

## **A focus on cereals in conference on organic breeding and propagation material with Belgian stakeholders, 11<sup>th</sup> March 2015**

*Belgian organic farmers are dependent on mostly foreign seed companies or their local distributors. This is the case as well for vegetables as for arable crops. The Belgian COBRA farmers conference in March 2015 aimed to bring organic farmers back to the real origin of organic seed.*

What are recent developments in crop breeding? Are these techniques compatible with organic agriculture? How is breeding for organic agriculture different? Which initiatives are going on and what are the opportunities for the future? These are some of the questions that were addressed during the conference 'Plant propagation material in organic agriculture: today and in the future' in Melle, Flanders, Belgium. This conference was organized on 11 March 2015 by Inagro (department of organic production) and Bioforum, the Flemish sector organization of organic agriculture and food. The main theme was treated for two sectors: vegetables and cereals. Farmers, researchers, processors, consumers and other stakeholders in organic agriculture and breeding were invited. Some 40 participants with different involvement in the organic chain discussed on the subject from their own perspective.

### **Organic breeding and seeds...**

Organic farmers that buy organic seeds often don't realize what the origin of this starting material is. Breeding has become a specialized profession in hands of various, sometimes large, companies. This is also the case in organic agriculture. In Belgium, organic farmers are dependent on mostly foreign seed companies or their local distributors. These are often companies that have a small branch of organic seeds next to the main activity in conventional agriculture. These organic seeds have been conventionally bred but are grown organically in the last stages of seed production. The compatibility of some breeding techniques with organic agriculture is questioned.

Meanwhile, there are some new breeding techniques and local initiatives that are very well adapted to the principles of organic agriculture. These include local initiatives such as participatory breeding, and breeding techniques such as the revival of (new) land races and the use of composite cross populations.

### **... a story of vegetables**

Plant physiologist Michel Haring (University of Amsterdam, NL) gave an overview on the evolution of techniques in vegetable breeding, from the use of parent lines in hybrids up to protoplast fusion and cis- and transgenesis. Maarten Vrensen (Vitalis, NL) and Mieke Lateir (Biosano, BE; Bingenheimer Saatgut, DE) shared their view on these evolutions as representatives of two seed companies that produce exclusively organic varieties. In these seminars and in the group discussion, it became clear that awareness of the use of these techniques must grow among all stakeholders in the organic chain.

### **... and one of cereals**

Breeding of cereals is different than for vegetables. The focus of discussion was on local breeding initiatives and new breeding concepts which are very suitable for use in organic production. Two speakers were invited. Professor Marjolein Visser (Université Libre Bruxelles, BE) teaches in

agricultural systems and agro-ecology and supports research on participatory breeding initiatives. Tim Moerman is a biodynamic farmer in Zeeland (NL) and is committed to the use of land races of wheat.

### **CCP's and participatory breeding**

Prof. dr. Marjolein Visser started by presenting the work on composite cross populations (CCP's) of winter wheat done by the Organic Research Institute and others. From the results of the study of Dawson & Goldringer (2012) she remarked that CCP's are in general more robust in hard and variable environments than their parent varieties and that CCP's can maximally adapt to local conditions through time. The COBRA-field trials at the organic experimental farm of Inagro (BE) and of the numerous other partners in the COBRA project have so far confirmed these observations.

Prof. Marjolein Visser identified three fundamental differences between the concept of CCP's and the conventional way of breeding in cereals. She sees CCP's as a step away from the 'control model' and towards the 'adaptation model'. The traditional creation of line varieties is a case of the control model in that it tries to rule out variation and forms a static balance. By contrast, CCP's focus on the system, exploit variation and form a dynamic balance. Secondly, CCP's are a shift from off-farm towards on-farm selection and go together with participatory, decentralized breeding. Thirdly, as an example of participatory breeding, the driving force in selection is not supply- but demand-driven.

She concluded her presentation by demonstrating some initiatives of participatory breeding in cereals:

- Le Moulon (FR): F<sub>3</sub> of wheat CCP's distributed to local farmers in France, participatory breeding by the network Réseau Semences Paysannes (RSP) – supported by INRA  
<http://moulon.inra.fr/>  
<http://www.semencespaysannes.org/>
- CETAB (FR): local network of farmers and bakers preserving old cereal varieties and knowhow, creating farm-adapted land races
- Red Andaluza Semillas (ES)  
<http://www.redandaluzadesemillas.org/>
- Maison de la semence citoyenne – Nature et Progrès Belgique (BE)  
<http://www.natpro.be/~natpro/jardinage/maisondelasemencecitoyenne/index.html>

### **Land races of wheat for high quality organic bakery**

Organic farmer Tim Moerman showed us a clear overview of the history of breeding in cereals. As an enthusiast for artisan baking, Tim shared his experiences with the use of land races and diverse plant material. He met among others Belgian artisan baker Marc Dewalque and from these experiences he came to understand the importance of cereals that are adapted to the local environment and the technical needs of farmers, millers and bakers all working together.

He sees the reason for a revival of local land races in their nutritional quality and in their use in organic agriculture, which is increasingly searching for alternatives to classic variety breeding. The DUS (distinctness, uniformity, stability) requirements for the distribution of propagation material is the most important barrier that limit their development. Nevertheless there are chances for using land races, especially in a chain approach where all actors from farmer to consumer join forces. In his

'Consumer guide on organic bread' he wants to convince consumers and stakeholders of these opportunities. He sees the example of 'der konsequente BioBäcker' in Germany as a proof that the chain approach can work. [www.biobakker.eu](http://www.biobakker.eu)

You can find the presentations of the speakers in Dutch here:

<http://mailing.bioadmin.be/files/2015/150316/>

The field trials conducted by Inagro of mixed crops and winter wheat CCP's can be visited at the field day at the organic experimental farm (June 17<sup>th</sup> 2015, Rumbeke-Beitem, BE). The invitation in Dutch:

[http://leden.inagro.be/Artikel/guid/6be0af5f-b8eb-40e0-acd0-472a0399a2a1\\_950](http://leden.inagro.be/Artikel/guid/6be0af5f-b8eb-40e0-acd0-472a0399a2a1_950)