Biocontrol usage in my farm

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SCEA Ferme des Brosses
My Farm

Conventional farming

350 ha

Loamy – Clay soil

Crops: Wheat / Sugar Beet / Potatoes / Maize / Rapeseed / Barley / Beans
Biocontrol history in my farm

80’s : Sugar Beet & Sulfur
90’s : Corn & *Trichogramma*
2000 : Rapeseed / Wheat & Ferric Phosphate
2010 :
   Wheat & Seaweed
   Rapeseed & *Bacillus pumilus*
2020 : Rhapsody & potatoes ?
Sulfur – Sugar Beet

**Disease** : Powdery Mildew (Oïdium)

**Biocontrol Solution** : Sulfur

**Natural Fungicide**
### Technical / Economical point of view

#### Stage: crop coverage (July)

<table>
<thead>
<tr>
<th></th>
<th>Chemical</th>
<th>Biocontrol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td>Spyrale (Difénoconazole/Fenpropidin)</td>
<td>Microthiol special disperss (800g/kg of sulfur)</td>
</tr>
<tr>
<td></td>
<td>Optisoufre (fertilizer)</td>
<td></td>
</tr>
<tr>
<td><strong>Using</strong></td>
<td>7L/ha Optisoufre 0,9L/Ha Spyrale</td>
<td>7kg/Ha Microthiol 0,9L/Ha Spyrale</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td><strong>59€/Ha</strong></td>
<td><strong>44€/Ha</strong></td>
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</tbody>
</table>

- Sulfur Fertilizer not registered as biocontrol.
- Avoid fungus resistances development.
Corn - *Trichogramma*

**Pest:** Moth Larva

**Biocontrol Solution:**

*Trichogramma* (egg-parasite, Hymenopthera)

Selective management and beneficials

No crop damage during application

Protection ✅

Application ✗
## Technical / Economical point of view

### Stages:
- 6 leafs

### Timing:
- 10 ha / 3 peoples / 1 hour

<table>
<thead>
<tr>
<th></th>
<th>Biocontrol</th>
<th>Chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Brand</td>
<td>Bio - Logic (Trichogramma)</td>
<td>Coragen (Chlorantraniliprole)</td>
</tr>
<tr>
<td>Using</td>
<td>1</td>
<td>0,125 L</td>
</tr>
<tr>
<td>Cost</td>
<td>32 €/Ha</td>
<td>37 €/Ha</td>
</tr>
</tbody>
</table>

**Storage:** Maximum 48h to cold

**Indirect Cost:** Workforce
Rapeseed / Wheat - Ferric Phosphate

Pest: Slug

Biocontrol Solution: Ferric Phosphate
Technical / Economical point of view

Stages: Sowing – Post sowing

<table>
<thead>
<tr>
<th>Commercial Brand</th>
<th>Biocontrol</th>
<th>Chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sluxx</td>
<td>5 Kg/Ha</td>
<td>4 Kg/ha</td>
</tr>
<tr>
<td>Cost</td>
<td>19,8 €/Ha</td>
<td>19,2 €/Ha</td>
</tr>
</tbody>
</table>
Seaweed – Wheat & Barley

Diseases: Septoria & Rust

Biocontrol Solution: Laminarine

Quantity: 2
### Technical / Economical point of view

**Stage: Ears of wheat 1 cm**

<table>
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</thead>
<tbody>
<tr>
<td><strong>Commercial Brand</strong></td>
<td>Vacciplant (Laminarine)</td>
<td>Kromatic (prochlorazale/Tebuconazole/fenpropidin)</td>
</tr>
<tr>
<td><strong>Using</strong></td>
<td>0.5L Vacciplant + 0.6L Kromatic</td>
<td>1.2L Kromatic</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>24€/Ha</td>
<td>28€/Ha</td>
</tr>
</tbody>
</table>

*Only resistant variety*

*Loosing curative effect*
Disease: Sclerotinia

Biocontrol Solution: *Bacillus pumilus*

Quantity: 2
Technical / Economical point of view

Stage: Flowering

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<tbody>
<tr>
<td>Commercial Brand</td>
<td>Ballad <em>(Bacillus pumilus)</em></td>
<td>Propulse</td>
</tr>
<tr>
<td>Using</td>
<td>1L/Ha Ballad 0,5L/Ha Overdyn</td>
<td>0,8L/Ha</td>
</tr>
<tr>
<td>Cost</td>
<td><strong>38€/Ha</strong></td>
<td><strong>39€/Ha</strong></td>
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</table>
Limits of biocontrol

Too little biocontrol solutions available
Less security of success than chemicals
Motivation

To decrease using chemicals product
To get new certification
for example: High Environmental Value – Level 3
To adapt the farm to the new legislation – No chemicals close to habitations