

Screening criteria for the development of commercial products for biocontrol of plant pathogens

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Development of BCA's

Isolation of candidate antagonists



Efficacy testing in bio-assays



Field testing

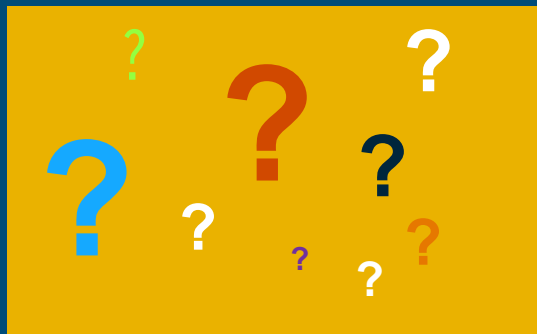


Contacting industries



The industry's questions

- Market size ?
- Advantage above other products ?
- Is any knowledge patented ?
- Fungicide compatibility ?
- Production costs per hectare ?
- Toxicological risks ?



- Does it work ?
- Shelf life ?
- Mode of action ?
- What about allergies ?
- Genetic stability ?
- ?



The industry's questions

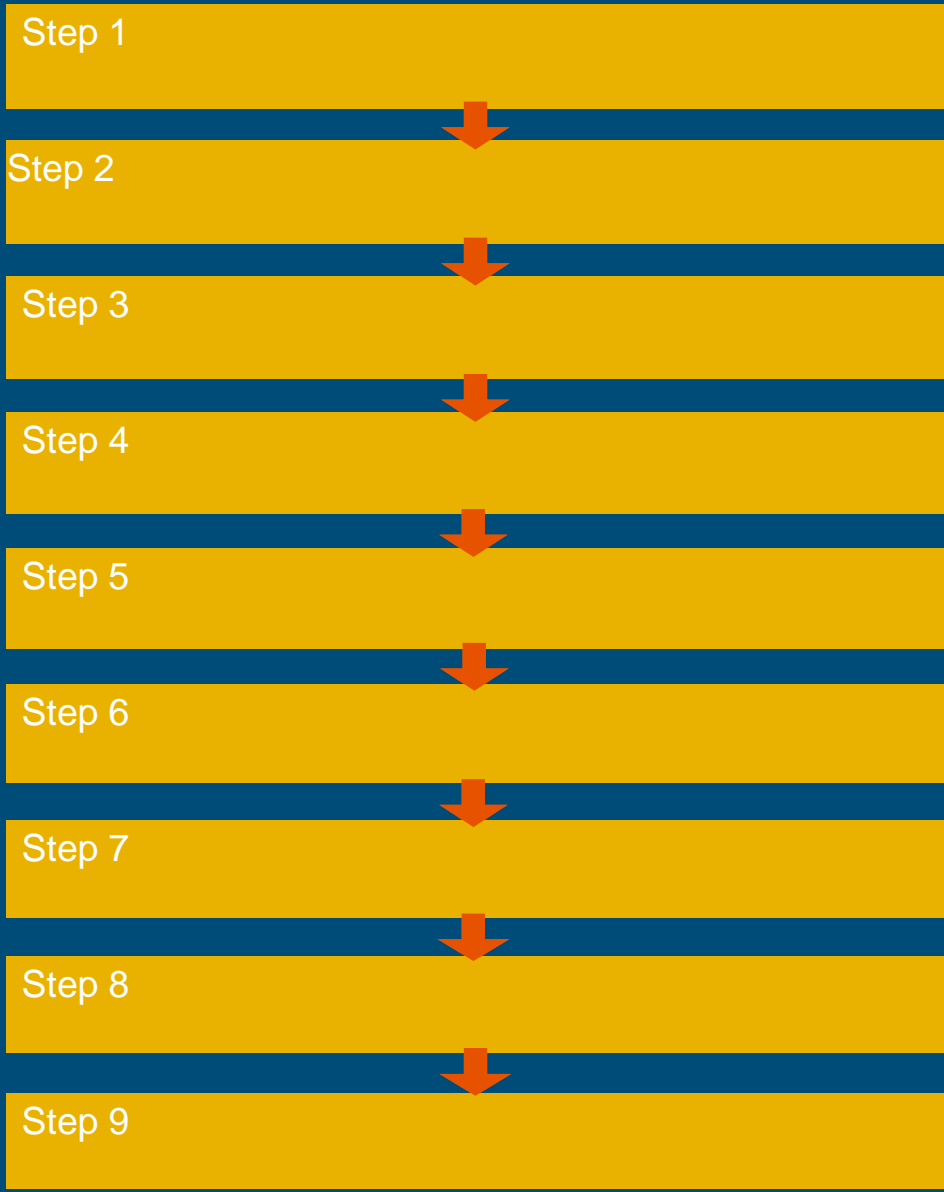


- Many questions for different disciplines
- Answers of plant pathologists on efficacy in bioassay and in the field not sufficient
- Input needed to answer questions very different

- Activity within ENDURE
- Publication of results in a journal

- ➔ Collect questions
- ➔ Systematic stepwise approach for screening

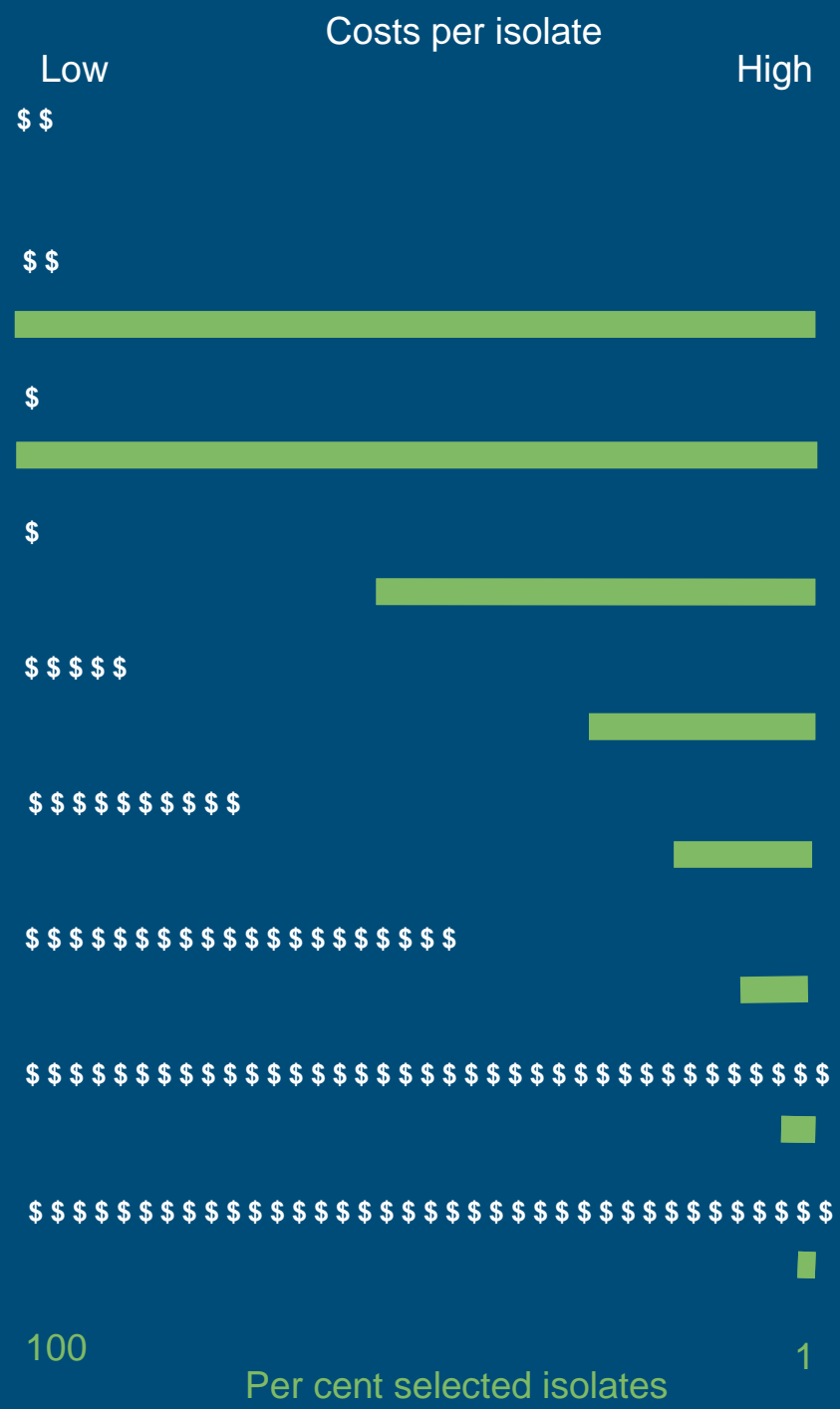
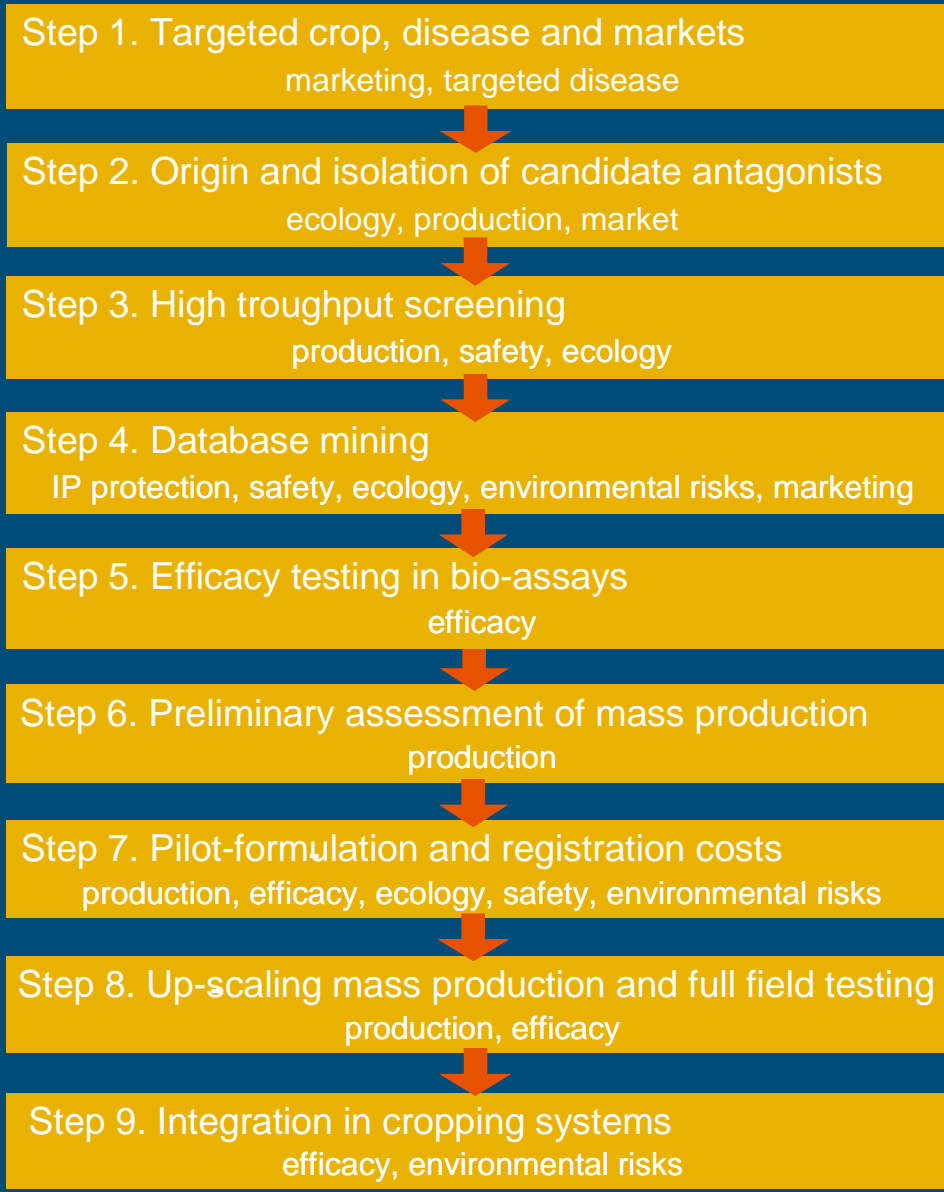




Low Costs per isolate High



100 Per cent selected isolates 1



Antagonist screening: Example 1

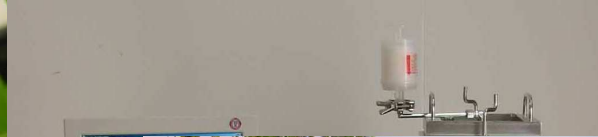
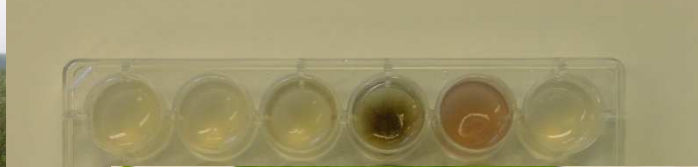
- Damping-off caused by *Rhizoctonia solani*
- Lambs lettuce sown in cold greenhouses at 0 - 5°C
- *Trichoderma harzianum* isolated in Iran
- *In vitro* screening followed by pot experiments



- Köhl (1989)



Antagonists screening (2): apple scab



Step 1. Targeted crop, disease and markets
marketing, targeted disease

Step 2. Origin and isolation of candidate antagonists
ecology, production, market

Step 3. High throughput screening
production, safety, ecology

Step 4. Database mining
IP protection, safety, ecology, environmental risks, marketing

Step 5. Efficacy testing in bio-assays
efficacy

Step 6. Preliminary assessment of mass production
production

Step 7. Pilot formulation and registration costs
production, efficacy, ecology, safety, environmental risks

Step 8. Up-scaling mass production and full field testing
production, efficacy

Step 9. Integration in cropping systems
efficacy, environmental risks

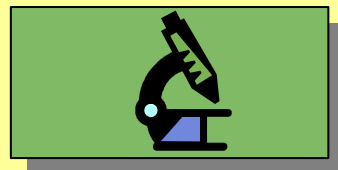
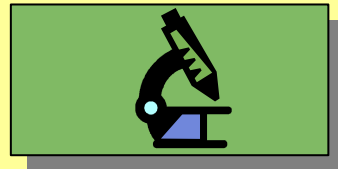
Conclusions

Screening criteria for the development of commercial products for biocontrol of plant pathogens

- Consider many relevant questions
- Use stepwise approach
- Consider commercial questions early
- Give the cheap answers first
- Avoid expensive field testing with the wrong candidates
- Use expertise of different disciplines

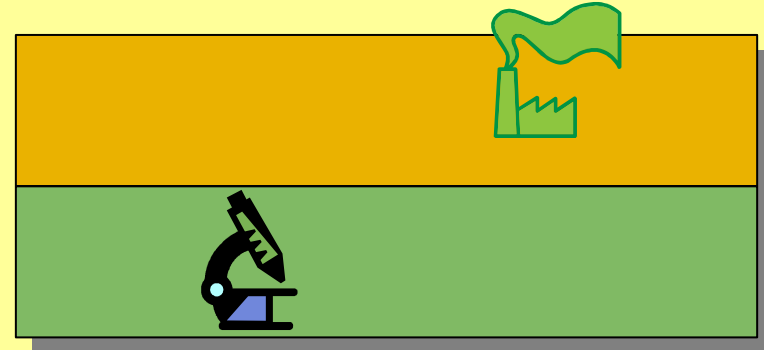
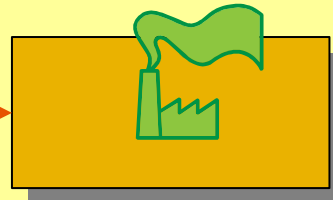


Collaboration of BCA-industry and Research Institutes



'BCA shopping'

- high public investments
- few products



'Tailor-made BCAs'

- market driven
- cost effective
- fast



*Thank you, and let us discuss –
now or in the coffee breaks*

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