.org
camara.es
camaracr.org
datacomex.comercio.es
cofides.es
cesce.es/es
extenda.es
ico.es
fepex.es
agenciatributaria.es
feteia.org

TOOLS

semrush.com
xe.com/es/currencyconverter
google.com/forms/about
analytics.google.com/analytics/web/provision/#/provision
canva.com/es_es
clickbank.com
zoom.us
hootsuite.com/es
mailchimp.com
moonback.me/home/es
brandbastion.com

RELEVANT INFORMATION

camara.es/comercio-exterior/plan-de-expansion-internacional-para-pymes
redalyc.org/pdf/174/17421345002.pdf
robertoespinosa.es
eae.es
portalferias.com
trade.ec.europa.eu/access-to-markets/en/home
marketing4ecommerce.net/which-social-networks-have-the-most-users-world-ranking/
juanmerodio.com
alimarket.es
inboundcycle.com
ine.es
cis.es european school of excellence.com
esgerencia.com/pdf/blogmkt/diccionario.pdf
marketing-xxi-com
promonegocios.net
expansion.com
mailxmail.com
tristanelosegui.com
tekdi.education
puromarketing.com

CERTIFICATIONS

globalgap.org
labmicrobac.com
normas-iso.com/brc-certification-global-food-safety
ifs-certification.com

8.2.6 LIST OF REFERENCE ENTITIES

Government agencies and administrations offer programs and support initiatives to assist Spanish companies in their internationalization efforts and/or in strengthening their presence abroad.

National Institutions

Spanish Institute for Foreign Trade (ICEX)

This is a national public entity whose mission is to promote the internationalization of Spanish companies.

It provides its services through a network of 31 provincial and territorial trade offices in Spain and nearly 100 economic and trade offices abroad. It also has 13 business centers abroad, which offer Spanish companies temporary infrastructure as incubators for internationalization.

ICEX's activities range from promoting Spain as a country brand, implementing sectoral plans (promoting a product offered by multiple companies abroad), or tailored actions for specific companies, to organizing trade fairs abroad, direct or reverse missions, point-of-sale promotions, and initiatives to inform and disseminate information on foreign trade. The main initiatives and support programs offered by ICEX include the following:

PROGRAM	OBJECTIVE	MAIN FEATURES
FOREIGN FOREIGN	Passport for travel is tool management management training Information guide for Spanish companies that calculate the export price of their product, analyze the attractiveness of a market, or make forecasts in international markets.	The most important added value of the "Passport to Foreign Markets" program consists of the 60 online management tools currently available, which allow users, among other things, to develop their wish to enter or consolidate their position in international markets, economic and financial support for their investment abroad.
ICEX NEXT	Promotion of **PROGRAM** abroad.	internationalization; Specialized counseling, at origin and destination; and small and medium-sized and/or co-financing of market research expenses, hiring of supporting the strengthening of their presence in human resources for the International and promotion abroad.

Other support initiatives/programs:

Club Pipe-Next services, ICEX IMPACT+, ICEX Large-Scale Distribution, ICEX CONECTA, ICEX Consolida, ICEX Target USA, ICEX Sourcing, and ICEX Integra.

For more information on the services and support offered by ICEX, please visit the institution's website: www.icex.es

Official Credit Institute (ICO)

This is a holding company for Spain's official credit institutions that manages certain lines of credit for exports in the field of foreign trade.

More information about the financial support offered by ICO can be found at: www.ico.es

Spanish Development Finance Company (COFIDES)

This is a mixed-capital joint-stock company whose purpose is to provide medium- and long-term financing for viable private investment projects abroad.

More information on the financing instruments offered by COFIDES can be found at: www.cofides.es

Spanish Export Credit Insurance Company (CESCE)

A public-private joint venture specializing in covering the risk of non-payment for domestic and foreign sales by Spanish companies.

For more detailed information on the policies offered by CESCE and how to apply for them, please visit the company's website: www.cesce.es

Chambers of Commerce, Industry, Services, and Navigation

Chambers of Commerce are public-law legal entities that provide various services to businesses within their jurisdiction. Some of these services are aimed at promoting the internationalization of Spanish companies.

More information about the support offered by chambers of commerce can be found on the website of the Spanish Chamber of Commerce: www.camara.es

In addition, the Spanish Chamber of Commerce offers the Xpande Plan for the international expansion SMEs.

Link: https://www.camara.es/comercio-exterior/plan-de-expansion-internacional-para-py-mes



España Expansión Exterior

España, Expansión Exterior is a state-owned commercial company that operates in two areas: (a) advising private companies on their internationalization process and
(b) providing technical services (commercial and financial consulting) to the public administration.

More institutional information is available at: www.expansionexterior.es