Unlocking agricultural potential with inoculants

Soya Expert Meeting, Hungary, 13th of June 2018
Diana Pocaznoi, Product Manager EMEA
Content

1. Company presentation
2. Portfolio
3. Factors affecting the rhizobial activity
4. Further development
Content

1. Company presentation
2. Portfolio
3. Factors affecting the rhizobial activity
4. Further development
More than 100 years in agriculture and innovation

BASF invests actively in innovations. Acquisition of Becker Underwood (1 bln €).
Inoculants & other products from ex Becker Underwood

**Products from Becker Underwood**
- Inoculants
- Biocontrol seed treatments
- Functional coatings and colorants
- Foliar biological products (including bioinsecticides & biofungicides)
- Biological plant health products

Why to inoculate? Watch here on Youtube: [https://www.youtube.com/watch?v=qqt9bp-zpeM&t=2s](https://www.youtube.com/watch?v=qqt9bp-zpeM&t=2s)
Expanding to meet customer needs

**France:** New seed lab in Merville and upgrades in coatings production in Genay

**Germany:** New R&D Center for Biologicals and Seed Solutions opens in Limburgerhof

**Canada:** Expansion of inoculants production in Saskatoon

**UK:** Expansion of inoculants and biocontrols production in Littlehampton

**South Africa:** Expansion of inoculants and biocontrols production in Durban

**Australia:** Expansion of biocontrols production in Somersby

BASF invests actively improving the formulations, the quality and increasing the volumes.
Content

1. Company presentation
2. Portfolio
3. Factors affecting the rhizobial activity
4. Further development
# Main soybean products

<table>
<thead>
<tr>
<th>Crop</th>
<th>HiCoat Super Soybean</th>
<th>HiStick Soybean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulation Type</td>
<td>Liquid (Pre-inoculation)</td>
<td>Solid (Peat)</td>
</tr>
<tr>
<td>Active Ingredient</td>
<td><em>Bradyrhizobium japonicum</em></td>
<td></td>
</tr>
<tr>
<td>Concentration</td>
<td>$1 \times 10^{10}$ bacteria/ml</td>
<td>$2 \times 10^9$ bacteria/g</td>
</tr>
<tr>
<td>Seed treatment</td>
<td>Up to 90 days between treatment and sowing</td>
<td>24 hours between after inoculation</td>
</tr>
<tr>
<td>Application</td>
<td>Precised application slurry</td>
<td>Applied dry, moist, seldom as slurry</td>
</tr>
<tr>
<td>Packaging</td>
<td>Inoculant (6,4 L) + Extender (6,4 L) for 4,5 tons seed</td>
<td>Inoculant (400 g) for 100 kg seed</td>
</tr>
</tbody>
</table>

HiStick® Soybean
Field trials

Limburgerhof, Germany, 2015
HiStick® Soybean
Field trials

Limburgerhof, Germany, 2015
Global inoculants portfolio for a large type of legumes
Content

1. Company presentation
2. Portfolio
3. Factors affecting the rhizobial activity
4. Further development
Factors affecting the rhizobial activity

- **Product quality**
  - bacteria concentration and the impact on yield
  - nutrition solutions for bacteria
  - packaging (form, quality)

- **Environmental parameters**
  - soil pH
  - inhibitors from soil (for ex molybdenum)
  ...
Product quality
Bacteria concentration and impact on yield

Effect on the rhizobia loading at planting on yield performance
(Yield data from France, Canada and Australia - virgin soils)

To ensure consistent yield performance, an inoculant needs to provide a high number of bacteria per seed at planting.

More rhizobia per seed = More yield potential
Product quality
Nutrition solution for bacteria

Benefits of nutrition solution
- Maintains rhizobia alive in the product
- Keeps alive rhizobia after application and before sowing
- Provides necessary elements for good development of the bacteria

Influence of the nutrition solution on the rhizobia seed loading after seed treatment

More rhizobia per seed = More yield potential
Product quality

Packaging

- Packaging containing specific & strong polymers to allow oxygen transfer & stability
- Special packaging to ensure sterility during the shelf-life period
- Packaging with high-oxygen layer to retain water
- Reasonable size to ensure increased oxygen transfer

High number of rhizobia per seed at planting

Maximized yield potential
Environmental parameters

Soil pH

Soil pH has direct effect on nodulation. Adjustment of dose rates is necessary.

- pH=5.0
  - Use normal inoculation rates
  - Use 2 x advised rates
  - Use 2x rates only after successful test

- pH=5.5
  - Use normal inoculation rates

- pH=7.8
  - Use 2 x advised rates

- pH=8.2
  - Use 2 x advised rates
  - Use 2x rates only after successful test

Nevertheless, on virgin soils or soils with no soybeans cultivation for ~7 years we seriously recommend double inoculation.
Environmental parameters
Nutrients & pH relationship in general: what’s up in the soil?
Environmental parameters
Molybdenum deficiency

- Molybdenum is one of the elements sometime with deficiency in the soil.

- Molybdenum (Mo) can be in deficit in very low pH soils, but seed grown in non-deficit conditions will supply sufficient quantity of Mo for a high yielding plant. Never add Mo-fertilizer to the seed!

- Incorporate the fertilizer well before sowing or better: use a Mo-fertilizer for foliar application, if extra Mo is really necessary.
Content

1. Company presentation
2. Portfolio
3. Factors affecting the rhizobial activity
4. Further development
Further development

Seed Enhancement and Plant Health

Inoculant in combination with bio-fungicide, polymer, colorant...

Vault HP

Vault IP PLUS

Bomvoro

HiStick NT