



**SITUATION AND OUTLOOK FOR THE DEVELOPMENT OF  
SEED PRODUCTION AND MARKETING SYSTEMS IN TANZANIA:  
IMPLICATIONS TO BEAN/COWPEA CRSP PROJECT SEED  
MULTIPLICATION AND DISTRIBUTION STRATEGIES**

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**INTRODUCTION**

Seed is one of the critical factors in increasing agricultural productivity of any crop. It provides the maximum limit of crop yield of all other production inputs. Unlike fertilizer and pesticides, farmers cannot be in production without seed. Since the mid 80's, the government of Tanzania and its donors placed much emphasis on the seed sector. Seed of high yielding varieties was and still is a main focus of many donors, including the World Bank and FAO.

Until the mid 80's, only state-controlled farms and seed marketing companies were formally allowed to produce, process, distribute, and market seed in Tanzania. Parastatal seed systems in Tanzania supplied 4% of the total seed planted each year whereas informal seed systems supplied 96% of the seed used by smallholder farmers. Informal seed systems include borrowing or purchasing stored food grains that are then used for seed. The formal seed system was and still is used as a mechanism for disseminating new varieties (technology transfer channel) obtained from Research and Development Centers, National Agricultural Research Centers (NARC's) and International Agricultural Research Centers (IARC's). By the mid 80's, the formal system was faced with several problems that included:

1. High overhead costs of production and distribution;
2. High transport and marketing costs due to over centralization of marketing organizations;
3. Limited production of crops and varieties;
4. Unreliable seed quality;
5. Cash flow problems due to problems in the implementation of government subsidized delivery systems.

These problems coupled with low levels of adoption of the new varieties and low effective demand levels of seed by small-scale farmers limited the impact of formal/commercial seed multiplication and distribution systems in Tanzania. Similar observations can be ascertained in Malawi and other African countries that had similar centralized seed systems.

Financial problems of the state-controlled seed system led to considerable problems in government budgets. The introduction of structural adjustment programs led to a reduction of support to state seed companies. As many other parastatals in Tanzania are privatized, the seed corporations, the state seed farms, and the state seed marketing company, Tanzania Seed Company Ltd. (TANSEED), were required to operate profitably, and be kept on the receivership list, or be dissolved. Currently, TANSEED is neither operating profitably nor efficiently and privately owned seed firms have emerged to fill in the gap. Low levels of government and donor agencies' support have resulted in a further decline in the supply of seed from the formal channel. As noted elsewhere, the private commercial seed sector has confined itself to high-value crop varieties, including hybrid maize and horticultural crops for domestic and export markets (ASPS, 1998). Thus public and private-based formal seed systems are not serving the majority of farmers whose farming systems and socio-economic

circumstance demand both crop and variety diversity (Tables 1, 2, and 3).

Non-government organizations (NGO's) and other emerging donor-assisted programs are becoming active in various ways to improve the availability and accessibility of seed by smallholder farmers. A primary question being asked is how to facilitate the development of a seed system that is market driven, that produces and markets seed efficiently, creates demand, and meets the effective demand of the majority of farmers.

**Table 1.** Production of certified seed (MT) in Tanzania by TANSEED from 1993 to 1999<sup>x</sup>.

| Crop      | Year    |         |         |         |         |         |
|-----------|---------|---------|---------|---------|---------|---------|
|           | 1993/94 | 1994/95 | 1995/96 | 1996/97 | 1997/98 | 1998/99 |
| Maize     | 1129    | 802     | 888     | 492     | 691     | 668     |
| Beans     | 28      | 21      | 55      | 26      | 145     | 130     |
| Rice      | 4       | -       | -       | -       | -       | -       |
| Wheat     | 13      | 3       | 6       | -       | -       | -       |
| Sorghum   | -       | -       | 10      | 26      | 24      | 59      |
| Sunflower | -       | -       | 35      | 3       | 1       | 24      |

<sup>x</sup> Source: Ministry of Agriculture and Food, Statistics Unit

**Table 2.** Seed production (MT) in Tanzania by Cargill from 1991 to 1997<sup>x</sup>.

| Year    | Maize Hybrid | Maize Composites | Sunflower | Total |
|---------|--------------|------------------|-----------|-------|
| 1991/92 | 300          | -                | -         | 300   |
| 1992/93 | 820          | 130              | 5         | 995   |
| 1993/94 | 1050         | 260              | 3         | 1313  |
| 1994/95 | 765          | 500              | 2         | 1267  |
| 1995/96 | 690          | 150              | 5         | 845   |
| 1996/97 | 660          | -                | -         | 660   |

<sup>x</sup> Source: Ministry of Agriculture and Food, Statistics Unit

**Table 3.** Annual seed demand (kg) of some crops in Tanzania from 1986 to 2000<sup>x</sup>.

| Year      | Maize  | Sorghum | Paddy  | Beans  | Wheat  | Oilseed |
|-----------|--------|---------|--------|--------|--------|---------|
| 1986/87   | 34,480 | 5,240   | 23,730 | 24,800 | 4,356  | 1,300   |
| 1992/93   | 36,359 | 6,747   | 27,754 | 37,699 | 10,364 | 1,564   |
| 1993/94   | 36,681 | 7,034   | 28,489 | 40,424 | 11,975 | 1,613   |
| 1994/95   | 37,007 | 7,840   | 29,242 | 43,347 | 13,836 | 1,663   |
| 1995/96   | 37,336 | 7,655   | 30,016 | 46,480 | 15,986 | 1,715   |
| 1996/97   | 37,667 | 7,985   | 30,810 | 49,841 | 18,470 | 1,769   |
| 1997/98   | 38,002 | 8,328   | 31,625 | 53,444 | 21,341 | 1,824   |
| 1998/99   | 38,340 | 8,686   | 32,461 | 54,307 | 24,658 | 1,881   |
| 1999/2000 | 38,680 | 9,060   | 33,320 | 61,450 | 28,490 | 1,940   |

<sup>x</sup> Source: Ministry of Agriculture and Food, Statistics Unit

**ASSESSMENT OF THE ON-FARM SEED SYSTEM BASED ON THE FUNCTIONS OF SEED SYSTEMS**  
**Research and development.** Indigenous knowledge and traditional seed selection criteria are used to initiate a research and development program. Farmers' selections are based on the

taste and preferences of their household members and the local population. Farmers are good at choosing varieties based on what is best for their traditional recipes. However this seed selection method reflects limited market orientation. Urban markets may be more heterogeneous than the local market where beans are produced. Limited market orientation results in surplus product that is not marketable beyond the local area.

**Seed multiplication.** Small-scale farmers are primarily subsistence farmers. Most of their produce is consumed at home and less than 20% is sold as surplus. Most production is limited to household small plots, and supervision and quality control is highly costly. Dissemination of technologies that may be beneficial to many farmers tends to be slow due to low levels of production.

**Processing and storage.** The primary reason for bean production is for food, therefore household food storage techniques are the primary storage techniques used. Farmers tend to have low levels of knowledge regarding seed technology, and limited appreciation of the importance of using proper seed processing methods.

**Distribution and marketing.** The household food situation and a need for quick cash are primary factors affecting distribution and marketing. Farmers need to remain flexible in order to respond to day-to-day problems. Where small-scale farming is the main source of food and a major source of cash income, farmers solve all their day-to-day problems with their stored food and with their farm crops. For example, green beans or maize may be harvested and sold to pay for medical services for a household member even if the prior intention was to grow the bean or maize crops for seed. Treated seed that may have been distributed by an NGO for planting may be washed, dried and milled for “Ugali” for the day. These are some examples of decisions farmers have made while involved in seed multiplication programs of new varieties.

**Seed quality.** Seed quality is a relatively low priority for research and development, because the current focus is on critical areas of production, processing, and storage. For example, a Quality Declared Seed (QDS) grade was developed in Tanzania because researchers (breeders) and seed quality control agency representatives believed that on-farm seed producers are unlikely to meet the required conditions for the production of certified seed.

**Exchange.** A large percentage of bean production is not for the market and is highly integrated into primary food production. Traditionally, borrowing and in-kind transfer of seed or food crops to relatives and friends is practiced. Decisions are made to allocate some portion of the produce meant for food to be used as seed to sustain household production. One needs to understand how household decisions are made with regard to the utilization of seed from on-farm seed production plots. A major question is whether small-scale farmers are likely to specialize in seed production and marketing.

In summary, the informal seed channel faces the following problems:

- Poor quality
- Irregular supply
- Inability to use/adopt state-of-the-art technologies
- Limited market orientation beyond the local area; non-market means are the main factor for exchange
- Not self-enforcing due to limited response to market conditions

Before structural adjustment problems, the government, with considerable support from USAID in 1982 and FAO/UNDP from 1985 to 1995, intervened in the seed system with the objective of solving the above-mentioned problems. The formal-public seed production system had several advantages including: (1) state-of-the-art technologies were used/adopted by the NAR's and

IARC's; and (2) foundation seed farms were theoretically more capable of producing large quantities of seed within a short period of time. These advantages were mainly due to access to infrastructure that included irrigation facilities and other physical, financial, and manpower resources availed to them by the government and donor agencies. However, effective demand for the seed was low due to market reasons such as:

- High prices, poor distribution timing
- Poor information flow from Research and Development Centers to farmers
- Lack of promotion for new technologies entering the market
- Management problems within state corporations

The formal-private seed system that evolved after liberalization of the state seed system may have advantages over the state system. Private commercial seed producers have access to resources at much lower transaction costs than the government, donors or small-scale farmers. However, successful participation of private companies in the seed system depends on the socio-economic environment that determines the returns on their investments. Loss-making units will not be maintained.

### **WHAT IS AT STAKE IN THE CURRENT SEED SYSTEM IN TANZANIA**

The Ministry of Agriculture has adopted a strategy for an improved seed supply scheme for seeds that are not supplied by commercial companies but are of critical importance for household food security in the smallholder farming sector (ICRISAT, 2000). This scheme seeks to involve small-scale individual farmers, farmer groups (women and men), NGO's, etc, by forming small but effective seed multiplication units capable of supplying improved seed at the farm level. The scheme is aimed at providing better quality seed relative to traditional farm-saved seed. Regulatory mechanisms have been put in place to formalize this seed production scheme including quality monitoring and enforcement by authorized organizations. A special seed grade referred to as Quality Declared Seed (QDS) has been established for this purpose.

The implementation of this scheme has so far involved:

1. Selecting crops and varieties, identifying target farmers/groups who will produce the seed, training of trainers in seed technology;
2. Procuring inputs or producing initial seed through contracts with research stations (breeders) and foundation seed farms;
3. Establishing demonstration plots for comparing improved and local varieties through field day events;
4. Involving Tanzania Seed Certification Agency (TOSCA) in inspection and quality control;
5. Rehabilitating facilities of key institutions that are involved in the scheme.

The emerging seed system is composed of a formal private/commercial sector that is confined to high value crops, and semi-informal and informal sectors that try to fill the gaps left by the formal sector. However there are major concerns regarding this emerging seed system and the potential for on-farm seed production to co-exist with the commercial/private sector. Several researchers have previously listed the constraints or problems in passing without presenting a critical analysis of the fundamental underlying problems. This paper does the same as more research is required to support our claims:

- The emerging semi-informal sector is highly subsidized in various forms ("donor syndrome"):
  1. Support in procurement of foundation seed;

2. Support in management for farmers and farmer groups involved in the production and marketing of seeds;
  3. Market guarantees, following outright procurement of all farmer-produced seed by NGO's or church organizations for humanitarian distribution;
  4. Support in services – e.g. inspection, grading, standardization, training, and extension (topping-up of salaries for extension officers and quality control inspectors, providing transport and lunches to facilitate visits).
- Use of economically non-viable units of production. Small-scale subsistence farmers are selected to join the list of seed producers.
  - Undermining of the potential for the development of a viable, formal seed system that could have occurred through commercialization and increased investment by private large-scale farmers.

### **CONCLUSIONS AND RECOMMENDATIONS**

1. "Donor syndrome" could lead to difficulties in transforming the system to the mainstream market (commercial channel) when the support system is cut off. Strategies for exit of government and donor support need to be formulated at the beginning to ensure that the system will be sustained when the support is removed.
2. Seed entrepreneurship should be a motivating force to farmers who are recruited to the semi-informal seed scheme. Following the modern definitions, entrepreneurs are people who have the ability to see and evaluate business opportunities, to gather the necessary resources, to take advantage of them, and to initiate appropriate action to ensure success. It is generally agreed that the entrepreneur is an action-oriented, highly motivated person who is willing to take risk to achieve goals. This definition suggests that not just any farmer can be a seed entrepreneur and in particular, subsistence farmers may lack the abilities to gather necessary resources and take advantage of them unless his/her entrepreneurial skills and socio-economic environment are improved. One can hypothesize that most small-scale farmers enter into on-farm seed schemes due to the support systems involved and not due to true economic incentives or opportunities involved.
3. Interventions may lead to resource mis-allocation in the market. Highly supported semi-informal schemes are in a better position to out-compete commercial, private traders. Entrepreneurs identify problems and turn them into business opportunities. This means where the semi-informal system may seem to provide solutions to the problems, it actually reduces the potential for entrepreneurs to become engaged in the system unless non-market means are used to facilitate it. Given sustainability problems of highly supported seed schemes, missed business opportunities are a double blow to small-scale farmers. This suggests that the government and donors should target their interventions only where justified and in markets that can be fully segmented or isolated from the commercial market to avoid suppression of the development of a private sector seed system.
4. Where needed, government and donor agencies should support development of private commercial seed business in Tanzania by supporting the development of infrastructures that may be constraining private involvement.

### **REFERENCES**

- ASPS. 1997. On farm seed production component. Agricultural Sector Program Support (ASPS). Mimeo Pg 13-18.

ICRISAT. 2000). Seed systems for the new millennium: an action plan for Tanzania. Proceedings of the Stakeholders' Review and Planning Workshop, 7-8 December 1999, Dar-es-salaam, Tanzania. Pg 26-27.

Ministry of Agriculture and Food, Statistics Unit. 2000. Personal communication.

United-Republic of Tanzania. 1994. National seed implementation guidelines. Ministry of Agriculture.

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