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Editorial introduction: Design issues and practical questions for demand-oriented seed systems

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Abstract

This special issue is a collection of papers that brings together different views on and experiences with seed systems and reflects the breadth of perspectives within CGIAR and beyond. The contributions relate to the major challenges facing seed systems research and development in different contexts and for different crops. One point of agreement among these articles is the need for the development of varieties and the delivery of seeds to be more demand-orientated. This introduction reflects on the implications for CGIAR and affiliated breeding programmes which aim to accelerate varietal uptake and turnover and rely on more effective seed delivery. Here, we outline how the various contributions in this special issue relate to this agenda. We conclude that realism about which farming households can be served by current approaches to seed system development is needed and argue that a wider range of partnerships will be required to broaden the reach of seed systems.

Keywords

Farmer needs, diverse seed demands, seed delivery, partnerships, inclusive seed systems, delivery profiles, reflections, OneCGIAR

The on-going reorganization of the CGIAR and its partners to implement a strategy and research agenda that has more impact (CGIAR, 2021) has reignited discussions around crop breeding priorities and seed systems' development. Seed systems are critical in providing farmers with quality seeds and form the critical links that connect breeders and farmers. This special issue has been put together as a result of discussions among CGIAR scientists and partners who share an interest in the One CGIAR developing a coherent and coordinated seed system research programme (Donovan et al., 2021a).

Inspired and informed by these discussions, this special issue is a collection of papers that brings together different views and experiences, reflecting the breadth of perspectives within CGIAR and beyond. They relate to the major challenges facing seed systems research and development in different contexts and for different crops. One point of agreement among these articles is the need for the development of varieties and the delivery of seeds to be more demand-orientated. This call for making CGIAR breeding programme more demand-orientated is accompanied by one to accelerate uptake and varietal turnover, facilitated by more effective linkages with commercial seed delivery with the aim of creating sustainable local seed sectors (CtEH, 2021). Acknowledging that different views exist, we argue that we need to be clear and more reflective about existing impact pathways. This will help to identify priorities, complementarities, synergies and existing obstacles. Targeted investments in breeding and seed systems simply can achieve greater impact in less time than they do at present and help accelerate progress to goals related to food security, gender equity and poverty reduction.

Several contributions to this issue point out how seed system development has served smallholder farmers in sub-Saharan Africa and other regions unevenly. Explanations for the successes and persistent challenges are found in the character of the crop seeds, the delivery pathways that have been developed and supported in particular contexts, the external factors that conditioned these pathways and the context of smallholder livelihoods. Hambloch et al. (2021) review the experiences with the supply of seed of improved sorghum varieties with a focus on East Africa. They conclude that diverse approaches of seed system development and diverse

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delivery channels are potentially more promising than private sector business models, given the characteristics of both the crop and the households who produce sorghum in this part of the world. Conditions of marginal agro-ecological and socio-economic communities are a poor fit with the goals of private sector actors. But even crops and conditions that offer more promising opportunities for profitable models, and thus private sector investments, face their own challenges. Donovan et al. (2021b) highlight the successes of three public and donor supported cases in harnessing the capacities of the private sector to supply seeds to smallholder producers: hybrid maize in Kenya, rice seed in Vietnam and Bangladesh, and hybrid tilapia fingerlings in Bangladesh. They also point to the persistent challenges faced by the private sector actors themselves to drive the uptake of these varieties among smallholders. Both studies suggest that new forms of public and private engagement are needed for seed systems to have a greater impact in farmers' fields.

Along this chain, from research station to field, breeders have opportunities to contribute to further improving demand-orientation of seed delivery. The literature review by Voss et al. (2021) reflects on what is known about gender-intentional maize breeding and outlines an agenda for future research and dialogue. Their review shows that better understanding of variety traits preferred by women is complex and posing methodological and conceptual challenges, and will still not sufficient to address women's needs. They show how real life contexts often limit the possibilities for women to grow the seeds of their preference. Access to seed and the associated crop inputs also play a significant role in the adoption of improved seeds. This implies focusing particularly on the challenges that are beyond the breeding programmes themselves and examining the routes through seed value chains. This review concludes that without understanding how gender-intentional breeding fits and ranks among the range of potential entry points for improving women's access to, and uptake of, new varieties. Without such improved understanding, continued work on gender-intentional breeding may be misdirected.

Mausch et al. (2021) argue that the diverse particularities of households, crops and contexts are crucial in understanding the differing demands for seeds and varieties. These different and diverse demands should be the central point of departure in the design of seed delivery pathways and seed business/delivery models and this, in turn, requires that we acknowledge the variety of different development visions and pathways. This is a prerequisite for being inclusive and contributing to the various Sustainable Development Goals. The authors present the concept of demand-profiles that are composed by selecting seed demand-characteristics from a menu of context specific options. They describe a seed landscape that shows parallels with 'food parks' that could and should form a network of different seed delivery models. They envisage different shapes and forms of seed business/delivery models, including those based on social profits/benefits as well as financial ones. Acknowledging the strengths and weaknesses of these different models in serving the demands of different types of farming households in different contexts opens up opportunities for coordination and support to the diversity of development pathways that farming households currently walk.

The study by Kilwinger et al. (2021) looks to find entry points for commercial business models for supplying cassava planting materials to smallholders in Rwanda. This informs the discussion about whether, how, and under what conditions the commercialization of seed delivery can guarantee a better supply and access to quality planting materials. There are those who see commercial, profit driven business models as a driver of seed value chains, whereas others see no reason to turn current models that hinge on social capital (relations within communities) into models of economic capital. The authors of this contribution show that in the case of cassava in Rwanda, and with the current absence of degeneration effects in this crop, there are limited opportunities for sustaining a commercial business model. This contrasts with the situation of seed yam in Nigeria, another vegetatively propagated crop, and the situation for many small grains, as reflected upon by Hambloch et al. (2021). Stuart et al. (2021) describe a yam seed system in Nigeria that is dynamic and commercial. Whilst largely informal, this system appears to function well. Yam has a low multiplication rate and seed degeneration strongly affects productivity in the fields of Nigerian farmers. Consequently, farmers are keen to financially invest in seed, thus providing opportunities for very different business models compared to cassava in Rwanda.

While donors, researchers and NGOs are focused on identifying delivery models that offer better ways to get seeds of various crops to various type of farmers working in different contexts, there is a more fundamental question which seems overlooked when defining what it means to be demand-orientated or demand-responsive. Demand-oriented means that we aim to provide seeds that have characteristics that end users prefer. But what if that farmers' preferences are based on 'what they know' and 'what they trust'? In this case, their demands may change if they are provided with a fuller range of information to help them make informed choices. We thus need to ask ourselves if farmers have access to unbiased and complete information about the seeds and varieties that CGIAR and other agencies offer. When presenting them with the promise of higher yields, do we also inform them about the need for additional inputs and the higher risks associated with taking out loans to purchase seed and inputs? And, how clear are we about those higher yields in farmers' fields? Are we sure that all farmers want to grow the productive new seeds we offer and become integrated in the market, under all conditions? Or, is it possible that we merely think that these seeds are better for them? If the latter, what measures do we use to be sure that what we define as 'better' is also considered as 'better' by farmers. If the information that we provide to farmers on the opportunities of these improved seeds is incomplete, our efforts to inform them may become a questionable form of 'nudging', which can create tensions in with providing them with the opportunities to choose and follow their

aspirations and making the most appropriate technological choices. These questions, as the various contributions in this issue argue, beg a better understanding of what motivates farmers to prefer particular seeds and varieties over others.

Two contributions in this issue represent an empirical effort to look at seed 'on offer' from the farmers' perspective. The contribution of Riungu et al. (2021) looks at the introduction of a new bean and maize varieties in Uganda. They show that when new seeds are promoted to farmers, much remains vague to them and non-adoption can result from poor information, limited interactions around demonstration trials, restricted access to the seed, and uncertainties over performance of the seed. Almekinders et al. (2021) show that, in West Kenya, choices for seed may be very different, simply because of the varying ways people that engage with maize growing and consumption. They conclude that some households that grow maize prefer to grow culturally-valued local maize varieties, while others have different priorities and buy hybrid seed. Lack of clarity about the potential performance of the seeds, the profitability of maize farming, the cash available for input purchases and the presence of organisations that tie the loans for maize input packages and other items to the arrangements with farmers further blur the picture.

What are the chances for seed system interventions doing better in the future and being more inclusive in meeting the demands and needs of more farmers? What concrete steps should be taken? The efforts of the CGIAR with public and private sector partners in the past have yielded impressive impacts in terms of delivering better seeds and improved varieties, but still leave many farmers with meagre or no benefits. Households in rural communities engage in agriculture in increasingly diverse ways and emerging global challenges require more resilient smallholder farming. This requires realism and critical reflection on the ambitions which farming households can be served by current approaches to seed system development. The contributions in this issue show the complexity of diverse seed and variety needs. An effective demand-orientation by CGIAR (and its public and private sector partners) requires realistic ambitions. A priority focus on accelerating the uptake of newer varieties by farmers who have already been reached before is a sensible goal. Attempting to broaden the reach to the more difficult and complex seed demands of rural households who are only partially engaged in markets and living in more marginal environments may need other approaches and other partners. It will require the identification or design of additional, alternative seed delivery/business models that can serve these diverse rural communities, development pathways and SDGs, and most likely the involvement of other partners that have a better understanding of, or contact with, these groups. In the end, farmers' resilience in facing an uncertain future is best served by them being well-informed on the variety of seed menus. Our efforts have to concentrate on making a diverse range of seeds available, from which these well informed choices can be made. Making concrete the next steps and putting the relevant partnerships in place starts with recognizing the need for realistic ambitions.

Editor

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