Perspectives of Biocontrol – ASEAN Initiative –

7th Annual Biocontrol Industry Meeting (ABIM)

1. ASEAN-German Cooperation
2. The Biocontrol Market in ASEAN
3. Bio-Agro Inputs Association (ABI)
- International service provider for sustainable development
- Private limited enterprise, non-profit company
- Owned by the German Federal Government

- 2 bn EUR turnover (2011)
- 17,500 staff, 2,000 projects
Objectives of “ASEAN Biocontrol”

- **Overall objective I (2011-2017)**
  ASEAN has developed regionally coordinated policies and strategies addressing sustainable agriculture and food production

- **Overall objective II (2011-2013)**
  “Sustainable agrifood systems are strengthened through the use of BCA and sustainable agriculture”

- **Sub objective 1**
  ASEAN Member States have developed harmonized guidelines and a regulatory framework on the use of BCA

- **Sub objective 2**
  The use of BCA in ASEAN Member States’ Farming Systems is promoted
How we Work – Structure & Set-Up

ASEAN Ministers of Agriculture and Forestry (AMAF)

Senior Official Meeting (SOM-AMAF)

ASEAN Sectoral Working Group on Crops (ASWGC)

Regional Steering Committee (plus National Task Forces)

Project Coordination Unit (PCU)

Government

Private Sector

Research

BCA Initiatives/NGOs

1 Principal Advisor
1 Project Coordinator
1 Office Manager
2 Advisors/Officers
2 ABC Medan Office
2 PM Private Sector

1 AMS Experts (1 DoA THA)

Expert Groups

2 International Experts (CIM)
Partners & Cooperation

Team of “ASEAN Sustainable Agrifood Systems”

“One Vision, One Identity, One Community”
<table>
<thead>
<tr>
<th>I Harmonization</th>
<th>II Promotion of BCA and sustainable Agrifood Systems</th>
<th>III Capacity Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASEAN Guidelines and Regulatory Framework on the use of BCA and other sustainable approaches in agriculture.</td>
<td>Record of regional &amp; national conferences on the application of BCA and sustainable crop management practices on sustainable Agrifood system in ASEAN.</td>
<td>Technical expert groups formed and trained that discuss technical issues related to sustainable agrifood systems and elaborate policy recommendations</td>
</tr>
<tr>
<td>Biocontrol Database.</td>
<td>Increased awareness of farmers, government officials to promote the application of BCA and sustainable crop management practices on sustainable Agrifood system, through media and PR Campaigns.</td>
<td>Models for sustainable agrifood systems implemented in collaboration with private sector, NGOs, development projects and technical advisory services.</td>
</tr>
<tr>
<td>Expert Groups at regional and national levels.</td>
<td>Common strategy on Sustainable Agrifood Systems.</td>
<td>Trained farmers on sustainable crop management practices, including application of BCA in the above models.</td>
</tr>
</tbody>
</table>
ASEAN Biocontrol Database: Screenshot “Product”
Concerning which crops do you see the most urgent need for BCA application?

Results from needs assessment:

- Rice
- Vegetables
- Coffee
- Fruits (incl. longan, banana)
- Chili, Eggplant (Solanaceae)
- Melon, Pumpkin (Cucurbitaceae)
- Coconut, Palm (Arecaceae)
- Cassava
- Maize
- Timber (Pterocarpus)
- Rain tree
- Orchids (Orchidaceae)
- Sweet Potatoe
Selection of Priority Crops

- By priority ranking (1st choice = 5 points; 2nd = 4 points; etc.)
- Number of interviewees = 9 AMS
- National Coordination in “National Task Forces”

**Selection of Priority Crops**

- Rice: 33
- Vegetables: 28
- Fruits: 13
- Palm Trees: 11
- Maize: 10
- Cassava: 7
- Coffee: 6
- Others: 14
### I. RICE

<table>
<thead>
<tr>
<th>Dominant Pest</th>
<th>Dominant BCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown Plant Hopper (5)</td>
<td>Beauveria (2)</td>
</tr>
<tr>
<td>Stem Borer (4)</td>
<td>Trichogramma (2), Pheromone (1)</td>
</tr>
<tr>
<td>Fungal disease (4)</td>
<td>Trichoderma (2), B. subtilis (2)</td>
</tr>
<tr>
<td>Rat (3)</td>
<td>Sarcocystis (2)</td>
</tr>
</tbody>
</table>

No. AMS in parenthesis

### II. FRUITS

<table>
<thead>
<tr>
<th>Dominant Pest</th>
<th>Dominant BCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit Fly (3)</td>
<td>Attractant (protein bait etc.) (2)</td>
</tr>
</tbody>
</table>
### III. VEGETABLES

<table>
<thead>
<tr>
<th>Dominant Pest</th>
<th>Dominant BCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diamond Back Moth (7)</td>
<td><em>Bt</em> (6), Parasitoids (3)</td>
</tr>
<tr>
<td>Flea Beetle (4)</td>
<td></td>
</tr>
<tr>
<td>Fusarium Wilt &amp; other Fungi (4)</td>
<td><em>Trichoderma</em> (2)</td>
</tr>
</tbody>
</table>

No. AMS in parenthesis

### IV. Palm Trees

<table>
<thead>
<tr>
<th>Dominant Pest</th>
<th>Dominant BCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhinoceros Beetle (Oryctes) (5)</td>
<td><em>Metarhizium</em> (5)</td>
</tr>
<tr>
<td>Hispine beetle (Brontispa) (4)</td>
<td><em>Asecodes hispinarum</em> (3)</td>
</tr>
</tbody>
</table>
BCA used in major crops (rice, vegetables, fruits)
### BCA used/available in the major crops (including palms)

<table>
<thead>
<tr>
<th>Microbials</th>
<th>No. of citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
<td>19</td>
</tr>
<tr>
<td>Entomopath. Fungi</td>
<td>18</td>
</tr>
<tr>
<td>Biochemicals</td>
<td>8</td>
</tr>
<tr>
<td>Trichoderma</td>
<td>7</td>
</tr>
<tr>
<td>Protozoans</td>
<td>3</td>
</tr>
<tr>
<td>Baculovirus</td>
<td>2</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>57</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Macrobials</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Parasitoids/Predators</td>
<td>10</td>
</tr>
<tr>
<td>Nematodes</td>
<td>1</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>11</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attractants/Semiochemicals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Various</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Botanicals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Various</td>
<td>10</td>
</tr>
</tbody>
</table>

**TOTAL**                     | **84**          

Source: ASEAN Member States (AMS), GIZ
Market Reality – Focus on microbials and nematodes
(according to CPL market research)

### Estimated Sales of Microbial & Nematode-Based BCA in Asia/Australasia (as of June 2010)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Sales Estimate ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bacillus thuringiensis</em> products</td>
<td>74.75 (40 account for China)</td>
</tr>
<tr>
<td>Other bacterial BCA</td>
<td>14.05</td>
</tr>
<tr>
<td>Fungal BCA</td>
<td>18.85</td>
</tr>
<tr>
<td>Viral BCA</td>
<td>23.90</td>
</tr>
<tr>
<td>Nematode-based BCA</td>
<td>0.95</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>USD 132.5</strong></td>
</tr>
</tbody>
</table>

This represents a significant increase in the sales of microbial pesticides since the estimate of $71.9 million in 2004/5.
Biocontrol Agents - Market Situation

- Bulk of the world’s Bt is supplied by two Japanese-owned, American-based, agrochemical companies:
  - Valent Biosciences (owned by Sumitomo Agro)
  - and Certis (owned by Mitsui).
- Main BCA supply comes from CHN, IND, and THA
- Some small, local producers (run by governments, cooperatives, or NGOs; pricing at marginal costs)
- Huge potential for development and use of microbial biopesticides and nematodes
- Critical barriers to product introduction
  - Oftentimes prohibitive costs for imported BCA
  - BCAs require relatively high level of product support
  - Ubiquity of agrochemicals
Major Aspects of BCA Usage in ASEAN

- Lack of harmonization and common understanding
- ASEAN Guidelines and Regulations for BCA
- Technical Evaluation (Compliance and efficacy test)
- Post Registration (monitoring, reporting, re-registration)
- ASEAN BCA Database
- ASEAN BCA Expert Groups (regulation, technology)
Biocontrol Agents - Market Situation

CAM ➢ Very small market of Bt, supplied from VTN

IDN ➢ Relatively large pesticide market (USD 200-225 m). Local and imported BCA (USD 2.25 m), vegetables

LAO ➢ Not any significant use of BCA

MYS ➢ Comparatively large Bt market, which appears to have little or no interest in any other microbial BCA

MYR ➢ Small user of BCA, mainly sourced from China

PHL ➢ Bt sells moderately; general lack of interest in BCA and unpopular to farmers (higher cost, slow action)

SGP ➢ Moderate (USD 0.75 Mio) Bt sales, mosquito control

THA ➢ Diverse microbial market but few products used (BCA USD 1 m/Chemical Pesticides USD 280 m)

VTN ➢ Relatively large microbial market (USD 5.5-6 m)
A variety of technologies / BCA products available

All 4 product groups used

- Microbials (dominant)
- Macrobials (government programs: predators, parasitoids)
- Botanicals (mainly neem)
- Semiochemicals (hardly represented)

Promising technologies/products

- Rice: Beauveria (BPH), Parasitoids, Pheromones
- Vegetables: B. thuringiensis (DBM)
- Fruits: Semiochemicals (fruit fly etc.)
- Fungal diseases: Trichoderma

How is the market reality? Do farmers use it?
ABI and ASIA – Associations and Networks

Bio-Agro Inputs Association (ABI):
- is an industry association;
- has a national registration and a charter;
- is directed towards the commercialization of BCA products.

Agricultural Sustainable Inputs Association (ASIA)
- will be an international/regional network of national associations;
- may possibly have individual companies/institutions as members;
- has a clear objective as partial successor of ABC.
VISION:
• TO BECOME THE MARKET LEADER FOR SUSTAINABLE AGRICULTURAL INPUTS (SEEDS, ORGANIC FERTILIZER, BIOPESTICIDES) IN ASIA BY 2020.

MISSION:
• TO STIMULATE THE ADOPTION AND ENHANCED USE OF SUSTAINABLE INPUTS IN AGRICULTURE THROUGHOUT ASIA.

SERVICE PROVISION:
• TO PROVIDE MARKET INFORMATION & ASSISTANCE FOR THE REGISTRATION OF BIOLOGICAL INPUTS.
• TO FACILITATE TRAININGS FOR BUSINESS PARTNERS & ASSIST IN BUSINESS MATCHMAKING.
• TO PROVIDE MEMBERS WITH A PLATFORM FOR KNOWLEDGE EXCHANGE & ASSISTANCE IN PRODUCT PROMOTION.

FACTS & FIGURES:
• MEMBERS: OVER 100
• REGISTERED PRODUCTS: MORE THAN 300
• MAIN MARKETS: “ASEAN/ASIA”

CONTACT: INFO@BIOINPUTS-ASIA.ORG

Supported by:
Many Thanks for your attention!