Evolution of work on the fight against late blight in France within the ministry of agriculture

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Service régional de l’alimentation
Evolution of the french service

• Since 2009 the Regional Plant protection service evolved in service regional of the Food (SRAL)
• The SRAL has a role of technical support, expertise and control in phytosanitary protection of vegetables
• The SRAL also has a role of Animation of the project Ecophyto 2018.
• The project Ecophyto is set up following grenelle of the environment
OBJECTIFS OF ECOPHYTO 2018

- Reduce of 50 % use of products phytopharmaceutiques in agriculture for 2018, if possible;
- Reduce and secure the usage of products phytopharmaceutiques in not agricultural zone;
- Form the farmers, professionalize the distribution;
- Improve the quality of waters
- Define precise and consensual indicators
- Mobilize the research and the transfer of alternative methods;
- Strengthen the observation on the bio-aggressors and the not deliberate effects of pesticides;
- Communicate on the reduction of the use of products phytopharmaceutiques.
The ecophyto project is declined in 8 axes

**Axis 1:** estimate the progress in decrease of the usage of pesticides

**Axis 2:** list and generalize the agricultural systems and the known means allowing to reduce the use of pesticides by mobilizing all the partners of the research, the development and the transfer

**Axis 3:** innovate in the conception and the development of the systems of low use pesticides

**Axis 4:** form in the reduction and in the reassurance of the use of pesticides

**Axis 5:** strengthen the networks of observation on the bio-aggressors and on the not deliberate effects of the use of pesticides

**Axis 6:** take into account the specificities of the FRENCH OVERSEAS DEPARTMENT

**Axis 7:** reduce and secure the usage of products phytopharmaceutiques in not agricultural zone

**Axis 8:** organize the national follow-up of the plan and its territorial declension, and communicate on the reduction of the use of products phytopharmaceutiques
If we realise a focus on the objectives of the AXIS 3 for the potatoes

> The AXIS 3 correspond at the innovation

- develop the regional programs of research and development
- organized trial of reduction of the quantities of Used product
- organized trial of resistance of the varieties in the late blight
exemple of result trials

-Trial of reduction of the quantities of Used product

![Graph showing reduction of quantities over time for different treatments]

- CONTROL
- Dithane Neotec 2,1 kg/ha
- Dithane Neotec 1,05 kg/ha
- Solavit MN + DITH 1,05 kg/ha
- PHOS 60 +DITH 1,05 kg/ha
- Bouillie Bordelaise RSR 1KG+ Silicuivre
- Bouillie Bordelaise RSR 1KG
exemple of result trials

-Trial of reduction of the quantities of copper

<table>
<thead>
<tr>
<th></th>
<th>BB 2KG</th>
<th>BB 4 KG</th>
<th>FERTICUIV</th>
<th>PROMILD2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of traitement</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Total copper</td>
<td>3.2 Kg/ha</td>
<td>6 Kg/ha</td>
<td>2.1 Kg/ha</td>
<td>2.4 Kg/ha</td>
</tr>
<tr>
<td>Reduction of the copper quantity en Kg/Ha</td>
<td>2.8 Kg</td>
<td>référence</td>
<td>3.91 Kg</td>
<td>3.6 Kg</td>
</tr>
<tr>
<td>% of réduce copper</td>
<td>46.7 %</td>
<td>référence</td>
<td>65.2 %</td>
<td>40 %</td>
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</tbody>
</table>

% de destruction

<table>
<thead>
<tr>
<th></th>
<th>TEMOIN</th>
<th>BB2Kg</th>
<th>BB4Kg</th>
<th>Ferticui</th>
<th>Promild2</th>
</tr>
</thead>
<tbody>
<tr>
<td>30/07/02</td>
<td>70</td>
<td>20,75</td>
<td>10</td>
<td>56,25</td>
<td>23,75</td>
</tr>
</tbody>
</table>
If we realise a focus on the objectives of the AXIS 2 for the potatoes

> The AXIS 2 correspond at:

- List and generalize the agricultural systems and the known means allowing to reduce the use of pesticides, by mobilizing all the partners of research, the development and the advice
- organized by a network of acquisition of references, of demonstration and network experimental experiment of farms

- and use of DSS for the reasoning of treatments
  - For potato we realised the software miléos
A only tool of decision-support-system

Mileos ® correspond to the fusion of 2 DSS :

Mildi-LIS ® × MiLPV = mileos

ARVALIS – Institut du végétal
Service de la Protection des Végétaux
Mileos ® allows to position at best treatments, without risk for the production, according to:

- weather,
- varieties,
- data of plantation of emergence,
- The growth of plants (activate, stabilized)
- The sanitary situation in the field,
- The realized interventions (treatments and irrigations).
Mileos ® require hourly data: temperature, Pluviometry and Hygrometry.

It involves a meteorological station in a 7 km.
The DSS inform the growers of risks with the SMS.

<table>
<thead>
<tr>
<th>Indices</th>
<th>30-08-2008</th>
<th>31-08-2008</th>
<th>01-09-2008</th>
<th>02-09-2008</th>
<th>03-09-2008</th>
<th>04-09-2008</th>
<th>05-09-2008</th>
<th>06-09-2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutte Divoux</td>
<td>520</td>
<td>521,5</td>
<td>522,5</td>
<td>523,5</td>
<td>525</td>
<td>548</td>
<td>549</td>
<td>550</td>
</tr>
<tr>
<td>Milsol Residu de sprores</td>
<td>4,18</td>
<td>3,85</td>
<td>3,82</td>
<td>2,85</td>
<td>2,73</td>
<td>2,85</td>
<td>2,85</td>
<td>2,73</td>
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<tr>
<td>Spores en germination</td>
<td>0,2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Puis (mm)</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>18,8</td>
<td>16</td>
<td>13</td>
<td>11,2</td>
<td>0,2</td>
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<tr>
<td>Vissaliser / Corriger la pluvimetre</td>
<td>0,2</td>
<td>0</td>
<td>0</td>
<td>1,4</td>
<td>3</td>
<td>1,6</td>
<td>0,2</td>
<td>0</td>
</tr>
<tr>
<td>Resistance au lessivage restante (en mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Liste des traitements:

<table>
<thead>
<tr>
<th>Date / Heure</th>
<th>Produits / Doses</th>
<th>Commentaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>08-10-2008 11H</td>
<td>SHERLAN 0.4 l/ha</td>
<td>modifier</td>
</tr>
<tr>
<td>01-10-2008 12H</td>
<td>SHERLAN 0.4 l/ha</td>
<td>modifier</td>
</tr>
<tr>
<td>10-09-2008 06H</td>
<td>SHERLAN 0.4 l/ha</td>
<td>modifier</td>
</tr>
<tr>
<td>30-08-2008 15H</td>
<td>DITHANE NEOTEX 2.1 kg/ha</td>
<td>modifier</td>
</tr>
<tr>
<td>23-06-2008 07H</td>
<td>REMELTORE 2,5 kg/ha</td>
<td>modifier</td>
</tr>
<tr>
<td>11-05-2008 12H</td>
<td>ADERTO 0,6 kg/ha</td>
<td>modifier</td>
</tr>
</tbody>
</table>
Two complementary versions

Mileos® « technicien »

- Consultation of the situation of the plots of land
- Accompaniment personalized by the producers in their decisions
- Management of the meteo data

Mileos® « grower »

- Creation and follow-up of the plots of land
- Recording of the observations and the interventions (treatments and irrigations)
- Display (Visualization) of the alerts and the advice (councils)
• weather station in closer of needs: precision and reliability of the calculations.

• Visualization) of the data weather reports by the producer and the technician: surveillance of the data.

• Autonomy in the decision-making but not isolation because the technician receives the information.

• Internet: guaranteed to use a tool always up to date.
• Forecasts of risk: anticipate treatments according to the meteo forecasts.

• Mutualization of the information on the environment: more precision for the release of the first treatment.

• Seized with the other interventions: for the producers who wish it, Mileos ® can be used as tool of fragmented follow-up.
At the beginning of Season ?

Fall on Only MILSOL

Generate day risk with Guntz-Divoux and Milsol with weather data

Cumul of risk Guntz-Divoux every day

Cumul G-D > Threshold T1 and risk Milsol > Threshold ?

T N+1 Recommended

Traitement N Ineffective ? And risk Milsol > Threshold ?

T N+1 Recommended

General principle of calculation
Map of weather station:
Mileos® “grower”

www.mileos.fr
You reach Mileos® with your personal access codes.
You create your plots of land: name, variety, date of plantation, …
You have the possibility of selecting the products which you use. They will so appear in the beginning of list, what will allow you to spare time in the recordings of your interventions in the course of countryside.
You arrive directly on the list of your plots of land. You visualize in a blow of eye the plots of land on the alert. By clicking a plot of land, you reach all its detailed information.
You consult the risk late blight and the forecasts for the next days.

In case of risk of late blight, you are alerted on the site Mileos® and by SMS for each of your plots of land.
To go farther to the analysis of indicators, you can visualize (display) the information under graphic shape.
You can consult the meteo data under graphic shape, for one or several days.
You have the possibility of correcting so necessary pluviometry.
You can indicate in Mileos ® your observations on the sanitary state of the plots of land.

This information is mutualized and available for consultation on a map.
You register the interventions: treatments and realized irrigations.
At any time, you can download your data for the plots of land which you wish.
For the technicien version

www.mileos.fr
The technicien manages his subscribers: creation, affectation of the meteo stations, the access codes...
The technicien can visualize all the meteo stations and identify the possible errors.
The technicien visualizes on a single screen all the plots of land and the current alerts.
The technicien can communicate with the subscribers via Mileos ®.
conclusion: Use of the software in France

- In 2009, around thirty groupings were subscribed
- To Mildi-LIS® or MilPV and more than 700 producers
- Were user in 22 departments for 30,000 ha of potato.
- Since the launch the appreciations of the users are
- Very positive, in particular:
  - The supply of a neutral and independent information,
  - The possibility of planning better his organization of Work,
  - A relevant information,
  - A facilitated traceability
Thank you for your attention!