Dr Rowland Chirwa

Demand-led markets and demand-led breeding

You get some bean seeds from germplasm that has taken 15 long years to develop by a good plant breeder. You prepare the soil well and you plant them at the right time. They grow strong and tall. They are hardy, vigorous and high yielding. They cook well and taste excellent. You harvest them, full of confidence, you take your share and enjoy them with your family, and then you take the surplus down to the market, looking forward to the money that will help you through the next few months. You get to the market and set up…

…And then you sit there for hours, all through the long hot day. Amongst the business and the bustle, amidst the calling and claiming, the buying and selling. Everyone ignores you, passes you by. You can't sell the beans, even when you discount the price later in the day. And there it is. That's the market.

Rowland Chirwa, Bean breeder and Co-ordinator of the South African Bean Research Network based in Malawi, has no doubt about the importance of the market in plant breeding. "*The market provides the demand. In fact, by definition the market itself is demand-led. You might have a great crop but it's no good if no one at the end of the value chain wants that variety. So what was for the breeder a great selection and for the farmer a great variety, is impossible to sell to consumers. That makes it a failed variety. Learning through mistakes, trial and error, has led us to demand-led breeding".*

But can the new information provided by closer attention to market perspectives work for the plantings and the harvests of the future? Customer tastes can change quicker than the 10+ year development cycle of a new variety. But in every enterprise the technology of today will not necessarily always address the issues of tomorrow, but that doesn't mean it shouldn't be used. Lead times for new varieties are being reduced to 5-6 years with molecular breeding. Predicting the consumer tastes of the future may be hard, but with a close and particular market focus the predictions are very much better than nothing.

Take the bean, for instance. The common bean is a perfect crop for demand-led breeding; it is rapidly evolving from a subsistence to a market-oriented cash crop. The white bean is the most grown and consumed grain legume in Eastern, Central and Southern Africa, where over 6 million hectares of land are used to grow beans every year. Thanks in part to the fast growth of specialized niche bean markets for processing and canning, common bean sales exceed US$500 million annually and have an export value of about US$110 million (FAOSTAT, 2010; Pan-African Bean Research Alliance (PABRA)).

Beans are popular with farmers, offering up to three harvests a year, enhancing soil fertility, improving productivity and increasing household food security. After harvesting they can be stored for a long time without deteriorating, and are easily converted to cash to meet urgent household needs. Improved bean varieties, particularly climbing beans, offer great

potential for increasing yields. So, where bean farming households in rural areas retain around 50% of beans for domestic consumption, higher yields put more food on plates.

But the common bean comes in many different shades and sizes, and customer preferences can vary even from one village to another, in taste, colour and size of grain. The strategy of the Pan-African Bean Research Alliance (PABRA) was to study the different markets in Southern, Eastern and Central Africa and develop demand-led breeding programmes for each participating country, using market information from a variety of links on the value chain to improve the variety selection process. Over more than a decade, PABRA identified leverage points with which bean varieties could be moved quickly at high volumes. 19.5 million farming households have been able to receive and plant quality seed of improved and preferred varieties between 2003 and 2013.

The project is succeeding. Breeders are now breeding for the markets and the main beneficiaries are the customers and the farmers: a win-win solution. The markets posed the question and the breeder response has proved to be the genesis of the solution, also re-pointing the breeders to the other end of the value chain.

Overall, Chirwa is optimistic and confident about the potential of demand-led breeding, believing that breeders are happiest when selecting and testing with a target in mind, when engaging positively with markets and their related activities, and knowing that their work is stimulating investment and creating employment not just for growers and farmers but right across the economic value chain.

What started with a practical strategy for selling beans is now promising significant and solid benefits in the employment, transport, supply chain, food quality and safety sectors, with related impacts on social stability, quality of life and economic development throughout sub-Saharan Africa.