

Traditional seed supply for food crops

Although in developing countries traditional seed supply systems, in which seed is produced locally by farmers themselves, is much more important than seed supply by the so-called 'modern seed industry', literature on traditional systems is scarce. Also, statistical information on the relative significance of traditional versus 'modern' seed supply is very limited. The attention paid to traditional seed supply systems is growing. At the Centro Internacional de Agricultura Tropical (CIAT) a special seed unit is engaged in the subject. In The Netherlands the Department of Tropical Crop Science of the Wageningen Agricultural University recently started a project to study seeds supply in developing countries with an emphasis on traditional methods. Below some aspects of traditional seed supply systems are discussed.

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Seed supply systems

Seed supply systems in developing countries can be subdivided into traditional and modern systems. In traditional systems it is common practice that the farmer produces his or her own seed, or gets some or all of it from other farmers, locally or in the region. In modern systems a part or all of the seed is bought from seed producers. These systems are characterised by a high degree of specialisation. Seeds are produced for the market and of ten there is an ample use of hired labour and inputs such as fertilisers and pesticides. Combinations of both systems exist as well; some farmers use traditional and modern systems on their farm, either or not for different crops.

Importance of traditional systems

What is the importance of traditional seed supply systems in comparison with the modern seed industry in developing countries? The only indications are the estimates by some experts. According to Delouche in his contribution to the conference on improved seed for the small farmer held in 1982 by CIAT in Colombia, at least 80 percent of the planted seed of the main crops is produced by the farmers themselves. Benerjee (1984) states that in India even more than 85 percent of the seeds used is coming from the farmers' own production. Thus, the contribution of the modern sector to the seed supply of food crops in most developing countries is restricted to 20 percent at the most.

Many Farmers prefer their own seed

Let's have closer look at the properties of modern seed and the wishes that farmers have with regard to seeds, one of their basic inputs. Plant breeders evaluate the performance of newly developed materials on the score of a number of criteria, of which the most important is, and always has been, yield potential. Other important criteria often taken into account are response to fertiliser, resistance to pests and diseases, length of growth cycle, and dietary value of the product. Sometimes materials are also screened for their suitability to mechanisation, such as mechanical harvesting. The varieties developed in such breeding programmes generally are appreciated by market oriented, relatively larger farmers, who are growing the crop in pure stands under relatively good growing conditions. Small farmers, on the other hand, need varieties with a good yield, which is reliable and stable through the years, also, when the environmental conditions are adverse. For this purpose, they often use a mixture of varieties. These varieties must be compatible with their farming systems. This could mean that a variety must be adapted to intercropping and staggered harvesting, for instance and that it should fit into the labour pattern. Subsistence farmers also attach much importance to a specific taste and culinary quality, while by-products that can be used as forage, building material etc., are appreciated too. As a result, seeds of their own varieties that are carefully selected by the farmers themselves during generations for the properties mentioned above and also for characteristics such as healthiness, shape, size and appearance are more likely to suit their individual wishes than seed of modern varieties, which is produced for a large group of customers.

Seed selection by farmers

The way in which farmers produce and select their seed varies enormously. Most farmers take a part of their grain of bean crop after the harvest as seed, while others make their choice in the field. Farmers who select after harvesting may just put aside part of their harvest, but they can also make a careful selection for a particular seed appearance. Also in selection before harvest several methods are applied. In a few cases,

farmers walk through their field and mark the plants they will use for next year's crop, while other farmers grow the plants that will give the seed for the next season on a separate plot at some distance of the main crop. They pay extra attention to this plot by applying manure or fertiliser, discarding off-types and keeping it free of weeds, pests and diseases. Careful visual selection gives farmers the opportunity to compose a seed mixture that will satisfy their needs. Thus, they strive for a uniform crop, but they can also choose to maintain a certain variation in earliness, shape, colour and taste of the product. In many cases farmers have successfully developed their own methods to produce and select their seeds. However, selection in the wrong way happens too. Barnett mentioned -at the CIAT conference referred to before- that several farmers selected large maize cobs with large grains after harvesting. These cobs appeared to come from plants that tended to be tall and late-maturing. Farmers frequently stated that they would prefer a shorter plant type. The mass selection they practised, however, gave the opposite result. Grubben (1987) mentioned that the unsaleable surplus of tomatoes is frequently used to extract seeds, which will be offered for sale in the market.

Considerations for buying seed

Farmers may have different reasons for buying seed instead of using a part of their own production. These reasons are often associated with necessity and/or economic aspects. Necessity to buy seeds arises when erratic rains repeatedly lead to failures of a crop. In general, farmers save enough seed to resow at least twice. However, in drought-prone areas farmers not infrequently run out of seeds and come to depend on seed from other sources. It is also necessary to buy seeds of those crops for which farmers can not adequately store the seeds. For instance, in areas with merely one short growing season each year, farmers are forced to get fresh seed from elsewhere. Groundnut and soy-bean in monsoon climates are examples of such situations. When the seeds are stored at ambient temperatures they soon deteriorate. In addition there are crops, such as some vegetables, which do not produce seed in certain environments. Farmers interested in growing these crops have to buy seed produced in more favourable regions. Economic considerations play a major role in the decision by farmers to buy seeds or to use their own produce. As a rule, farmers invest more in their cash crops than in their food crops. In cash crops a somewhat higher yield is directly reflected in higher monetary returns. Moreover, specific taste preferences are of less importance than in a food crop. Finally, the most obvious motive for farmers to purchase seed is of course the conviction that this material satisfies their demands better than their own produced seed, but often farmers are not convinced of this. They prefer their own seed for its adaptation of their farming system.

Future development

Although a slow change from traditional seed production to modern seed production may be foreseen, the extent of the area which is planted with farmer-produced seeds and the diversity in the wishes and needs of the majority of the farmers with regard to the characteristics of their crops, call for a strengthening of farmer-based seed supply at community level, rather than just a focus on the modern, commercial sector. Results can be expected from even minor improvements in traditional seed production practices such as selection in the field and better drying, protection and storage. It seems worthwhile to stimulate experienced farmers to specialise in seed production for their region. They should know -better than anyone else- the desired type of the crop they are growing. The present situation of traditional seed supply systems is comparable to that of intercropping two decades ago. Scientists supposed that intercropping did not need attention because cultivation in pure stand would become a general line. Nowadays, however, intercropping receives the attention it needs because of its importance. The same opinion can be discerned about supply. Some programmes are just focussed on introduction of 'modern' systems without paying sufficient attention to the traditional systems. In the process of shifting to modern systems -which indeed may have the far future- one should know the starting point properly. Moreover, even if the development towards modern systems takes place, this will take much time. In the meantime, improvement of traditional seed supply systems is needed very much.

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