

## Agriculture and Food Security: Where research can make a difference



Remarkable progress has been made over the past 10 years in decreasing the proportion of poor and hungry people in the world. However, feeding an estimated 9 billion people with safe and nutritious food by the year 2050 remains a challenge for agricultural research, development and policies – especially given the challenges of climate change, increased demand, and volatile prices.

In particular, we need to develop and scale up innovations specifically suited for the nearly 800 million small-scale farming families globally – to increase the sector's productivity and gradual transition toward economically

viable small and medium-scale farming, especially in South Asia and Africa.

One of the ways of achieving food security is through focused and practical research. We see clear evidence that science and research can increase both food supply and play a key role in the fight against poverty. The World Bank has shown that agricultural growth is twice as effective as non-agricultural growth in reducing poverty. That is because most of the world's poor live in rural areas.

At Canada's International Development Research Centre (IDRC), our goal is to invest in knowledge, innovation, and solutions to improve lives and livelihoods in the developing world. Bringing together the right partners around opportunities for impact, IDRC builds leaders for today and tomorrow and helps drive change for those who need it most.

Our commitment to supporting agricultural and food research makes sense. Canada has long been a major player in food and agricultural research, and now we are expanding our field of agricultural and nutrition research activities. We are moving beyond the traditional "stars" of food research — the grains such as wheat, rice and corn — to "orphan crops" that have been too often overlooked, but are of vital importance to the world's poor.

These orphans include pulse crops, millets and a host of other local cereal, vegetable and fruit crops.

As we meet this week in Jaipur – during the International Year of Pulses – we should note that pulses were considered orphan crops in Canada just two decades ago, with low production and receiving relatively minimal research attention. However, advances in agricultural sciences and a vibrant international market have turned the Canadian pulse sector into a major world player.

Given this, it is not surprising that pulse crops have figured prominently among our current portfolio of projects.

Pulses are staple foods in many regions of the world, diversify income and food sources for the poor in developing countries. They are rich in micronutrients and a key source of protein (much cheaper than animal protein).

Many pulse crops grow well in dry conditions and can provide a hedge against the negative effects of climate change—a major concern in India and throughout South Asia, where many of the world’s poor reside.

Unfortunately, despite their clear benefit, pulse production remains stagnant, and often declining, in the very countries that consume them the most and where population is growing the fastest.

In our minds, this remains a key challenge for the pulse sector. What is blocking farmers, especially small-holders growing crops on 1 to 2 ha of land, from expanding production? What will it take to see voluntary uptake of these crops? How can the private sector become more involved? And, where can research help?

In the academic world, we often argue about whether basic or applied research is more important. In my opinion, it’s a bit of a moot point.

We need to harness the power of both scientific and farmer-based knowledge to develop the right crops, tools, techniques, and expertise for smallholder farmers and their communities.

Many smallholder farmers already have extensive knowledge of what works and what does not, drawn from generations of farming under challenging and changing circumstances. Often what is most needed is simply a boost to supplement their ongoing efforts, such as access to affordable technologies, to new techniques that have been proven in similar circumstances, or to markets and information.

Unfortunately, there remains relatively little plant research targeted to pulse crops in many Asian countries. That means farmers have trouble finding good quality seed, difficulty coping with crop diseases, and face challenges in maintaining productivity.

So the question that we are currently asking, where do we go moving forward? With the world’s population projected to increase by several billion over the next four decades, the need for agricultural support, investment, research and sustainability becomes all the more urgent. This is a huge challenge as well as an opportunity for our ingenuity.

I pose this question to the attendees of this Conclave - what are the key Research-for-Development issues that we need to tackle in the next 5 to 10 years if we are to increase pulse production in India and South Asia? Why are pulse crops often a difficult “sell” to small-holder farmers? What are the bottlenecks that we need to address? What are the fastest and most effective ways to take research products to scale?

Part of the answer may lie in the knowledge that as the world continues to urbanize, the current commercialization of small-scale farming will continue – that is a fact. This will require research that is market aware. This is what small-scale farmers want, and what urban consumers need.

It is also becoming clear that we need to pay more attention to the incentives, options and desires of poor rural people in our work, including a solid grasp of the economics of it. Labour-intensive systems, especially those that lock poor people into back-breaking manual labour for low returns, are simply not feasible options.

To accelerate impact, and to ensure that research breakthroughs benefit as many people as possible, we need to find ways to involve the private sector.

Admittedly, for over a decade, IDRC's programming has not focused much on private sector collaboration – but recent trends have shown that we can position ourselves to effectively engage with the private sector.

We are now more systematically approaching the topic of private sector collaboration. We are building on a modest base of knowledge, experience and promising new programming. However, we would like to be seen as a knowledge partner of choice, to accelerate our impact as a research funder, to tackle the most difficult development problems, and to have a greater impact.

We are seeking to foster public-private research partnerships that have the ability to transform promising proof-of-concept research into development outcomes at scale. In so doing, we expect to access the expertise and resources within both the public and private sector to:

- improve food and nutritional security for small-holder farmers;
- help to develop the rural economy – an economy that can support an expanding agriculture sector;
- create farm and non-farm jobs for men, women and youth.

Guaranteeing the wide adoption of (and benefit from) innovations require the development of new business models and creative public-private partnership arrangements that involve business firms, service providers and not-for-profit organizations. Innovative financial services suitable to small and medium size farmers in the developing world will also contribute to address bottlenecks to adoption and accelerate the use and benefits of improved technologies.

All are needed to improve the profitability and resilience of small-scale farming systems globally – both today and under future scenarios of climate change.

Meeting the food security challenge will require government, public and private sectors to significantly ramp up their efforts. The challenge is great, but the opportunities are bigger.

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