

# Botanical Biopesticides:

A Paradigm Shifting Biosolution  
for Sustainable Crop Protection

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ABIM CONFERENCE

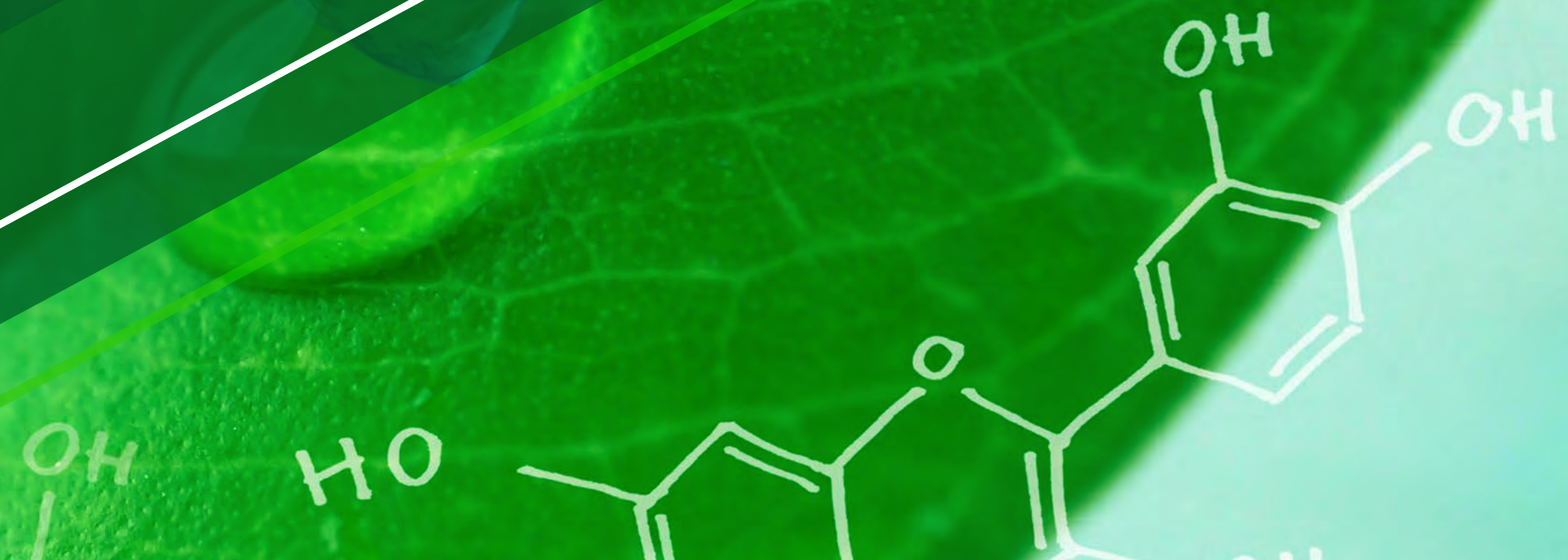
October 25, 2016

**Ecoflora Agro**



# Premier Botanical **SOLUTIONS**

for sustainable  
crop protection





# Our Company

Certified



Corporation<sup>®</sup>

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[bcorporation.net](http://bcorporation.net)



**We believe**  
in healthy  
and sustainable  
**agriculture**





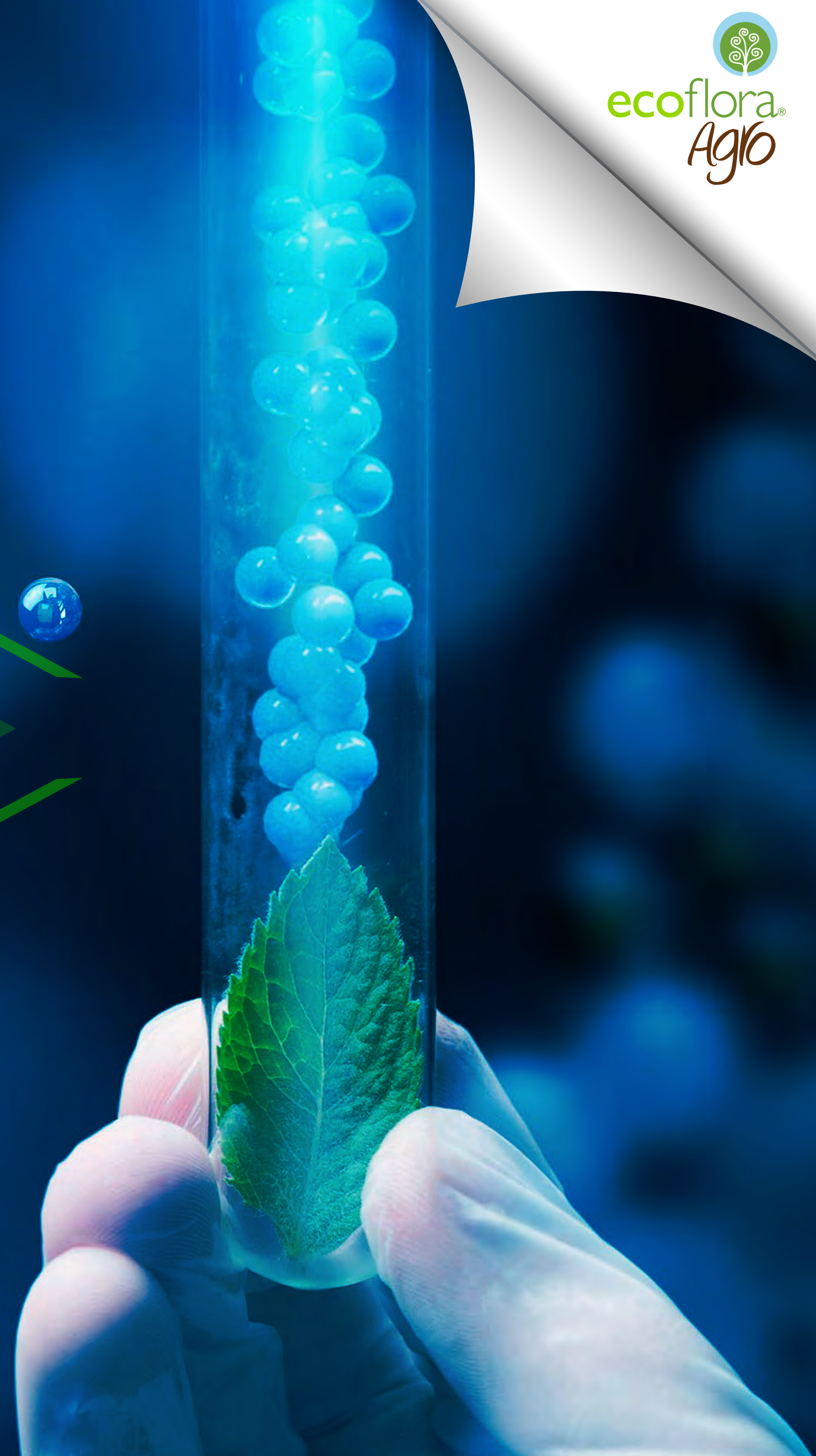


**Our purpose:**  
Crop and Life Protection.



Referred to by WIPO\*  
as **“The Secret Garden  
of Innovation and Development”**

\*World Intellectual Property Organization  
[www.wipo.int/ipadvantage/en/details.jsp?id=3247](http://www.wipo.int/ipadvantage/en/details.jsp?id=3247)





A scientist in a white lab coat is holding a clear petri dish containing a small green seedling with two leaves growing out of dark soil. The background is a blurred laboratory setting. A large green arrow graphic points from the text towards the plant.

**Ecoflora Agro** is a technology based company with **18 years of experience** developing unique botanical **solutions** for **sustainable crop protection.**



**Located in the Heart  
of the Americas**





# Premier Botanical Solutions for Sustainable Crop Protection

Insecticides,  
Miticides,  
and Repellents



Fungicides,  
Protectants,  
and Bactericides



Molluscicides





# The insect's world is chemical

**Chemical compounds** determine the **relationship between the plants** and other **groups of organisms** associated to them





The background is an abstract composition of vibrant green and red. It features thick, curved lines and shapes that resemble stylized plant stems and leaves. The colors are bright and saturated, creating a dynamic and organic feel. The text is overlaid on a dark green, semi-transparent area on the right side of the image.

**Plants *evolved* to have  
chemical defenses against  
competitors  
and pest organisms  
(secondary metabolites)**



**Plants** developed **biochemical signals** to attract and maintain **beneficial organisms** associated to them



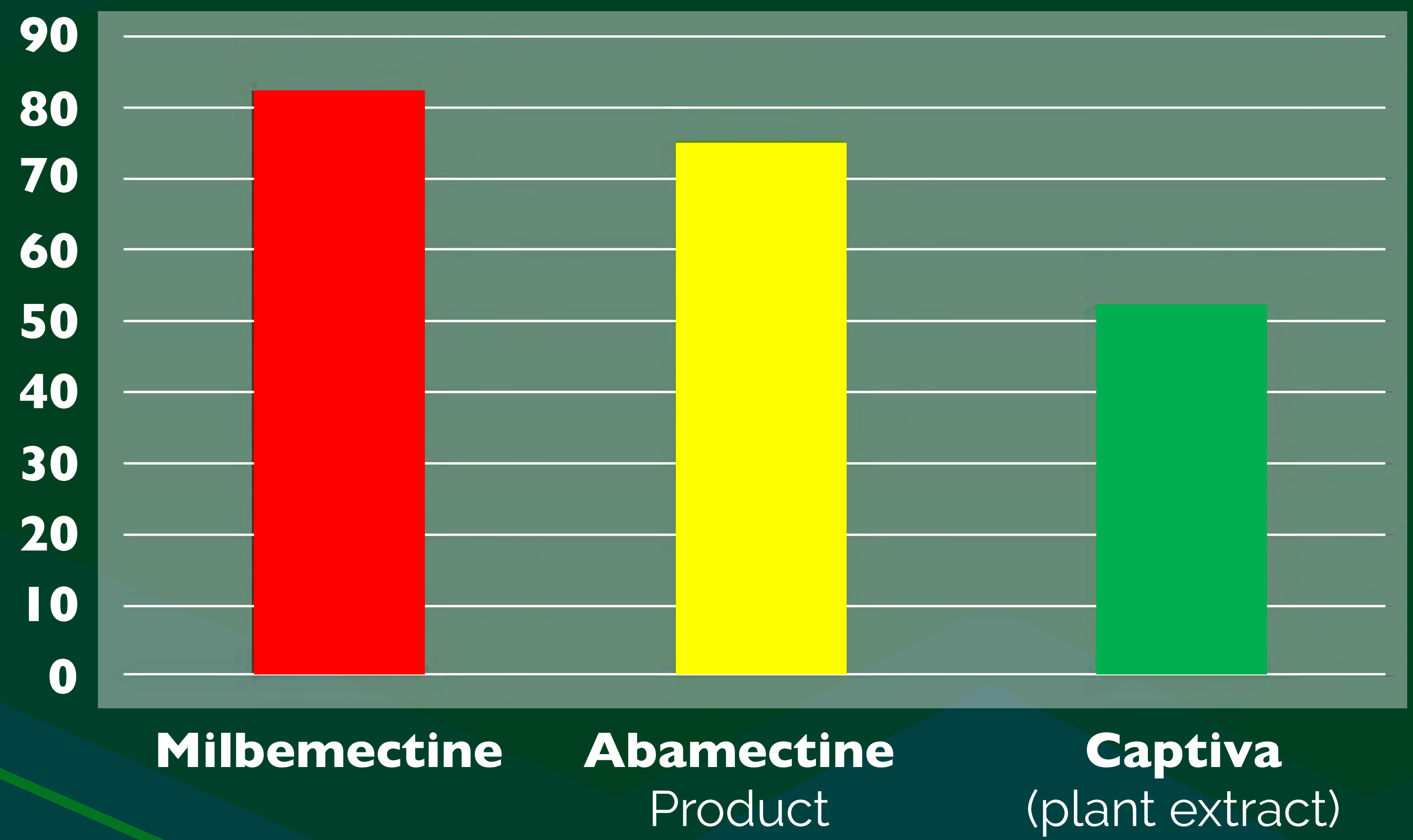


**Most of synthetic pesticides, negatively affect or suppress the auxiliary and beneficial insects that may have adapted to agro-ecosystem.**





# The Paradigm: Chemical pesticides are the most effective solution for pest control



*% Mites (Tetranychus urticae)*  
**Mortality by contact (3 daa)**



# Comprehensive Benefits of Plant Extracts in Crop Protection

- A **lower dependence on Synthetic Chemical** Control to achieve a competitive Crop Protection.
- A significant **reduction of risk among pest species**, to develop Resistance mechanisms, as a result of a lower Selection Pressure.
- An important **reduction of Pest Management Costs**, resulting from a **lower infestation pressure**, **lower accumulated residues and damage**, and **better crop protection and yields**.



# Comprehensive Benefits of Plant Extracts in Crop Protection

- A significant **increase in the Conservation and Enhancement of CROP BIODIVERSITY** including non-target organisms which in turn, **make a tremendous contribution** to the overall Crop Protection and production.
- **Higher Crop Protection standards** can be attained based on the **application of Plant Extracts** resulting from the **positive interactions** between botanical products and beneficial macro and microorganisms in green house and field crops.
- **Lower toxicological and eco-toxicological risks**, for field workers, consumers, living organisms and the environment.



# Comprehensive Benefits of Plant Extracts in Crop Protection

- A more even, **stable and permanent establishment of Beneficial Macro-organisms** associated to Green House and Field Crops where the application of Plant Extracts and Botanical Pesticides is broadly adopted and preferred by growers.
- A **friendlier agro-ecosystem to promote the establishment and growth of beneficial microorganisms**, associated to both: the crop plant itself, as well as to the soil environment where the crop plants occur.



**Botanical Pesticides** have **complex modes and mechanisms of action**, which combine a diversity of Lethal and Sub-Lethal Effects, such as:

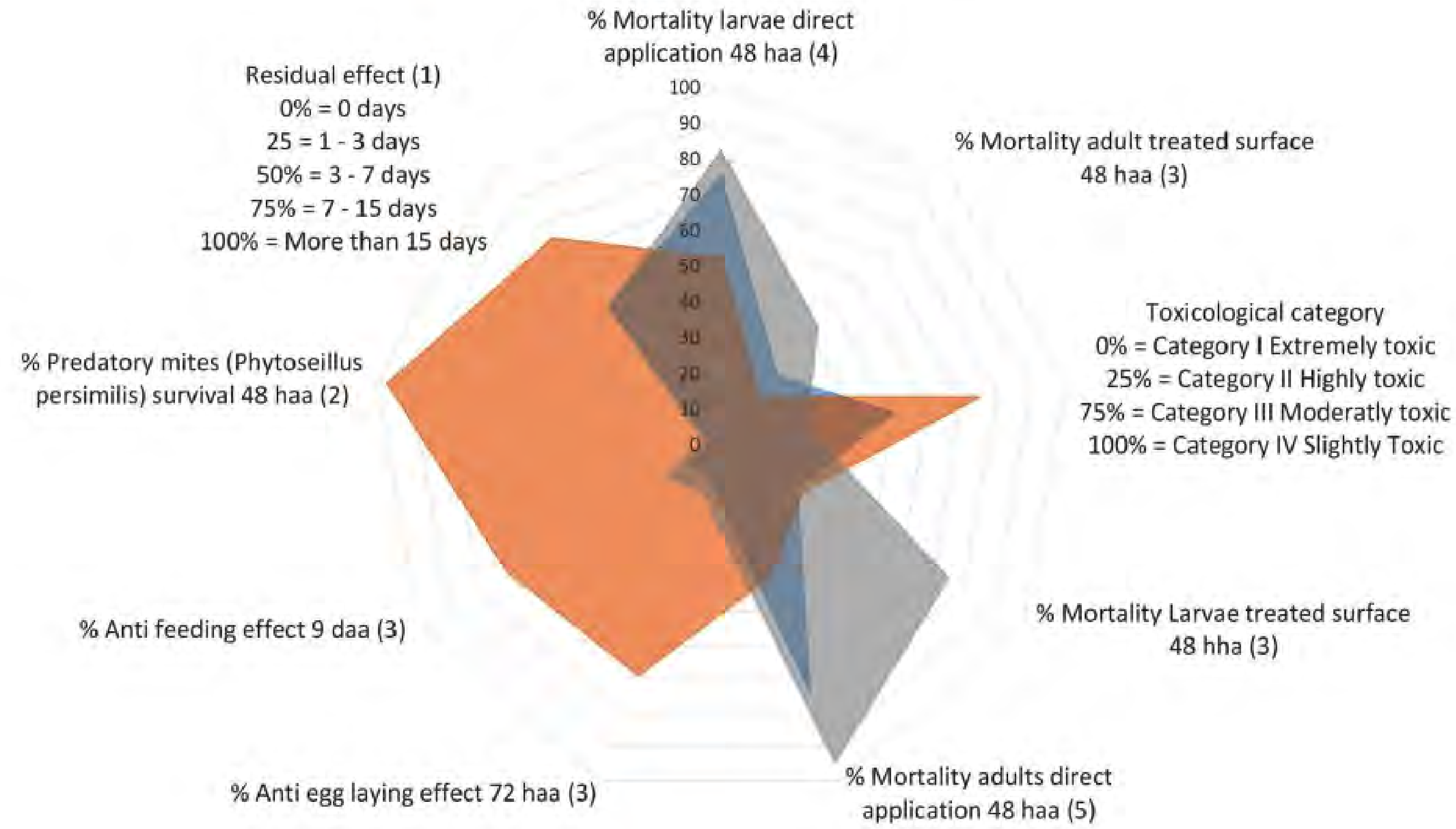
- Anti-feeding
- Anti-egg-laying effect
- Anti-mating (*pheromone interference effect*)
- Repellent Effect
- Deterrent Effect

These **effects combined**, can be more than enough to ensure a high standard of **Crop Protection**, even if the lethal effect is medium, low, or negligible



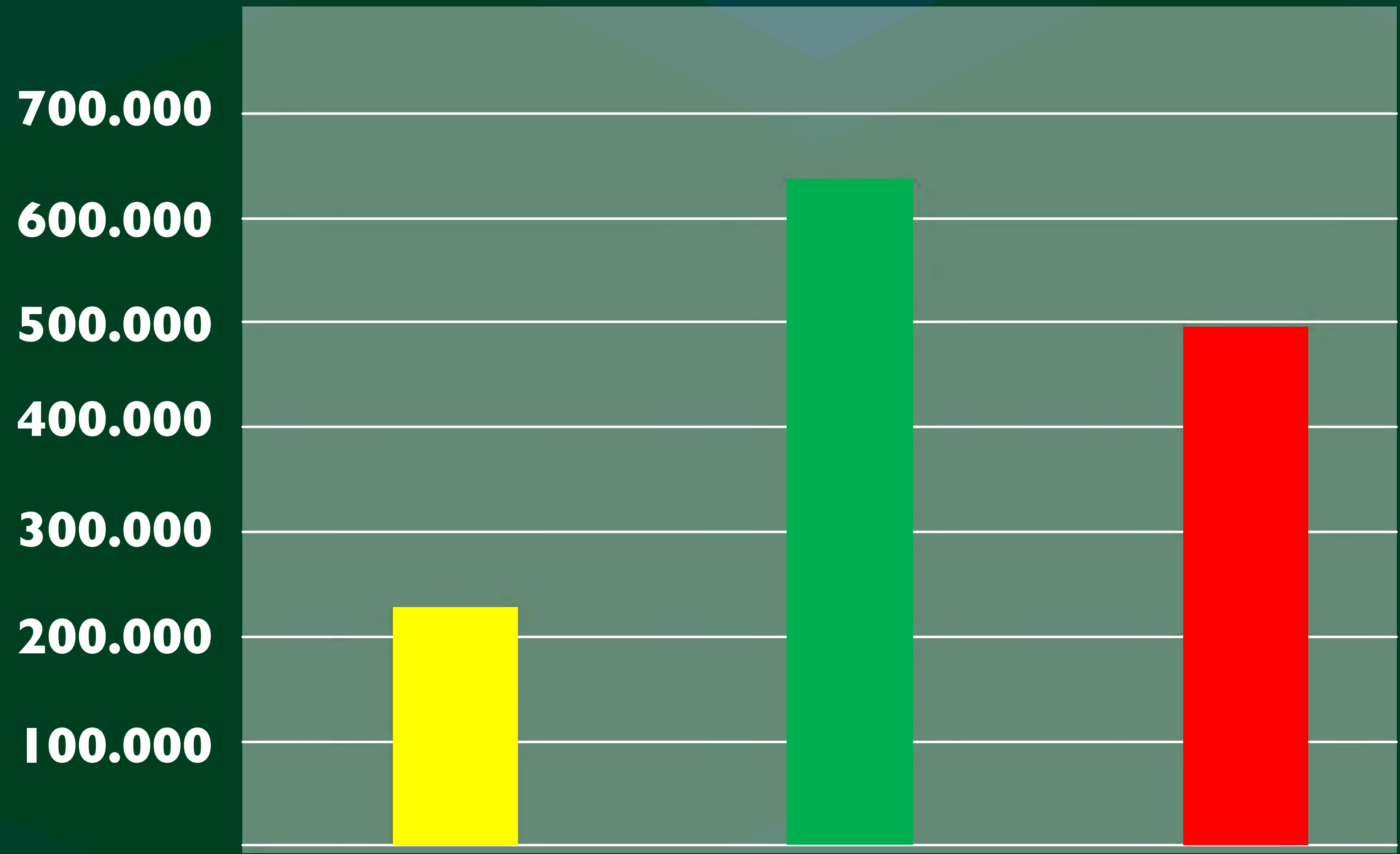
# TECHNICAL PROFILE SPIDER WEB ANALISYS

■ Abamectine ■ Captiva ■ Milbemectine





# Crop Protection Index (CPI)



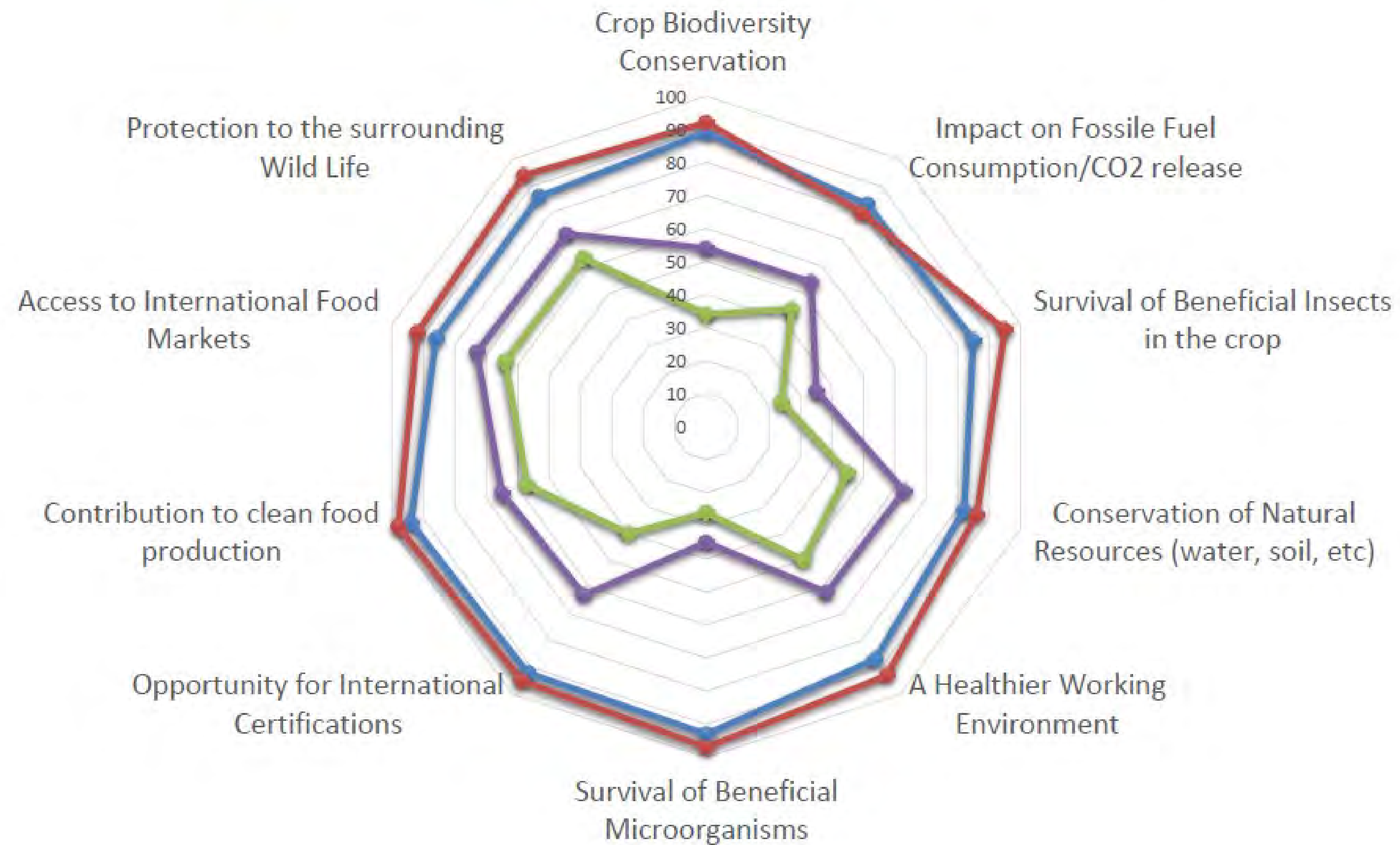
	<b>Abamectina</b>	<b>Captiva</b>	<b>Milbemectina</b>
<b>CPI</b>	<b>228.447</b>	<b>636.681</b>	<b>494.497</b>



# Sustainability Index

## QUALITATIVE PROFILE: CONTRIBUTION OF PLANT EXTRACTS TO SUSTAINABLE AGRICULTURE

—●— CapsiAlil 1 cc/L   
 —●— Finitex 1 cc/L   
 —●— Abermectina   
 —●— Milbermectina





- The use of **Ecoflora's Plant Extracts** contributes to the **conservation and management of Biodiversity** (*including pollinators, biocontrol and beneficial microorganisms*) as well as to agro-ecosystems sustainability.
- Through their lethal and sub-lethal effects **these are paradigm shifting tools** for effective and sustainable IPM and ICM.



# The Paradigm Shift

- **“Crop and life protection”** are more important than pest control.
- **Most Botanical biopesticides / plant extracts** have a higher **“Sustainability Index”** and may even have a higher **“Crop Protection Index”** than chemical pesticides.





# Thanks



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