Final Seminar Valerie
Perspective of the tool builders

Brussels, 14 November 2017

Nicole Koenderink, Peter M. Schuler, Anton Smeenk, Jan Top, Don Willems
Our objective – helping advisors, farmers and foresters to find useful innovations

Our analysis – what is out there, what is needed?

Our solution – ask-Valerie.eu
Our objective

Helping advisors, farmers and foresters to find useful innovations

Innovations: new solutions for existing problems

Partly from scientific developments e.g. in EU projects
Partly from best practices in other countries

Useful: applicable in practice!

Note: innovations for farmer A may be run-of-the-mill for farmer B. Any solution may be innovative.
For easy access to innovations, we need an online tool

Typical entry points:

- Google, Bing, Yahoo!, ... : text-based search in all web-accessible documents, mono-lingual
- OrgPrints: text-based search in organic ePrints-collection, multi-lingual
Search results – generic search

Google

Bedoelde u: sow thistle

Sonchus - Wikipedia
https://en.wikipedia.org/wiki/Sonchus • Vertaal deze pagina
Sonchus is a genus of flowering plants in the dandelion tribe within the sunflower family. Mature sow thistle stems can range from 30 cm to 2 m (1 to 6 feet) tall, depending upon species and growing conditions. Coloutration ranges from green...
Sonchus oleraceus • Sonchus asper • Sonchus arvensis • Sonchus brachyotus

Sonchus oleraceus - Wikipedia
https://en.wikipedia.org/wiki/Sonchus_oleraceus • Vertaal deze pagina
Sonchus oleraceus, with many common names including common sow thistle, sow thistle, smooth sow thistle, annual sow thistle, here's colwort, here's thistle, ...

Sow Thistle: Pictures, Flowers, Leaves and Identification | Sonchus...
www.ediblewildfood.com/sow-thistle.aspx • Vertaal deze pagina
Sow Thistle (Sonchus arvensis) is wild, edible and nutritious food. Identify sow thistle via its pictures, habitat, height, flowers and leaves.

Sow Thistle - Eat The Invaders
eattheinvaders.org/blue-plate-special-sow-thistle/ • Vertaal deze pagina
26 mei 2014 - Captain Cook's men, foraging, find a Sow Thistle at Queen Charlotte Sound in New Zealand. Which they proceed to devour along with several...
Results – specific search

2 documents found

Both are documents on sowthistle in organic farming

Searching on Sonchus arvensis gives 18 more documents
For easy access to innovations, we need an online tool

Typical entry points:

- **Google, Bing, Yahoo!, ...**: text-based search in all web-accessible documents, mono-lingual
  
  → low relevance for most documents, high number of results

- **OrgPrints**: text-based search in organic ePrints-collection, multi-lingual
  
  → highly relevant, low number or results

- **Both**: user needs to know a lot about his/her question: synonyms, flexibility to change query when search results are not useful.
Our solution

We want to provide our users with a digital advisor:

- Access to relevant domain-specific documents from 50 different sources in 7 different languages
- Help in specifying the query
- Using the advisor’s knowledge of the domain to find all relevant documents
- Using the advisor’s network to connect to other people for interaction on the problem
The created tool and its pillars

Valerie ontology

Document base

Digital advisor algorithms

User community

ask-valerie.eu

Enter search term(s)...

Search
Three algorithms mimic the digital advisor:

- **Auto-completion**: when a user starts asking a question, Valerie helps by suggesting key words from the ontology.

- **Query editing**: when a user has asked a question, Valerie provides terms that are related to the question to specify the question better.

- **Ranking**: when a user has asked a question, Valerie searches the document base for relevant documents and ranks them on predicted relevance.

Note: Valerie is still learning to do better!
When typing “appl”, all kinds of concepts from the ontology appear in which “apple” or “application” occur.

Irrelevant words like “applause” are not shown.
When typing “unif”, all kinds of concepts from the ontology appear in which “unif” occur, including concepts where “unif” is not part of the first word.
When searching for a concept, Valerie looks up the term in the ontology and shows its broader, narrower, related, solutions, innovations terms.

This helps the user in making the question more specific (refine) or more generic (broaden)

Example: variable rate irrigation

Note that a term may have more than one broader term (parent)
When searching for a concept, Valerie looks up the term in the ontology and shows its broader, narrower, related, solutions, innovations terms.

This helps the user in understanding the innovation-solution pairs

Example: trap cropping is an innovative solution in the area of
- Cyst nematode control
- Forest insect pest management
- Methyl-bromide alternative
- Non-chemical nematode control

Example: cyst nematode control has potential innovations in the area of
- Trap crop
- Trap cropping
- Trap plant
When searching for a concept, Valerie looks up the term in the ontology and shows its broader, narrower, related, solutions, innovations terms.

This helps the user in associative browsing of the query domain through the related terms.

Example: searching for **potatoes** gives areas in which the user could be interested in: **potato diseases**, **potato pests**, **potato quality** etc.
Selection & ranking algorithm:

- During search, the documents containing the ontology terms from the search query are identified

Query: I want info on B and D

- Document 1 contains ontology terms A, B, C, D, E, F, G, H
- Document 2 contains ontology terms B, D, F, H, J, L, N, P
- Document 3 does not contain ontology terms B and D
- Document 4 does not contain ontology terms A, C, G, K
Ranking of documents takes place on four criteria. For each of the four criteria, a score is determined, and then the scores are combined.

1. search terms occur in the title
2. search terms occur on the first page of the document (e.g. abstract)
3. all search terms occur equally often in the document
4. the number of times that a search term occurs in the document
When the documents have been found, for each document a paragraph (snippet) is selected to be displayed.

The title and the first paragraph in which all search terms occur is shown.

- Title contains ontology terms A, D, E, F
- Contains ontology terms B, D, G, H
- Contains ontology terms A, B, C, D, E, F, G, H
You can select your preferred language and the other languages that you speak.

The search terms will only autocomplete on these languages.

The search results will only show documents in the selected languages.

The query editor will show terms in your preferred languages (if they exist), otherwise in one of the other languages that you speak, otherwise in English.
Community

• Building up thematic communities
• Sharing documents with others
• Discussing innovation
• Connecting through social media
• Connecting with other users
• Searching (content, communities and experts)
• Activity feed, ...

Overview: Community features
ask-Valerie.eu – your virtual advisor

Time for a demo!
The result: ask-Valerie.eu

ask-Valerie.eu

Search
Community
Sign In
About

minimu

minimum uprawy
minimum tillage
minimum humidity
minimum daglengte
minimum temperature
minimum germination
minimum cultivation
travail minimum du sol
daily minimum temperature
dagelijkse minimum temperatuur
Calibration and adaptation of the NDICEA model to **reduced tillage** systems: Final-report of the Tilman CORE Organic II project. Work package 5.2.

Calibration and adaptation of the NDICEA model to **reduced tillage** systems [page 1]

Adoption and adaptation of conservation agriculture in Tanzanian southern highlands: lessons learned from Mshewe ward Mbeya region

Table 13. The diversity of individual understanding on CA principles Fraction (%) CA principles being comprehended by farmers 8.7 Only **minimum tillage** (opening furrow, no soil disturbance, no ploughing) 6.5 Only soil cover (cover crops and/or crops residue) 63.0 Minimum tillage followed by soil cover (especially legumes) (24.14% of this fraction) Minimum tillage is more important than soil cover 4.4 Planting maize and pigeon pea/lablab 2.2 Planting with direct planter and ox-plough 15.2 No opinion The number of surveyed farmers = 46 individual farmers Many farmers described CA as farming without disturbing the soil. This implies the absence of deep tillage; ploughing, deep weeding, and ridging. Some farmers additionally addressed the importance of herbicide as an integral part of CA. In the absence of herbicides they must prepare the land by ploughing to eradicate the initial weeds and later to carry deep weeding to kill the surviving ones. While facilitators advised shallow weeding (scratching technique using tillage depth of less than 5 cm) as an option to [page 41]

Population densities of pests and natural enemies in wheat (Triticum aestivum) and potato (Solanum tuberosum L.) in a diverse strip cropping system in the Netherlands

Aphids density: Parasitized aphids A total of 300 parasitized aphids were counted by visual observation on plants of potato. Out of those, 93 were found on strip treatment, 90 on plant treatment, 17 on tillage treatment, 40 on **minimum tillage** treatment and 39 on mulching treatment. Parasitized aphids showed to be at its highest value on July 3rd
Adoption and adaptation of conservation agriculture in Tanzanian southern highlands: lessons learned from Mshewe ward Mbeya region

Table 13. The diversity of individual understanding on CA principles

<table>
<thead>
<tr>
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Minimum tillage is more important than soil cover. 4.4 Planting maize and pigeon pea/lablab 2.2 Planting with direct planter and ox-plough 15.2 No opinion. The number of surveyed farmers = 46 individual farmers. Many farmers described CA as farming without disturbing the soil. This implies the absence of deep tillage, ploughing, deep weeding, and ridging. Some farmers additionally addressed the importance of herbicide as an integral part of CA. In the absence of herbicides they must prepare the land by ploughing to eradicate the initial weeds and later to carry deep weeding to kill the surviving ones. While facilitators advised shallow weeding (scratching technique using tillage depth of less than 5 cm) as an option to...
minimum tillage

- reduced processing
- reduced tillage
- ridotta lavorazione
- technique
- culturale simplifié
- travail minimum du sol
- uprawa
- zminimalizowana

- bad soil structure
- forest soil quality
- low soil organic matter
- soil conservation measure

- conservation tillage
- disc harrowing
- non-inversion tillage
- tine cultivation
Secondary spring tillage. However, use of conservation tillage in the long-term resulted in lower soil bulk density at the 0-10 cm soil layer compared to conventional tillage (Carter et al., 2009b). Ekeberg and Riley (1997) reported similar soil bulk density values under three tillage systems (i.e., plough, tine 6 cm and minimum) 10 years after the initiation of tillage treatments. Fertilization regime had no effect on soil bulk density since values were similar throughout the potato production period (Table 3). [page 12]

The overall objective of the project OSCAR was to be of use for, and improve sustainability in low-input, organic, and conventional farming systems. The research built on centrally planned multi-environment and long-term experiments on of living mulch (LM) and cover crop (CC)...

Final Report Summary - OSCAR (Optimising Subsidary Crop Applications in Rotations)The overall objective of the project OSCAR was to be of use for, and improve sustainability in low-input, organic, and conventional farming systems. The research built on centrally planned multi-environment and long-term experiments on of living mulch (LM) and cover crop (CC)...Executive Summary: The overall objective of the project OSCAR was to be of use for, and improve sustainability in low-input, organic, and conventional farming systems. The research built on centrally planned multi-environment and long-term experiments on of living mulch (LM) and cover crop (CC) based reduced tillage systems and detailed research on system management optimization, technology improvement, soil ecological services, and dissemination. LMs can benefit both organic and extensive conventional farming in Europe. For successful LM based cropping high crop densities are needed and regular sowing patterns were best suited. If expected cereal yields ≤ 6 t ha⁻¹, a clover LM canopy sufficiently strong to generate a dense sward after main crop harvest can establish in temperate and north Mediterranean environments with mild winters and no water limitation of wheat productivity. In cooler places sowing the LM before the main crop or undersowing in spring can be solutions. High biomass... Read More

REduced TILLAGE AND COVER CROPS IN ORGANIC ARABLE SYSTEMS PRESERVES WEED DIVERSITY WITHOUT JEOPARDISING CROP YIELD

In the French trial very superficial tillage and reduced tillage had higher weed infestation and consequently lower undersown alfalfa biomass at wheat harvest. Weed diversity was also higher in these two treatments. Wheat yield was lower in the reduced tillage system and higher with shallow than deep ploughing. Mid-term trials in the Estonian system experiment weed presence was strongly influenced by green manure crop, rye being the most suppressive one and ryegrass the least. This had a carry-over effect on weed density in the next pea crop. Perennial weeds dominated in red clover. [page 2]
Functionele agrobiodiversiteit: van concept naar praktijk

We hebben veldonderzoek uitgevoerd op bedrijven met niet-kerende grondbewerking (NKG) om vast te stellen in hoeverre de bodemstructuur effectief wordt verbeterd door een beter functionerend bodemleven, en op welke termijn na omschakeling op NKG resultaten kunnen worden verwacht. Onze studie sloot aan op door de Provincie Limburg gestimuleerd onderzoek naar bodembiodiversiteit en functionele agrobiodiversiteit, uitgevoerd door Praktijkonderzoek Plant & Omgeving. We hebben het bodemleven en de bodemstructuur onderzocht op diverse bedrijven in Limburg in een oplopende reeks onafgebroken NKG, telkens met naastgelegen bedrijven of percelen met conventionele grondbewerking. Hierbij werd gekeken naar regenwormen, schimmels, bodemaggregaten, indringingsverstand en waterinfiltratie. Daarnaast konden we gebruik maken van een experiment in Ierland om effecten van het achterlaten van stro bij NKG te onderzoeken. [page 44]

Duurzame onkruidbestrijding bij Niet-Kerende Grondbewerking

8.2 Schoffelen in NKG-systemen Een kenmerkend probleem voor bouwplannen waarin NKG al langer wordt toegepast is dat de organische stof zich meer in de toplaag bevindt. [page 18]

Aan de slag met niet-kerende grondbewerking

Niet-kerende grondbewerking ● 17 Granen Het teelt van granen zonder te ploegen lijkt in eerste instantie eenvoudig, maar de mogelijke problemen worden onderschat. Problemen waar je tegenaan kan lopen zijn:
- Moeilijke start van de granen bij late in-zaal in november-december
- Ziekteoverdracht in een teeltplan met meer dan 50% granen
- Opslag van tarwe in brownerger
- Vertraagde stikstofmineralisatie in de wintermaanden
Granen inzaaien na roolvruchten in de herfst vraagt om een goede voorbereiding. Zorg dat alles klaar staat voor je begint met oogsten, zodat je direct na of tijdens het oogsten kan starten met inzaaien. Vroeg inzaaien noodzaakt tot het omlaag brengen van de zaailaadhoeveelheid zoals beschreven in de tabel 4. Wacht je met zaaien, dan loop je het risico dat een regenbui het haast onmogelijk maakt om granen in te zaaien met een woeler-zaalcombinatie. [page 17]
The effect of **reduced tillage** on weeds and plant diseases

Annual weeds do not usually cause problems in **reduced tillage**. The abundance of some species may be lower in unploughed soil than in ploughed soil if weed-control has been continuously effective, because the weed seeds accumulate in the topsoil and the seedbank becomes poorer. On the other hand, the rhizomes of perennial weeds benefit from **reduced tillage**. On heavy clay soils, perennial weeds do not seem to proliferate in **reduced tillage** more than they do in ploughing. On light soils, however, perennials have to be controlled more carefully in **reduced tillage**. The effect of tillage on perennial weeds can be improved by the timing of tillage and by increasing tillage intensity or depth. [page 5]

**Jokihelmisimpukan suojelua edistävät viljelytoimet Pirkanmaalla**

On these farms the most risky plant in cultivation is early potato. Winter rye as catch crop is recommended, because it gives yield in next summer. The use of farmyard manure and legumes as fertilizers did not cause any leaching risk of nitrogen. **Minimum tillage** reduces nitrogen leaching too. [page 5]

**INNOVARE I SISTEMI CULTURALI CEREALICOLI RIDUCENDO LE LAVORAZIONI DEL SUOLO**

**Minima lavorazione** Aratura [page 2]

**Viljanviljelyn perusmukkausmenetelmien taloudellisuusvertailu**

In the smallest farm group of 38 ha the net loss in the cultivation of feed cereals (barley and oats) were the lowest when using the **reduced tillage** (cultivator or knife harrow). In the case of spring wheat the cultivator would seem to result in slightly smaller net


Building up thematic communities

Agroforestry

Agroforestry is the practice of combining trees and crops/livestock on the same piece of land. This is...

Mike den Herder 2 Feb 2017

Added a new link EURAF - European Agroforestry Federation to category "Information on agroforestry in Europe".

The European Agroforestry Federation (EURAF) aims at promoting the use of trees on farms as well as any kind of silvopastoralism throughout the different environmental regions of Europe. EURAF has about 280 members from 20 different European countries.
Crop rotation, soil cover ... pest mana...

I just found a useful paper in ask-Valerie's library. Have a look:
www.ask-V.eu/125436

Crop rotation, soil cover management and integrated pest management
Crop rotation is the farming practice of growing different crops in sequence over several years. In general, crop rotations have the following advantages relative to monocultures. Crop rotation provides greater variety in the timing and duration of soil cover than is typically the case in a monoculture. Keeping the soil covered can reduce nitrate leaching, protect against erosion, improve soil structure, contribute to carbon sequestration, suppress weeds, pests and diseases, and enhance...
Ask-Valerie.eu Community
Discussing innovation

Valerie

Peter M. Schuler
business transformation manager

Write a new comment...

Luca Bechini 25 Jan 2017

Is it possible to create a new discussion (for example about conservation agriculture)?

Like (1) · Comment ·

Show all 6 comments.

Frank de Ruijter 25 Jan 2017

This website gives a good overview on why to plow or not: https://iowaagliteracy.wordpress.com/2015/04/27/why-do-they-do-that-plowing-or-tilling-fields/

Like

Janet Dwyer 25 Jan 2017

Is Plow a recognised spelling? American, maybe. In the UK we say ploughing.....

Like

Peter M. Schuler 24 Jan 2017

business transformation manager

2017-11-14 Valerie @ Brussels
Teile einen Link mit deinen Followern

Is it possible to create a new discussion (for example about conservation agriculture)? http://humhub.silvacube.de/index.php?r=content%2Fperma&id=144

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Is Plow a recognised spelling? American, maybe, In the UK we say ploughing.

Like

Peter M. Schuler 24 Jan 2017
business transformation manager

Which types of sub-communities would you like to actively participate in?
Where can I find out how to set up a forest owners group? We have a lot of unmanaged forest in my region (Yorkshire Dales in England), most of it is owned by farmers but they don’t manage it any more. There is a growing risk of forest fires.
ask-Valerie.eu Community
Connecting with other users 2/3
ask-Valerie.eu Community
Connecting with other users 3/3
ask-Valerie.eu Community
Searching (content, experts and communities)
Any questions?

Thank you for your time and attention.

ask-Valerie.eu will be online soon. Please follow us on Twitter!

@Valerie_project
Content (how to ensure end users get the best content)

1. **What is the most suitable format for ‘translating’ research outcomes into practical outputs? Do the issue-solution pairs used in ask-Valerie, VALERIE factsheets and org-prints provide a good structure?**

Process (how to ensure sustainability of such a platform)

2. **What needs to be done to make a knowledge platform such as ask-Valerie work in the long run? What strategies can be used and what resources are needed to develop a community of users (e.g. How could users contribute towards maintaining the system?)?**
Timings

• 2:15 to 2:40 (25 mins) – Appoint a group rapporteur and discuss the questions: take notes to formulate one sentence answers

• 2:40 to 2:45 (5 mins) – Rapporteurs write out one sentence answers

• 2:45 to 2:50 (5 mins) – Rapporteurs report back
Content (how to ensure end users get the best content)

1. What is the most suitable format for ‘translating’ research outcomes into practical outputs? Do the issue-solution pairs used in ask-Valerie, VALERIE factsheets and org-prints provide a good structure?

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2. What needs to be done to make a knowledge platform such as ask-Valerie work in the long run? What strategies can be used and what resources are needed to develop a community of users (e.g. How could users contribute towards maintaining the system?)?