The present situation on the application of ICT in precision agriculture in Sweden

Anna Rydberg & Johanna Olsson
JTI – Swedish Institute for Agricultural and Environmental Engineering

Objective

To investigate …

- the information flow on technique intensive farms
- if Swedish PA-farmers have similar user requirements to Finnish farmers
- user requirements for facilitated decision making in PA

How?

- By interviewing farmers and their advisors practicing precision agriculture in Sweden
- Conducting a case study
Interviews

Participating farmers represented the group of farmers that have adapted most PA techniques.
• 5 farmers
• 6 advisors

Questions to farmers:
• Farm data
• Precision agriculture
• Handling of information in crop production

Questions to advisors:
• Experience and opinion
• Crop production programmes
• Handling of information

Case study

Case:
Information flow for producing milling wheat

Instruction:
Produce an information flow chart by drawing your own conceptual model of an annual sequence.
Analysis of interview responses

Technology on farms in study

<table>
<thead>
<tr>
<th>PA technique (number of farmers)</th>
<th>Software</th>
<th>Crop production software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rent Yara N-sensor (2)</td>
<td>AgroCom (Claas) (4)</td>
<td>DataVäxt (3)</td>
</tr>
<tr>
<td>Own Yara N-sensor (2)</td>
<td>Farm Site Mate in PDA (2)</td>
<td>Näsgård Markvägen (2)</td>
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<tr>
<td>Yield mapping (5)</td>
<td>Tivetronic between PDA and seeding ECU (1)</td>
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<tr>
<td>Soil mapping with GPS (5)</td>
<td>CardWriter (1)</td>
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<tr>
<td>Site specific fungicide application using Yara N-sensor file (2)</td>
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<tr>
<td>Seeding with site specific P (1)</td>
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</tbody>
</table>
Farmer- Advisor cooperation

Interaction in information handling

Problems with existing techniques

- Long start up time
- Information from yield mapping not useful
- Communication between machine and equipment
- Bad profitability
- Technical problems
- No price on environment
- Expensive technique
- Complicated handling of information
Technical needs

• Simpler handling of information
  – More evaluation by crop production software
  – Standardized software
  – Better internet connections at country side
  – Better import and export functions between crop production software and PA information, especially maps.

• Map information
  – Make drawings in maps – compare between years, fields etc.
  – Overlap map and image information
  – Combine map information from different software

Next new investment

• Autosteer
• PDA
• Yara N-sensor
Positive towards …

• Programs on the internet
• Common database
• Two way communication between farm computer and ECU

Analysis of case study
Information exchange with many actors

Different ways of data transfer

Execution of task
Evaluation

Conclusions

- Results from Finnish study also valid for Swedish farmers
- Better handling of spatial information needed in PA
- Better communication between machinery and software
- Better communication between different software
- More evaluation directly in crop production software
Thank you!