Case Study Tomato Colombia

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Bio-inputs and their role for sustainable agriculture

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President

Asobiocol
Asociación Colombiana de Bioinsumos

Asobiocol

General objectives

- Raise awareness on issues such as safety and sustainability
- Agro Conscious Network - For a true green revolution
- To reach the entire agricultural sector to generate organic products seeking a healthy life.
- Give Asobiocol the differentiating recognition in the agricultural environment. Ex: achieve results with farmers to show and generate knowledge spaces

Asobiocol

General objectives

- Develop projects endorsed by scientific entities that allow us to demonstrate the benefits of using bio-inputs.
- Promote an ethical and legal culture throughout the chain of production and use of bio-inputs.

Asobiocol and its role

- Created in 2017 with the aim of giving visibility and sustainability to the Bio-inputs sector in Colombia.
- Member of BioProtection Global.
- Strategic Alliances:

BioProtection Global

corpohass Colombia

ceniflores
Centro de Innovación de la Floricultura Colombiana

Coalición para la Alimentación y uso del Suelo

ANLA
AUTORIDAD NACIONAL DE LICENCIAS AMBIENTALES

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How to achieve a more sustainable agriculture through bio-inputs

- Working to generate standards according to the type of technologies required by the market.
- Increasing in quantity and quality the human capital dedicated to this industry (Awareness and trust generation).
- Advancing in the protection of knowledge of new technologies

How to achieve a more sustainable agriculture through bio-inputs

- Researching and developing biological solutions for a more sustainable agriculture.
- Generating synergies between the different regulatory entities to improve the speeding up of the registration process.
- Increasing the laboratories and control tests registered with the regulatory entity.

How to achieve a more sustainable agriculture through bio-inputs

- Transferring and promoting the adoption of the use of bio-inputs in different crops (local consumption and export).
- Harmonizing standards with target countries.
- Advancing in the control of informality and piracy

Bio inputs clasification - ICA

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Bio inputs concepts in our regulation

Biofertilizers:

- **Biofertilizer:** Product made from organic materials obtained from composting processes, to which viable beneficial microorganisms have been added that are guaranteed in the composition of the product and that are used to improve the biological and / or physicochemical characteristics of the soil, degrade organic matter or promote plant growth and that can guarantee organic carbon.

- **Biological inoculant:** Product that contains viable microorganisms capable of acting, directly or indirectly, on all or part of the plants, increasing their productivity, regardless of their hormonal or stimulant value; these products will be able to guarantee organic carbon. Its mechanisms of action can be nitrogen fixation, phosphorus solubilization, nutrient absorption, degradation of organic matter or promotion of plant growth.

Bio inputs concepts in our regulation

Bio controllers:

- **Biochemical Products:** Semio-chemicals and naturally occurring substances, not subjected to chemical synthesis, which act as pest controllers, such as diatomaceous earth, oils of vegetable origin, orthoboric acid from mines, as well as secondary metabolites from the production of microorganisms that are fully identified, or chemically synthesized substances that must be structurally identical to a natural chemical substance and that allow the control of pests by modifying their behavior, such as pheromones, allomones and kairomones

Bio inputs concepts in our regulation

Bio controllers:

- **Microbial agent for pest control:** Product formulated from microorganisms such as bacteria, fungi, protozoa or viable viruses capable of acting through biological mechanisms to control pests.
- **Macroorganisms:** Organisms that by their nature seek out and attack pests, including entomopathogenic nematodes, parasitoids or predators.
- **Plant extract:** Product of one or more components found in plants and obtained by exposing these or their parts to processes such as pressing, grinding, crushing, distillation and / or extraction and that acts as a pest control.

Key crops and pests in Colombia

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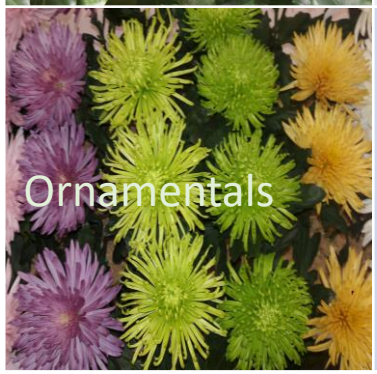
Key crops and main pests

Crops	Key pests	Conventional area (%)	Organic area (%)
 Avocado	• Colletotrichum • Trips • Monalonium • Bruggmanniella perseae • Ants • Bugs	98	2
 Coffee	• Hemileia vastratix • Leaf miner • Hypothenemus hampei	95	5
 Ornamentals	• Botrytis • Powdery mildew • Downy mildew • White rust • Trips • Acarus	98	2

Key crops and main pests

Crops	Key Pests	Conventional area (%)	Organic area (%)
 Solanaceas	• Fusarium • Botrytis • Bacteria • White fly • Nematodes	98	2
 Potatoes	• Soil diseases • Phytophthora • Alternaria • Tecia solanivora	99	1
 Banana	• Sigatoka • Crown rot • Fusarium	90	10

Key crops and main pests

Crops	Key Pests	Conventional area (%)	Organic area (%)
	• Gaeumannomyces • Rhizoctonia • Grain complex • Hydrellia wirthi • Spodoptera frugiperda	98	2

- Mayor crops mainly for local consumption (rice, potatoes and veggies)
- Export cross demanding less use of agrochemicals – MRL's (banana, avocado, etc.)

Bio inputs
Market evolution

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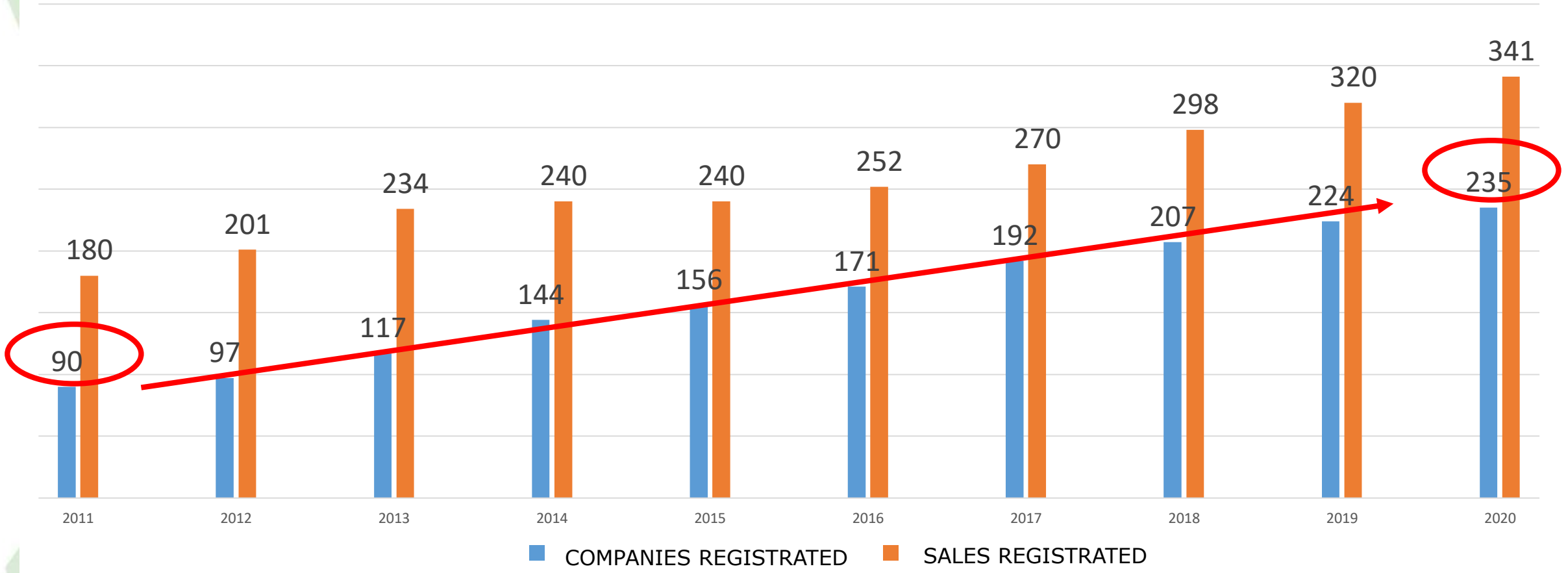
Companies and bio products registreed



Year 2011 to 2020 (Source: ICA)

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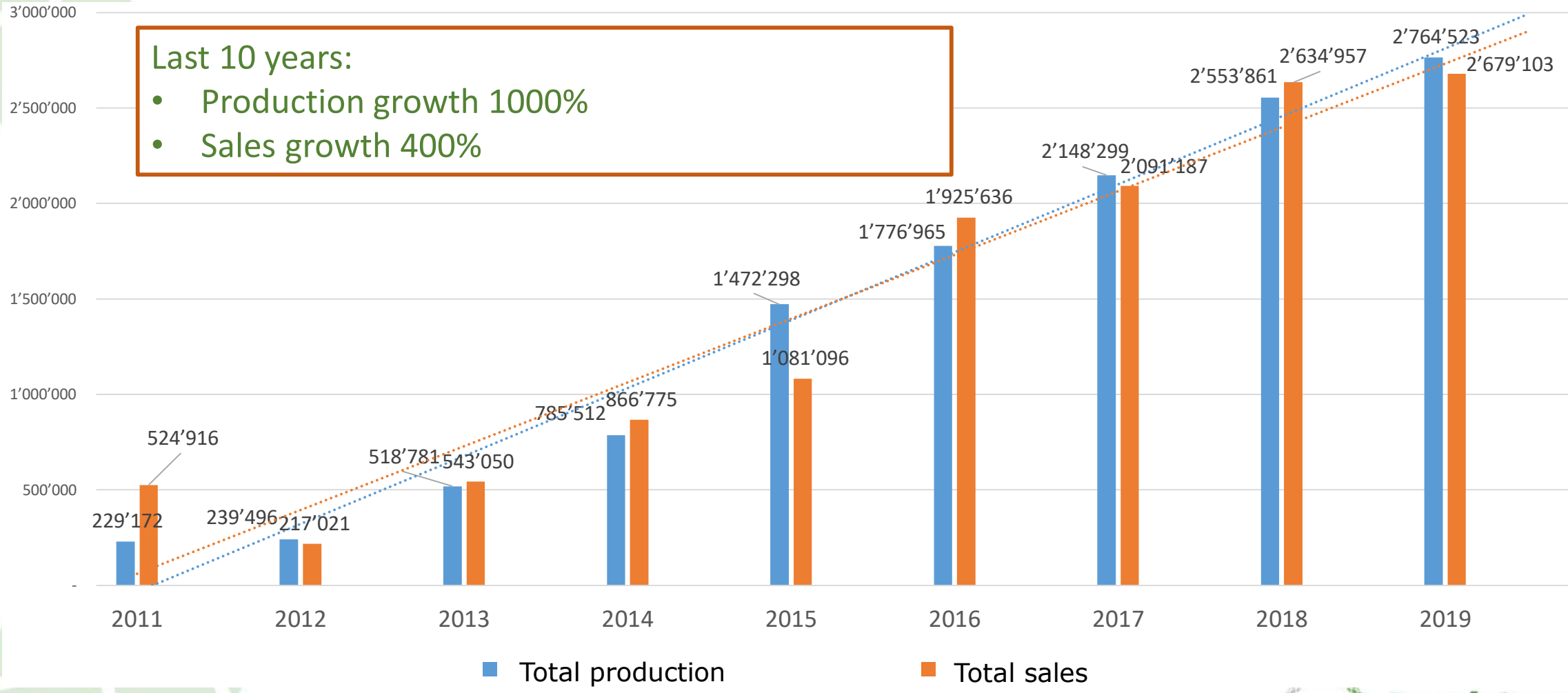
Production and sales statisitics (KG/ LT)



Year 2011 to 2020 (Source: ICA)

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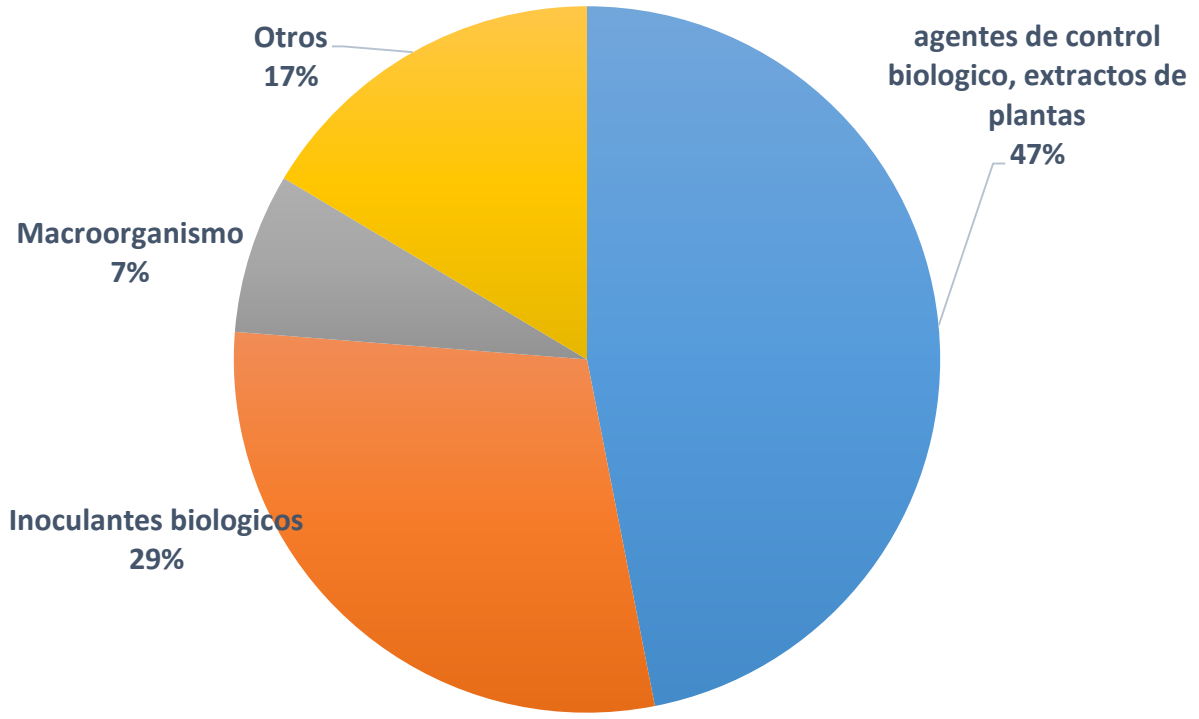
Participación por tipo de bioinsumo

Porcentaje – Fuente ICA



Year 2011 to 2020 (Source: ICA)

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“From Soil to table” Tomato Project

Camilo Villalobos
Board member
Asobiocol
Asociación Colombiana de Bioinsumos

Tomato project overview

Greenhouse production

- **Tomato greenhouse production** is limited to approx. 3.000 Has in Colombia
- **Mostly of growers** have less than 3 Has
- **Main production issues are** Soil disbalance and disease , nematode, White fly, lepidoptera, bacteria, Botrytis, Anthracnose.
- **More of 95% of area** is produced with high pressure of agrochemical and intensive chemical fertilization
- **Cost of production** per plant **USD 1 ,** Fresh tomato per kg **USD 0,25**
- **Chemical Residues, low margins and lack of sustainable crops** are serious concerns for farmers

Tomato project challenges

- Define a BIO phytosanitary management program in tomato with our associated partners
- Validate management program under greenhouse cojditions seeking to generate value offer BIO in the crop.
- Decrease the chemical load and residues in greenhouse tomato.
- Find other added values for the farmer and the environment
- Define the way to influence the local agricultural community, participating companies, institutions and research entities to achieve scaling real and scalable value proposition to other crops and territories.

Tomato project Key Steps

- Creation of Phytosanitary committee inside association defining preventative portfolio for Soil, pest & disease management
- Socialization and clear definition with farmers of project and objectives with 2 different farming conditions and farmers profile
- Project implementation with third party in the field but closely supervised by Asobiocol
- Permanent follow up and feedback from farmers and committee.
- Laboratory measurement for soil health , nutrition, diseases
- Continues learning and improvement

Tomato project main results

FARMER´S MANAGEMENT

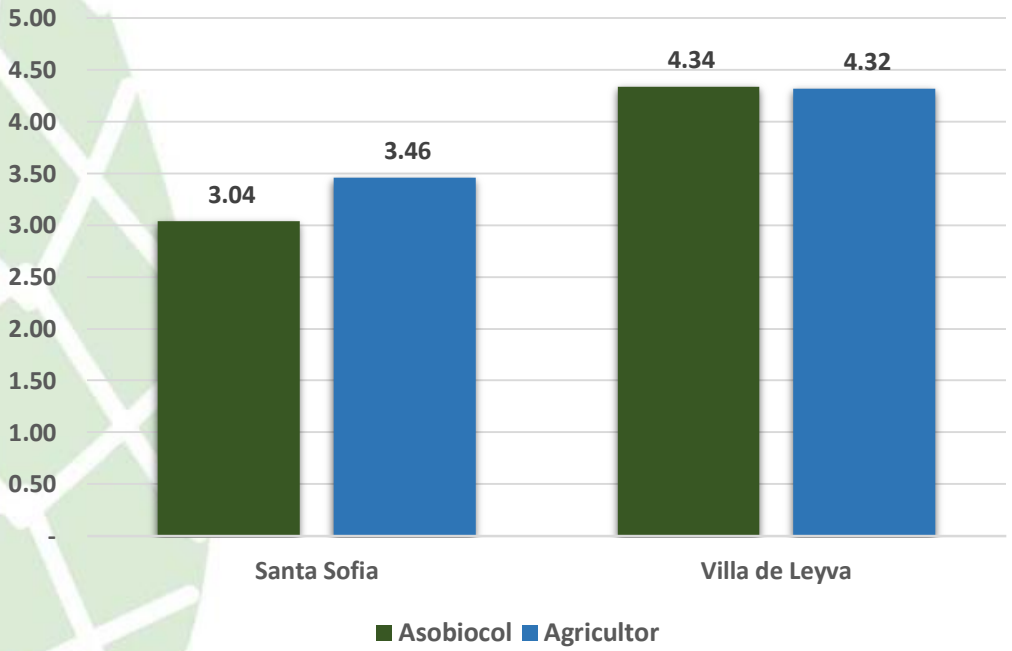
- ✓ Soil disease/nematode issues
- ✓ Normal crop development
- ✓ Usage of cat I,II,II crop protection products sprayed weekly
- ✓ Standard flowering and losses due Botrytis
- ✓ Standar tomato size
- ✓ Less shelf life
- ✓ Residues in the fruit

BIO BASED MANAGEMENT

- ✓ NO soil of nematode issues
- ✓ Improved crop development
- ✓ Preventative BIO portfolio with weekly sprayings
- ✓ Early flowering and better apparition of fruits
- ✓ Better size & quality of tomato
- ✓ Improved shelf life – 8 days
- ✓ No residues

Tomato project results: Yield & Quality

YIELD



QUALITY

Tomato project results

- Asobiocol´s program allowed management of pests and diseases achieving productivity similar to traditional management, even when the cost of production was higher.
- To implement bio-rational management, proper cultural management of tomato cultivation is key.
- Organic amendments and inoculation of beneficial microorganisms regulate populations of soil pathogens.
- Better fruit quality was obtained: organoleptic and post-harvest life with Biorational management

Tomato project KSF & Learnings

- Agreements with participants
- Creation of technical committee, portfolio review and recommendations
- Physical chemical + microbiological analysis of initial and final soils: nematode problems, bacteria, fusarium and nutritional imbalances
- Recommend nutritional management plan
- Management of the process of residue analysis in harvest
- Cost/benefit management
- Bringing marketing chains closer : “clean and healthy food”

Tomato project Next Steps

- Implement and scale comparative biorational experience together with farmers who want to adopt the technology openly with association follow up
- Focus on harvest quality: Measure residues, post-harvest and organoleptic life specifically to achieve differential harvest target market prices.
- Attract and link other actors in the agri-food chain to promote the use of bio rational and improve income for the farmer
- Monitor bio-rational management over time to see medium and short-term results in order to see regenerative effects on soil and environment.
- Define targeted communication strategy for outreach and adoption.

We made it possible WORKING togheter as ONE for the Farmer!!!

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Thanks
Q&A

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