



Potato futures: impact of hybrid varieties

Online international conference
November 30, 2020

Background

In the last decade, hybrid potato breeding as a new paradigm has grown from a promising principle to a realistic approach. Breeders welcome the prospect of hybrid potato breeding as a game changing development that may help to adapt potatoes to various soils and climates and to make them resistant to pests, disease, heat and drought. Indeed, the promises of hybrid potato breeding clearly resonate with a more general debate in the literature about the role of plant breeding in responding to the global challenges of food security, agrobiodiversity and climate change.

These promises also inspired the NWO-funded project *Responsible innovation in Dutch potato breeding* (Potarei 2015-2020), initiated by researchers from Wageningen University, the Rathenau Instituut and the University of Groningen, with active participation of the company Solynta, the inventor of hybrid diploid potato technology. The Potarei project focused on conditions for a responsible development of hybrid potato that should benefit 'the productivity, sustainability and diversity of the current potato production systems'.

Now, five years later, several companies are developing this technology and we are at the eve of the market introduction of hybrid potato, possibly followed in the near future by a rapidly expanding market share. In this context, the conference *Potato futures: impact of hybrid varieties* offers a programme in which we want to bring together, compare and contrast the insights from the Potarei project with the views and experiences of breeders, stakeholders and policy makers in a national and international context.

Aims and main agenda for debate

The future of hybrid potato breeding is both open and uncertain. This future will not only depend on the ultimate agronomic performance of hybrid potatoes, but also on a range of societal actors, conditions and developments that may steer breeding in various directions. In this conference we will focus on the societal goals and system conditions that may guide and shape the development of hybrid potato.

In the morning programme hybrid potato breeding will be introduced and discussed as a radical system innovation and different scenarios will be presented as possible futures for this innovation, shaped by diverging technological and societal system contexts. On this basis, we have identified two issues as our main agenda for debate:

- Hybrid breeding will be an important driver for rapid variety development, creating new added value, both commercially and from a societal point of view. This raises questions about the needs to which this variety development should respond. How to connect commercial interests and values with innovation that contributes to the common good, responding to food security, sustainability and climate change as major societal challenges expressed in the global sustainable development goals?
- Hybrid varieties will become available as true potato seeds that can be propagated, stored and transported as a commercial (or public) source of clean and high-quality planting material. This creates new opportunities for the organisation of potato value chains, with cultivation systems that may vary from direct sowing by farmers, to using plantlets or (mini)tubers produced in special nurseries. What would be the implications of these various system choices for different stakeholders in the potato sector?



Two system contexts

As a well-developed agro-industrial system, the potato sector in the Netherlands, Europe and the United States may lend itself in many ways to the introduction of hybrid potatoes, although it may also have to undergo significant system transformations to enable a successful introduction of the hybrid potato. In developing countries, on the other hand, and in Africa in particular, we find a mostly informal potato sector that is institutionally, technologically and commercially poorly developed, dominated by smallholder farmers facing conditions in which the cultivation of commercially sourced hybrid potato planting material may not be considered a feasible and attractive option.

In this conference we will highlight both system contexts in two parallel afternoon programme tracks with the aim to elaborate our main agenda for debate in more specific and concrete ways. In the first track, focussing on the Dutch/agro-industrial context, the intended participants are primarily stakeholders from the Dutch potato sector and other relevant parties – including breeders, farmers, trading houses, processors, and agencies involved in certification, regulation and policymaking. The intended participants in the second track, focussing on the developing/African context, are parties from the Dutch and international potato sector, concerned with international agricultural development, global food security, sustainability and climate change – including CGIAR centres, the international seed and potato industry, knowledge institutions, governmental or private policy makers, funding agencies, and civil society organisations.

Dutch/agro-industrial context

The Netherlands has a leading position in (seed) potato breeding, production and export. Hybrid breeding may be adopted by Dutch potato breeding companies primarily for its commercial perspectives, but to what extent and under what conditions will it also serve the common good in response to major global challenges? Do we need an orchestrating role for the private sector or government in this regard? What system changes and choices can we expect with respect to the production and use of hybrid planting material and what are the implications of these changes and choices for the international position of the sector in potato seed tuber production and export? How to steer this development in the right direction and which parties can take responsibility for this? What to expect from the government in enabling this development, especially with regard to international regulation of true seed and seed tuber transport and distribution, and the need for (seed) variety protection?

Developing/African context

Seed system interventions with the aim to advance food security seek to serve a wide range of farmers, but innovative commercial seed technologies often do not fit with resource-poor farmers' reality. In this context, the hybrid potato must be regarded as a highly complex and challenging innovation. For a successful introduction of hybrid potato, the development of commercial potato value chains is generally considered as a key condition, but how to connect this development to different categories of farmers, including smallholder farmers, strongly depending on farm-saved seeds? Adaptation of hybrid varieties to local conditions and climate change may be seen as an important requirement in this respect, also maintaining local agrobiodiversity. How to organise dedicated hybrid breeding programmes for this purpose? What role in this context for collaborations between farmers' organisations, business, NGOs, and public research and extension organisations, including participatory breeding initiatives?