
The green information chain: *Groen Kennisnet* brings agricultural knowledge from research to the classroom, on the farm, and into agri-business

Rob van Genderen

Wageningen UR Library, Wageningen, The Netherlands.
Rob.vanGenderen@wur.nl

Jacqueline Ringersma

Wageningen UR Library, Wageningen, The Netherlands.
Jacqueline.Ringersma@wur.nl



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Abstract:

“Groen Kennisnet” creates a content collection and professional “green” knowledge base (agriculture, horticulture, animal welfare, environmental protection, water management, food, fisheries). “Groen Kennisnet” makes these available to the Dutch agricultural education system and agri-business, and organizes communities around specific themes. “Groen Kennisnet” thus contributes to the connection between innovation in research and business & teaching.

In our paper we explain how we organize the green information chain, the IT infrastructure and the communities. The combination of content, IT and community results in bringing new innovative knowledge available in the classroom and on the farm.

Keywords: Library, Knowledge base, Content Collection, Agricultural Knowledge

1 INTRODUCTION

Groen Kennisnet is an information network in the Netherlands with the aim to support the “green” sector in the golden triangle of education & research, trade & industry, and government authorities. With “green” we mean the domains of agriculture, horticulture, animal welfare, environment, water management, food and fisheries.

Groen Kennisnet creates a collection, and a professional knowledge base in the “green” domains and makes this available to the agricultural education system and agri-business in The Netherlands. *Groen Kennisnet* organizes communities around specific themes and

provides domain specific sub sets of the collection and the knowledge base to these communities.

Wageningen UR Library is one of the partners in *Groen Kennisnet*. Wageningen University and Research Centre is a collaboration between Wageningen University and the Agricultural Research Institutes in the Netherlands. Wageningen University is the only Dutch University in the scientific domain of food and environment. The primary role of the library is to support the staff and students of the University and Research centre. However, in participating in *Groen Kennisnet*, Wageningen UR Library contributes to a broader audience, namely the other “green” educational institutions in the Netherlands, the agribusiness, the government authorities, and the Dutch citizens interested in “green” information.

Besides Wageningen UR Library, the other partners in *Groen Kennisnet* are:

- Ministry of Economic Affairs: initiator of *Groen Kennisnet* and main financer
- Ontwikkelcentrum (OC): publisher of learning materials for the “green” schools in the Netherlands
- ‘Green’ education: 1 university, 5 BSc level vocational education institutions and 13 vocational training institutions
- Content partners: publishers of professional journals in the “green” domain

The role of the Wageningen UR Library in *Groen Kennisnet* is the organization of the information chain and the IT-infrastructure for this. We also contribute to the organization of the communities.

In this paper we explain how we organize the “green” information chain, the IT infrastructure and the communities. The combination of content (learning materials, publications and other resources of information), IT and community results in making new innovative knowledge available in the classroom and on the farm.

In the remaining of this paper we will use the abbreviation GKN for *Groen Kennisnet*. GKN can be used both Dutch and English since *Groen Kennisnet* means “Green Knowledge Network”.

2 GKN: FROM E-LEARNING ENVIRONMENT TO INTERNET PORTAL

GKN was established in 1999 by the former Dutch Ministry of Agriculture (now the Ministry of Economic Affairs) as an e-learning environment for “green” schools in the Netherlands. In GKN environment schools, teachers and students could cooperate and share knowledge in an Intranet environment. The Ministry invited partners to distribute innovative (digital) knowledge from research into the classroom, on the farm and into agri-business. At the time Wageningen UR Library already had a large document database with practical knowledge for the green sector, which was created for the Agricultural Research Institutes. Based on this asset, Wageningen UR Library was invited in 2005 by the Ministry to cooperate and share the available knowledge. The Ontwikkel Centre (OC), had a database with learning materials (mostly paper only). In 2009 Wageningen UR Library, OC and the other partners joined their digital content in one IT-infrastructure. In June 2010 the GKN website www.groenkennisnet.nl was launched by the Dutch Minister of Agriculture, Mrs. Gerda Verburg. With this new website the available content could be shared more effectively with partners in educational environments. In addition agribusiness and public interested in

“green” subjects also got access to the Internet portal, and use most of the digital content of the documents in the knowledge database. The available knowledge was enriched and explained in news items, thematic sub sites, an education portal and in special files (“dossiers”).

3 THE GREEN INFORMATION CHAIN – HOW IT WORKS

The main goal of GKN is to distribute and retrieve innovative online knowledge into organized communities in education and agri-business, and to the broader public. In order to be able to share this knowledge we take the following steps:

1. Content collection

Wageningen UR Library collects open access, digital and unique professional knowledge in the domain of agriculture, food and environment. We acquire research reports, conference presentations and student reports from the agricultural research within Wageningen UR. Through our content partners, publishers of the professional journals, cooperatives and project partners, we acquire journal articles, reports, video’s and other practical information resources. Through the Ministry of Economic Affairs innovative projects are being financed and the results are made available in the knowledge base. The documents are described by library staff, with formal metadata and documented with key words and abstracts. The metadata are stored in the document database. Included in the metadata is a link to the full text document (if available).

An essential part of our content is the article collection. The articles originate from the professional journals. For the acquisition of these, we work closely together with the publishers. The publishers make the articles online available on different conditions. Sometimes access is restricted and login is required, but most of the time only an embargo period is imposed before the articles can be made available online. The relation between GKN and the publishers is one of give and take; we offer them functionality in return: a journal archive environment or a search box on their specific content in the document data base. Never is there payment involved in this collaboration.

2. Archiving

Wageningen UR library stores the full text documents of the publications in a digital archive with a persistent URL for use in different databases and use on a variety of domain specific portals. The URL to the full text in the digital archive is included in the metadata in the document database. The relevance of the documents is judged by trained library staff members, with special knowledge in specific fields. We do not include documents that contain text or photo material that is copyrighted by authors or photographers.

3. Educational content

OC provides most of the educational content in GKN. To include the educational content in GKN we harvest metadata from different educational content providers in our cooperative network and include the metadata in the database. The educational content is described with a special metadata set specific for educational content (the Dutch NL-LOM metadata scheme). Mostly the educational content is not publicly accessible, but requires a login which is available to students and staff of the educational institutes.

4. One search environment

We make all metadata and full text searchable in 1 search index (SOLR Lucene) at www.groenkennisnet.nl through a search box. Search results can be refined through a faceted browser, so that users can easily find the content in specific themes (animal welfare, entrepreneurship, food, nature and landscape etc.).

5. Communities

Partners in our network are organized around specific themes (e.g. pig farming, plant protection). We provide thematic websites within the GKN site. We further provide the communities with metadata in NL-LOM or Dublin Core on the sub-set of the collection which is of interest for the specific community. Partners can obtain a search box scoped at a specific theme (script) for inclusion in their own websites.

6. Services: content in context

“Groen Kennisnet” provides additional services on content: we compile digital leaflets on specific themes (“dossiers”) which are on topic in the social debate. These leaflets give the latest information (e.g. [bees](#), [Q-fever](#)) and links to the most relevant literature and can be used in the classroom for further discussion or project work.

News items on green and agricultural issues, provide information and links to background information on topics which are under debate in politics or society. Besides publications and learning materials, the GKN search engine also contains news items, project information, webpages from partner websites and organisations and people.

7. Organizations and experts

For the organizations and experts GKN provides an expert database. Currently 750 experts in the agricultural and green domain have registered in the expert database. In addition 1380 profit and non-profit businesses can be found in the database, including the Dutch Agricultural Institutions.

4 THE GREEN INFORMATION CHAIN – IT INFRASTRUCTURE

In order to have one search environment GKN makes metadata and full-texts from the different sources (e.g. Library, OC, news, websites) searchable in 1 search index (SOLR) at www.groenkennisnet.nl. The search box provides access to research output, articles, educational content or scopes to specific themes (animal welfare, entrepreneurship, food,

nature and landscape). Figure 1 gives a schematic view of the complex infrastructure of harvesting and delivering metadata from and to different sources and portlets.

For educational purposes we harvest metadata of educational content from different providers in our cooperative network (all in the NL-LOM metadata scheme). To distribute the content, our partners can harvest thematic content for use in their own portal or website. GKN also provides thematic search portlets to the GKN partners in exchange for their content.

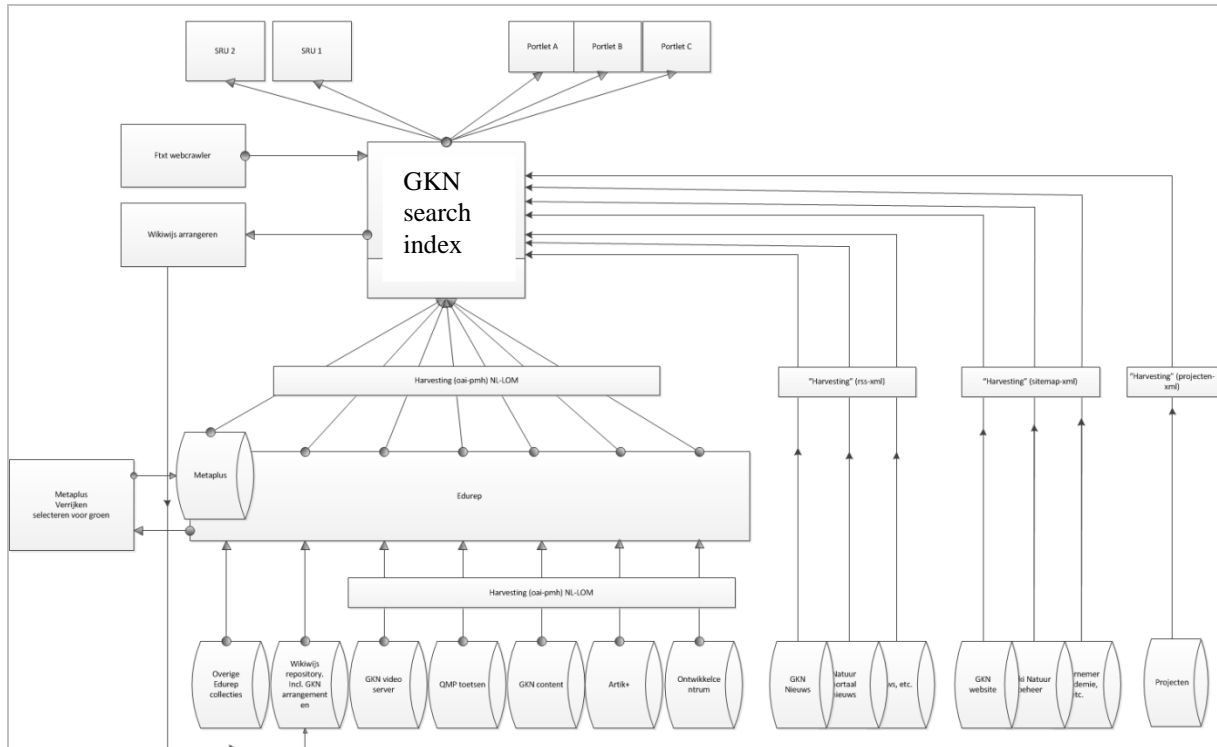


Figure 1: GKN infrastructure

5 ROLE OF COMMUNITIES

A challenge in the current GKN model is how to bring the available content and knowledge to the users who need this information? The teacher in the classroom, the farmer, agro-business and general public. GKN users are organized around a specific theme, but not every theme in GKN has an active community. Only active communities use the GKN knowledge, and only active communities supply documents to the knowledge base, so active communities are an essential part of our user interaction model.

Theme communities work with a community manager who talks to users in the agri-business and educational institutes ('pig farming', 'ornamental bulb growing'). The community manager acquires the needs of the community and informs the users about GKN and the possibilities of the platform and knowledge database. In this way the available content will be partly 'demand-driven' by the end-users of GKN. The result is that the content will be used much better because it is made more useable in their work or in the classroom.

GKN also delivers to cooperation between research and business. A nice example is the search box on the portal of the Dutch Turfgrass Research Foundation. This foundation, which finds its roots in the Turfgrass agri-business supports education and research in making information available in a concise manner. The community installed a search box on the

GKN knowledge base, configured in such a way that only relevant information will be found. The community delivers content from their members to the knowledge base , and thus contributes to the enrichment of GKN as a whole.

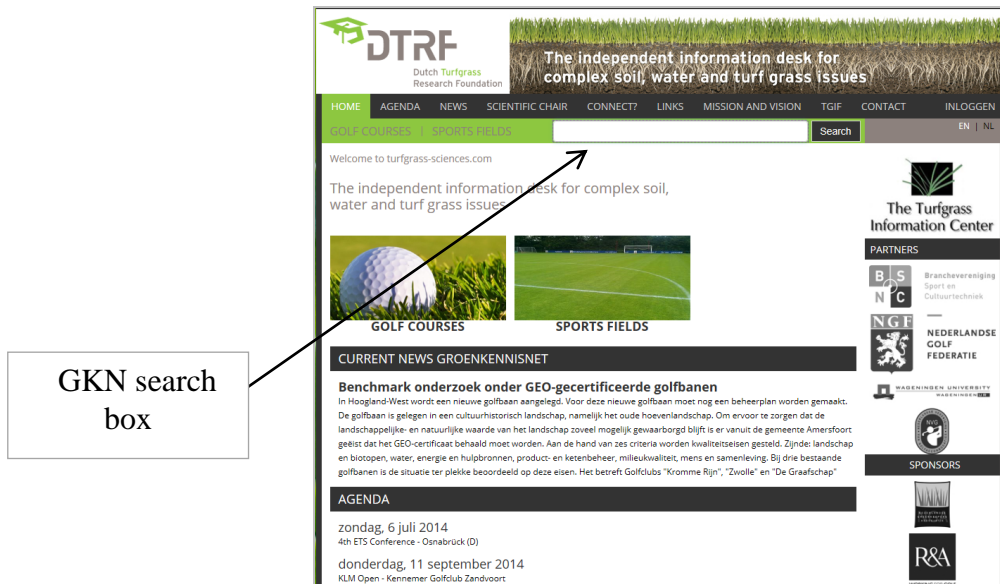


Figure 2: DTRF Portal with GKN search box

For the use of the knowledge base by the general public, we make the digital publications retrievable in Google, and we use social media to spread our information. In this way also actors who do not know the GKN portal will be able to use the GKN knowledge base. On a yearly bases we deliver around 1.7 million downloads from the GKN knowledge base to end-users.

6 LESSONS LEARNED

Although GKN is aimed at the Dutch language regions, and the Dutch educational system, we think that GKN provides an excellent example of how agricultural knowledge can be brought into teaching programs and into the agri-business. GKN is ready to be copied in other countries. There are a few lessons that we have learned, and which can be useful for you, in case you would like to apply the GKN model.

What lessons did we learn from working in GKN for several years?

1. An important lesson is that not everybody is willing to (freely) share their information and knowledge. You must put quite an effort in this activity. Communication is essential, and the role of community managers can be helpful. Visit the potential users of your content and organize meetings to inform them.
2. Do not spend too much time and money on the innovative techniques but focus on the usage of the content. On the other hand, you may be surprised how often organizations are prepared to finance these innovative techniques compared to the willingness to make a financial contribution for new content. It is not easy to convince people that information is not free!
3. If you host digital information on your server, beware of copyrights! Even when we made solid arrangements with the publishers of the professional journals, it sometimes turned out that the publishers did not have solid arrangements with free lance authors and photographers.

4. Last but certainly not least: library staff is positive about their new activities. Let them really take part in the cooperation with other organizations. New skills are needed, tasks have to be redistributed and their activities will be more diverse.