

West Africa Seed and Planting Material



*The Newsletter of the West Africa Seed Network
(WASNET)*



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This is the sixth issue of *West Africa Seed and Planting Material*, the newsletter of the West Africa Seed Network (WASNET). WASNET addresses the needs and problems in the seed and planting material sectors in West African countries and brings together seed personnel from West African countries in a structure, which will encourage them to work together to strengthen national and regional seed industry development.

The newsletter is the medium through which the latest developments of WASNET are communicated to seed and planting material staff in West Africa and beyond. It also aims to inform readers of the current events in the seed and planting material sector. Even more important is its "discussion" function, whereby readers are encouraged to pose and answer questions.

We thank everybody who has contributed to this issue. We received many contributions and the current issue is again a long one. However, we would like to encourage staff in Francophone countries to contribute more.

The current issue of the newsletter deals with the private sector in West Africa. Views were solicited from private sector and public sector personnel and companies were asked to present their work.

We would like to remind readers to respond to issues raised in the newsletter. Please do not hesitate to voice your opinion. The Newsletter should become an interactive tool; not as fast as the Internet, but it should be used to get answers to questions.

We also would like you to update us by sending us information.

The West Africa Seed Network (WASNET)

Seven countries have officially appointed network country representatives (Burkina Faso, The Gambia, Ghana, Mali, Niger, Togo, Senegal). The Secretariat has prepared proposals for each country that has appointed an official country representative. Proposals are as follows:

Burkina Faso	prepare a regional catalog of seed and field standards
Gambia	study seed policies in the region
Ghana	prepare a directory of available seed in the region
Niger	study seed laws in the region
Nigeria	prepare a regional variety catalog
Mali	study seed import and export regulations in the region
Togo	prepare a regional directory of seed industry participants

The proposal for the activity, which Senegal will carry out has not yet been prepared. Proposals are now under review by the different country representatives and a meeting of the Steering Committee has been planned to finalize matters.

Send your comments on articles and contributions for the next issue of the newsletter as soon as possible to the address at the top of the page

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Private seed sector views and opinions

Challenges of private seed sector participation in agricultural development in Africa

S.A. Ajayi

The potential of a well-managed, responsive, and need-oriented private seed sector as a catalyst for both agricultural and economic development is enormous. When the necessary legal, infrastructural, and institutional supports from the public sector are in place, activities and services of the private seed sector have a multiplier effect on national, regional, and global economies. Food is produced in abundance and made available at affordable costs, farmers' income and standard of living are raised, more jobs are created, industrial growth is accelerated, and national wealth is increased.

The slow emergence of a private seed industry in many African countries and the unpleasant experiences of early entrants have been attributed to many factors, chief among which is the failure to take cognisance of "African specificities" with regard to farming systems and sociocultural values of the target beneficiaries. Some of these specificities that are crucial to a successful and impacting private seed sector participation in the development of the agricultural sector in Africa are highlighted below.

Agricultural development in Africa will, for the foreseeable future, be dependent upon the performance of smallholder peasant farmers. From the prevalence and persistence of this farming system, it is unlikely that this will give way to large-scale farming in the short term. To date, recorded increases in production are a result of expansion of cultivated area rather than productivity per se. But the limit of expansion is being reached and this poses a great danger of food insecurity in the region. The FAO has predicted that about 50% of Africa will be unable to meet their food needs by this year. There is, therefore, a critical and urgent need to increase productivity, which is only possible through the use of high quality seed. Given past performance records, the public seed sector is incapable of confronting this challenge, only a responsive and supported private seed sector can cope effectively with this challenge.

Private seed sector participation must be tailored to meet the needs of the dominant group of farmers. Although private seed industry is often driven by economic considerations, in the African context and in the short run, participa-

tion must be development-driven if it is to be effective. The pattern of commodification of seed in agriculturally developed countries is not likely to work in Africa at this stage of the development of the seed industry. Innovative approaches to break sociocultural affiliations that threaten growth of the seed industry and to satisfy the need of the farmers are needed. African farmers are not necessarily conservative in adopting new technologies. The risks associated with adoption, for example nonavailability of seed when needed against which the farmer has no guarantee, is a major problem that should be addressed.

Complimentary efforts and support for the private seed sector from the public sector are lacking in many African countries. Successful private seed sector development, therefore, requires extra investment and additional responsibility to bridge this gap. Not all public sector staff responsible for providing support services are sufficiently informed and persuaded about the value of high quality seed (HQS). Poorly motivated public extension agents cannot promote the use of HQS. Until policy makers, administrators, and farmers are aware and sufficiently convinced of the value of HQS, private seed sector participation may not be adequately encouraged and supported, and their impact may not be felt.

Effective distribution and marketing channels are a prerequisite for economic returns on investments in private seed sector. There is no blueprint for seed marketing. Strategies to cope with prevailing challenges must be in the context of farming system, economic, and sociocultural peculiarities. A collective effort of all private seed sector operators will minimize the impact of this burden on other activities of the sector.

Training and research partnership with public institutions are necessary. This is conspicuously underdeveloped or lacking in Africa. The long-term benefit of such partnerships is in favor of the private sector through the number of categories of technical experts and specialists needed for a successful and need-oriented private seed sector. Researchable constraints in the African seed sector are more than what indi-

vidual companies can handle. The expertise in our universities and national and international research institutes in Africa should be utilized to address these constraints. Extrapolation of results and techniques from elsewhere in seed production and delivery in Africa must have to be applied cautiously. For example, harvest decisions of seed crops have for many years been based on the hypothesis that seed quality is highest at physiological maturity (PM), defined as time during maturation when seed dry weight is maximum.

But recent studies have shown that for many crops, quality continues to increase for days or weeks after PM, depending on environmental conditions. We also have found similar trends for physiological seed quality and storability of hybrid maize grown in southwest Nigeria. Innovative and need-oriented research aimed at finding solutions to the harsh tropical environment for development and postharvest quality of seed should therefore receive a high priority in the research agenda of both private and public institutions.

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Newspaper excerpts

Group wants conducive environment for seed business

New Nigerian, Friday, 31 March 2000

Submitted by Kunle Sanni, Kaduna

West Africa seed industry managers have called on the Federal Government to create a conducive environment for the private sector to operate in the seed business. The group—in its communiqué issued at the end of a two-week workshop jointly organized by the International Institute of Tropical Agriculture (IITA), German Technical Co-operation (GTZ) and Council for Scientific and Industrial Research (CSIR) held at the Crop Research Institute, Kumasi, Ghana—said such an environment should involve low-cost credit provision and the development of a farmer-user market. Participants at the workshop noted that seed supply is a capital-intensive business, therefore, government should assist through providing low-cost credit facilities by creating agricultural bank programs in Anglophone countries. It advised that such credit facilities should attract lower interest rates, such as those obtainable in Francophone countries, where 7–9% is charged.

The workshop, which has its theme, "Setting-up successful seed enterprises" was coordinated by Dr A.J.G. van Gastel. He suggested the establishment of microfinance credit programs that would take care of rural farmers and enable them to improve on seed production. The group said, for seed market development to succeed, the government should among others, improve extension, research, training, and promotion to all farmers especially the low-income and subsistence ones. "National food security and national seed security policies, whereby government buys excess produce in the country and thereby stabilizes market prices received by farmers. Government should also improve the condition, pricing, and access of farmers to markets", the communiqué added. Participants urged West African governments to protect local agricultural production and industries on a subregional basis and review trade liberalization policies considering local raw material base. They called on the government to encourage intraregional seed trade by removing all trade barriers and minimizing paper work and permits within the subregion in accordance with ECOWAS protocols. The workshop was meant for seed managers in private and public sectors who were drawn from Benin, Burkina Faso, The Gambia, Ghana, Guinea, Nigeria, Senegal, and Sierra Leone.

Challenges in privatizing the seed sector in developing countries

Sam Kugbei

Strictly speaking, the seed industry has been in private hands for centuries during which farmers, as private individuals, have saved their own seed and used indigenous knowledge and experience to select and improve varieties. It is by this means that landraces and traditional varieties have arisen. Many farmers use local means of exchange including barter, seed-for-work, and gifts to spread varieties within farming communities.

However, increasing demand for food due to rapid population growth cannot be adequately sustained by the low yields normally found in the traditional farming sector. Improved varieties are needed, but these have to pass quickly from research stations to farmers. Seed projects to deliver this delivery system were therefore established mainly through aid agreements during the 1970s and 1980s. The objectives of these projects were social and developmental, but not commercial. As a result, they were heavily subsidized and run as official government entities. This method of delivering seed has had only limited success as shown by the generally poor spread of new varieties amongst most farmers in developing countries.

The efficiency of state seed delivery systems came under greater scrutiny when governments started to introduce economic liberalization/privatization policies and analyzed the efficiency of parastatals. In addition, many countries are also looking for alternative and more cost-effective ways of making seed available to farmers, although suitable approaches have been difficult to find, particularly for self-pollinating crops.

Privatization normally refers to the process of introducing market forces into an economy to facilitate free trade. This definition needs some modification when it is applied to the seed sector in developing countries because of the diversity in the nature and functions of various parts of the seed system. What seems more relevant for the seed sector is to encourage a diversified industry that com-

prises various types of suppliers who compete freely with one another and target different segments of the seed market including the traditional sector. This requires a redefinition of appropriate roles of the government and the private sector. In many cases, it has meant a withdrawal of the public sector from production and marketing activities, leaving these to the private sector, whilst retaining control over regulatory and policy matters and breeding.

There are two key routes to privatizing the seed industry in developing countries. Their success depends largely on the nature of government policy. The more frequent approach is to restructure government seed departments to operate commercially through internal reorganization, to transfer assets to private ownership, or to lease facilities. Internal reorganization along commercial lines has often led to a contradiction between the desire of the state to pursue efficiency objectives on the one hand, while maintaining social obligations such as keeping the population employed, distributing cheap seed, and producing seed of minor or less profitable crops.

Outright sale is usually difficult because the physical assets concerned may either be of little commercial value or are too expensive to acquire and run cost-effectively. Hiring and leasing facilities could be a suitable alternative provided reasonable rates and conditions are applied. Despite the cost inefficiency of public enterprises, they remain the main source of certified seed of new varieties in many countries and often employ a large pool of staff with specialized training and experience in seed production.

Care has to be taken in privatization to avoid negative side effects, especially a sudden breakdown in national seed supply and high unemployment, which could subject the reform process to political opposition. What is required is a dynamic, but gradual approach that takes local circumstances into account, and does not depend on imposing entire models from elsewhere.

A second approach is by encouraging alternative suppliers including foreign companies, domestic enterprises, and village-level organizations to enter the seed trade. Given the right policies, it is easier to motivate companies to produce and market seed of high value crops, especially those in which hybrids exist, but much more difficult for less profitable crops particularly self-pollinating cereals and grain legumes. Since these crops form the backbone of food supply in many countries, finding appropriate seed delivery systems is essential. These could be small-scale enterprises with low overhead costs or larger companies that include them as additional activities to make optimal use of existing resources and maximize economy of scale. There are many examples of potential new seed enterprises and they include large farmers, farmers' associations and cooperatives, input suppliers, traders and merchants, foreign companies, and industrial companies with rural interests such as processors and traders.

However, designing and managing well-functioning small seed businesses in farming communities is a challenging task. The access of potential enterprises to microcredit, marketing support, and technical training are crucial for start-up and continued survival.

Striking the right balance between efficiency and equity considerations in privatization is not easy. Policy decisions must be realistic and are usually difficult, but should take country-specific features into account. The state should avoid using unfair means to compete in areas where the private sector is, or could be, efficient and has a clear comparative advantage. Shortage of public funds means that the private sector should be encouraged to enter the seed market as much as possible even for the less profitable crops.

The final objective should be to promote a more open seed market that generates better products for farmers at prices they can afford and

are willing to pay. For this, good market prices are important because as more farmers become cash-oriented, the greater the possibility of them becoming customers for seed also.

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Decisions a government should take in order to encourage the development of the private seed industry

- Enact company laws where they do not exist
- Enact a good seed law to ensure an efficient quality control system under official supervision
- Enact a plant breeders' rights law
- Allow a free market seed price, but with minimum prices when needed
- Suppress subsidies or, when subsidies are really needed, subsidize both public and private sectors equally
- Encourage banks to give credit for agriculture and seed businesses
- Maintain and/or develop strong research programs with equitable access to develop plant varieties by private companies
- Publish reliable agricultural statistics
- Encourage seed companies to set up a seed industry association in the country

In some countries it could also be useful to:

- gradually reduce state control over state-owned companies
- lease state land on long lease for seed production
- allow private companies to use public marketing channels

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Public institutions and private seedsmen

Niels P. Louwaars

In many countries, seed laws are considered a hindrance to private seed industry development. Variety registration, quality control and dealer registration unnecessarily frustrate the commercialization of seed supply. This paper argues that not so much the regulations but their implementation that creates the problems perceived by international and local seed entrepreneurs.

Objectives of seed regulations. Seed regulations are intended to promote the availability of quality seed in the market. The preface of some seed laws concentrates on the consumer protection aspect of seed legislation, others combine the quality aspect and the promotion of seed production.

Consumer protection. Consumer protection in the seed sector is necessary. Farmers cannot readily observe the major quality aspects of seed (viability, variety). There are basically two ways to protect consumers: either strong control (the label gives the guarantee), or strong competition among seed producers (the brand name gives the guarantee), combined with efficient procedures to claim damages when the seed is bad. Seed quality control organizations that are primarily geared to consumer protection develop into a kind of police force, controlling the quality and movement of seed through bureaucratic procedures. Officials normally manage these organizations through strict procedures. Concentrating on consumer protection does not automatically mean that public institutions have to do the control. Seed quality control started in many states of the USA as an initiative by farmers' associations. Their operations were often only formalized into

regulations later on. Such farmer-based quality control organizations have to prove the value of their label with time. Customers will ask for the label only when they have experienced that the quality of the seed is indeed good. Government seed certification organizations on the other hand think that the official stamp automatically gives them the necessary status. This is a misconception. Also public agencies have to "earn" their credit.

Promotion of seed production. Seed laws should also promote the development of an efficient seed industry that produces a high quality product. Seed quality regulations give a common basis for all seed producers. The rules protect the bonafide seedsmen from fly-by-night seed producers who want to make a quick profit through supplying low quality seeds. This is illustrated by the development of seed testing and certification agencies by the seed producers themselves in countries like The Netherlands. They introduced a joint quality label to position themselves in the market. Only later, the seed law confirmed the operations of the seed quality control agencies. Seed quality control organizations that are primarily geared to the promotion of seed quality develop into partners of seed producers rather than a "seed police force". Such organizations may be managed by a board which represents all stakeholders equally: seed producers and dealers, farmers, and officials. They can actively support the emergence of small- and medium-scale enterprises.

Can regulations and institutions harm seedsmen? In practice, seed and variety regulations indeed create obstacles.

- New varieties have to be tested for a number of years for their value for cultivation and use (VCU) and for distinctness, uniformity, and stability (DUS), and the results of these tests scrutinized by an academic variety release committee (VRC) before seed can be marketed. VCU tests are commonly not very representative for farmers' conditions, results of parallel extension or company trials are not taken into account, and the evaluation is commonly based on a very narrow set of (yield) data. On top of that, there may be a conflict of interests where public breeders want their own varieties to be released rather than those of commercial competitors.
- Seed certification standards are commonly very strict with regard to the number of off types, even where the level of farming may not warrant the strict uniformity from an agronomic point of view. Laboratory testing and the release of data and labels may be inefficient, thus leading to problems in the marketing chain. At the same time, the system is unable to check the storage conditions of the seed after testing, thus reducing the value of the label.
- Too often unreasonable requirements for the registration of producers and dealers, such as minimum education levels of staff, size and age of processing equipment, reduce the number of entrepreneurs and increase possibilities for rent-seeking by officials.
- Regulations are commonly designed uniformly for all crops and for all situations (for both commercial and the local seed markets alike). Where systems may operate fairly efficiently for some major crops, special knowledge and procedures may be lacking for smaller crops like vegetables or less commercial crops like roots and tubers. This either results in a total neglect of such crop seeds or—even worse—in a haphazard implementation of rules.
- Finally, in countries where public institutions are forced to generate their own funds, all inefficiencies of the system are paid for by the breeder/seed producer. Releasing a variety may be too costly, especially for crops with small or not very profitable markets. The cost of seed may become too high compared to farm-saved seed.

These examples will not appear in every country at the same level of severity, but many of these aspects widely occur. The result is that there is a bias in favor of existing public institutions, so that it is difficult for international companies to enter and virtually impossible for small, private seed enterprises to develop.

Can the regulations and institutions support the seedsmen? During a recent international meeting on seed regulations in Washington DC, a representative of a major seed company asserted that his company would not like to operate in a totally unregulated market. Regulations give a common framework for all seed suppliers and as such protect the seedsmen against unscrupulous competition.

The system should thus primarily support serious producers to supply quality seed. At the same time it should effectively test seeds in the market for quality, labeling etc, in order to create common ground for all producers and dealers, and force fly-by-night businessmen to take their product (or customer) more seriously.

Seed quality control institutions can support bona fide seedsmen by offering their expertise and infrastructure on seed quality in all its forms. New seed producers may not know how to inspect their seed production fields to achieve acceptable varietal identity and uniformity. Seed producers may not have the expertise nor the equipment for good seed testing, which is the basis of many seed processing and marketing decisions. Finally, the institutions may do a final sampling and testing of the product. This service can be rendered to established seed companies, to NGOs that support local seed business development, to emergency seed distribution programs, and to farmers/farmers' groups alike.

It would involve training of seed producers to be quality oriented, advising them to solve quality-related problems, and only in the last instance, rejecting fields or seed lots. This can be done under a law which prescribes minimum seed quality standards or true-to-labeling alike. It would help when the law does not prescribe that all fields and samples be inspected by the national seed certification organization, but that some of its powers may be delegated to seed producers. It is not so much the statutory duties, but more the attitude that makes the difference.

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African University Initiative Posted on the Web, 24 April 2000

New York (Reuters)—Four major US philanthropic foundations announced a \$100 million program to help universities in sub-Saharan African countries. The initiative was launched at a meeting attended by UN Secretary-General Kofi Annan. It will support efforts, many already under way, by heads of African universities and academic bodies to expand and improve the education of the next generation of African leaders. The Partnership to Strengthen African Universities is a collaboration of the Carnegie Corporation and the Rockefeller, Ford, and MacArthur foundations. It is expected to provide more than \$100 million in support for projects over the next five years. Each foundation will support higher education institutions in the way that it chooses and in the countries where it has traditionally focused. While the nature of the supported activities will vary, an important element will be regional and intercountry education leadership links. The Ford Foundation makes grants throughout Africa from offices in Egypt, Kenya, Nigeria, and South Africa. The Rockefeller Foundation has worked in eastern and southern Africa, the Carnegie Corporation in former Commonwealth countries, and the MacArthur Foundation primarily in Nigeria and the African Great Lakes region.

What really is privatisation?

Bill R. Gregg

With current economic trends, governments are getting out of the seed business and leaving the private sector to provide farmers with the higher yielding seed needed to produce more and raise rural income. Governments have shown that their experience is administrative, not market-oriented. Government seed programs have, by and large, operated at a loss (requiring subsidy from tax money) and still only delivered seed to a small percentage of farmers. Most government seed programs could not operate as self-sustaining, productive business enterprises. Growing populations and costs have placed so many demands on government budgets that most governments can't continue supporting loss making programs.

Why was government in the seed business? We went through a period in which government "tried to do everything for everybody", especially in developing economies. Everybody thought government had to "lift us up by our bootstraps". The unforeseen problem was that there was no room left for our individual hands "on the bootstraps", so nobody could develop the ability to lift their own bootstraps.

Perhaps we old-timers in the seed business also have to accept a measure of blame here. When the world realized that the population was growing faster than the food supply, there was a massive drive to increase food production. High-yielding seed is a major input in increasing food production. But, in a crash-program attempt to increase the supply and use of improved seed, we focused on the technology. All of us, seed specialists and government policy makers, overlooked the need to create farmer demand for improved seed to create a market; we overlooked the need to make seed production and supply a self-sustaining business; we overlooked the need to establish "appropriate technological" facilities and programs suited to local conditions and capabilities. The result? Big seed plants and big programs with big overhead expenses and big markets, which in turn involved higher costs. Politics became involved, and seed production was based on government "targets", not on what farmers would buy. As market (farmer demand/acceptance) development was overlooked, farmers would not buy much seed, or pay more for the seed. So it was often sold at cost—and a lot of seed never left the storage! There still exists at least one program in which seed is sold at prices lower than market grain price. The private sector (which earns its living from the profits) could not afford (even if they were invited to do so, which did not happen) to carry on large loss making operations.

Also, most seed industry investments were initiated as "government to government" international development assistance, so there was no way to channel sustainable business programs into the private sector.

Why continue to supply improved seed? Higher farm and rural production and income are still needed; this need was not magically erased when governments privatized seed supply. Furthermore, the private sector cannot supply

a market, which does not exist. Rural populations are almost being forgotten in the effort to improve income and living standards.

How to supply improved seed. The private sector should be responsible for production and market-oriented operations, such as producing and marketing seed. But, the private sector cannot exist on money-losing operations; it must earn a profit to survive. What is the answer? One approach is to be pragmatic about privatization, and recognize that economic and social development is an all-encompassing partnership of the private sector and government.

This means that a stable, realistic, and pragmatic seed industry must include government programs not only for necessary public services but also for nonprofit activities, which provide the foundation for improved seed supply. Commercial activities must be privatized; the private sector, with the ability to respond rapidly and focus on market demands should handle seed production, processing, distribution, and marketing.

How not to privatize

Government should not just suddenly walk out. Government cannot simply say "it's privatized; we are leaving". Farmers and rural people still need the income advantages of higher yields. The private sector earns a living by investing in something, which will earn a profit (the private sector's salary for investment, risk, and management). Seed supply is a low-profit, high-risk business; the private sector is not just sitting there waiting for a chance to jump in. There are other more profitable ways to invest money. In the interim period between government pullout and private sector entry, farmers still need seed. Government pullout should be logical and reasoned, and done as the private sector takes over—but without ever competing with the private sector.

Essential public service activities should not be forgotten. There are many roles for the public sector in developing seed supply such as (a) extension farmer educational promotion to create a market, (b) research and variety development, (c) external quality control, etc. These should be continued and strengthened to provide a base on which the private sector can build market-oriented volume seed supply.

Existing government facilities should not be privatized. This common failure overlooks the fact that all buildings and machines wear out or become obsolete and need to be replaced. Further, most government seed facilities are not suitable for private sector operations. The best way to develop a successful, farmer-serving private seed sector is to simply close government facilities and ease the way for the private sector to establish new facilities which fit the identified needs of their operations.

How to privatize

Make it attractive and easy for private sector investment. Considering the risk and low return of investments in seed, incentives must be provided to attract the private sector into

supplying the seed essential to rural income development. Special low-cost loans for capital investment and operating capital have been successful in attracting the private sector in some countries. It has also helped the private sector to keep the price of seed to farmers lower. Tax holidays, technical advice and support from government agencies, elimination of government competition, and other programs have also improved the investment environment and attracted private sector seed supply.

Fulfil public service activities to create a market and provide basic support. Market development—educating farmers to understand and use higher cost/higher yield seed—has been inadequate or nonexistent. Government must strengthen and increase promotion of seed to farmers. Government must also make it possible for farmers to buy seed by improving credit facilities and roads/communication to get seed near to farmers, ensuring truly better seed, etc. If there is a real market (many farmers to buy improved seed) and it is not too costly and risky to invest in, the private sector will enter seed supply, but not before these conditions exist!

Set up strong government policies, laws, and programs to support the private sector. A well-focused national seed policy to define the roles of government and the private sector and ensure government support (and prevent competition, interference, constraints, etc.) is essential. This must have the force of law, and be long term. Some seed investments take 20 years or so to recover; so to make such long-term investments, the private sector must be assured that favorable conditions will not be changed "next year". A realistic national seed law and quality control, with effective enforcement, is essential. It must be able to

adjust standards as conditions improve, so that it will not try to operate with unrealistic standards before seed development makes them economically possible. Implementation must be in a supportive, educational manner rather than by force. Other laws, e.g., freedom to transport seed across interstate and intrastate boundaries, must support seed supply, not hinder it.

Variety development, availability of breeder and foundation seed of high quality and at reasonable prices, training of seed specialists, etc., must be ensured.

How long will it take to develop an effective private sector? Pragmatically, government seed supply never did focus on developing farmer acceptance, marketing, ability to purchase, and the basic aspects of the "using farmer end of the balance". Government efforts focused on the "production and processing end of the balance". Clearly, this was unbalanced and did not reach all, or even most, farmers.

The private sector will not take this approach. It must sell seed and earn a profit to survive. It does not receive an allocation from government budgets.

How long will it take to develop an effective private sector? The answer is as long as it takes to develop effective extension seed promotion, create conditions to encourage farmers to buy improved seed, and to encourage the private sector to produce and market the seed.

How long will it take to develop effective Extension seed promotion, create conditions to encourage farmers to buy improved seed and to encourage the private sector to produce and market the seed?

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Setting up a successful seed enterprise: the role of policy, research, quality control, extension and credit

Ernest Asiedu

The role of the government in supporting the private sector in setting up successful seed enterprises is to create an enabling environment for the smooth takeoff and operations of the sector. This may be achieved through the functions of governmental organizations, such as a seed policy and coordination body, research organizations, a seed quality control and certification agency, plant quarantine and extension services, and a credit delivery system. In addition to these, the development of infrastructure, including roads, transport, and markets are necessary for the development of the private seed sector.

The role of policy and coordination. The role of a policy and coordination body is to ensure the proper functioning of all the organs of the seed industry for attaining the desired seed requirements of the country. The National Seed Service performs such a function in Ghana. The policy and coordinating body creates a regular forum for discussing issues relating to seed industry development amongst stakeholders. The issues may include updating seed and quarantine laws, standards and regula-

tions, seed pricing, seed imports and exports, seed storage and marketing, seed security stock, and seed requirements of the various classes and promotional activities involving the use of improved seeds. In Ghana, these are achieved through the functions of the National Seed Technical Advisory Committee. The membership of this committee consists of all stakeholders in the seed industry. The committee meets quarterly.

In Ghana, the National Varietal Release Committee oversees the release of improved crop varieties developed by research institutions and universities. The committee also comprises all stakeholders of the national seed industry.

The role of research. The research organizations play an important role in supporting the private seed sector through technology development and dissemination.

Technology development. Research institutions and the universities have the mandate to develop superior crop varieties. These must be high yielding, adapted to the environment, and of high nutritional quality and acceptability

to consumers. These organizations are also mandated to develop crop management packages. The technologies developed are tested on experimental stations and evaluated and demonstrated on farmers' fields to determine the technological options, which are the most productive and most likely to be adopted by farmers.

Research organizations must conduct surveys to determine technology adoption of crops, varieties, field management practices, and food preference. These organizations also conduct cost-benefit analyses on production practices to determine the profitability of the recommendations.

Training, seminars, and conferences. Research institutes and universities may conduct training programs for extension officers, seed growers and dealers, and farmers to update their knowledge and skills in modern technologies. Open days, field days, national and international conferences, and workshops are other forums where research findings are presented and extended to end users. Information on the availability of improved technologies, including seeds are discussed in these fora.

In Ghana, the Crops Research Institute (CRI), the Savannah Agricultural Research Institute (SARI), the Oil Palm Research Institute (OPRI), the Plant Genetic Resource Centre (PGRC), the Council for Scientific and Industrial Research (CSIR), the Cocoa Research Institute of Ghana (CRIG), and the universities are the main research organizations responsible for the development of crop production technologies.

The role of seed quality control and quarantine. The seed quality control and certification agency is to register accredited seed growers and dealers and provide them with recommendations for seed production and marketing. This agency is also responsible for training seed inspectors and seed growers and dealers in the techniques of seed production, processing, storage, and marketing and the standards required of them. The agency enforces seed laws, regulations, and standards through regular inspections of seed fields and processing, storage, and marketing facilities.

The concerns of seed growers and dealers, such as unfair pricing, adulteration by unregistered dealers, lack of processing and storage facilities, and marketing problems are fed back to the policy formulating body through the certifying agency for discussion and remedial action. The agency also advises the policy formulating body as to any threat to the seed enterprises by adverse weather conditions and seed imports.

The plant quarantine agency ensures that imported and exported seeds meet seed health standards. In Ghana, the GSID of MOFA with its branches sited in the various ecological zones of the country, is responsible for seed quality control and certification. The Plant Protection and Regulatory Services Department (PPRSD) which is also an umbrella department for GSID is responsible for enforcing plant quarantine laws.

The role of extension. The agricultural extension service is a link between researchers and farmers in technology dissemination. The agency helps to support the private seed sector through the stimulation of various crop production activities. This agency presents research results in ways that can be easily understood by farmers and also conducts training programs on new technologies, which include seeds and planting material. The agricultural extension service conducts surveys on food needs and availability in various parts of the country. Some of these results may serve as a basis for determining the requirements of seeds and planting material.

The agricultural extension service is responsible for promoting improved technologies through television and radio programs and developing and distributing fact sheets, farmers' handbooks, and manuals. The agency conducts planning workshops to enable farmers, extension agents, and research scientists to discuss production constraints and reformulate appropriate recommendations to enhance the adoption of improved technologies.

Since extension is in contact with farmers, nongovernmental organizations (NGOs) and other large-scale users of seeds and grains, it is a major contact point for information on seed marketing.

The role of the credit system. Availability of credit facilities facilitates the adoption of improved seed. When farmers are given low interest loans, they are able to purchase improved seeds and other production inputs. Under certain situations where credit is not available or interest rates on agricultural loans are too high, farmers become reluctant to adopt improved production practices. Investment promotion through reducing taxes on seed sales and imported seed equipment could encourage the private seed sector to develop.

Conclusion. The government role in supporting the private seed sector is through the support given to policy formulation, research, quality control, quarantine and certification, extension, and credit delivery systems. The role of research is to develop improved crop varieties and production practices since the cost of technology development may be too high for the private seed companies under the socioeconomic circumstances of the farmers.

To ensure that farmers adopt improved seeds extensively, seed quality control and certification measures are put in place to enforce seed production and marketing standards that will build farmers' confidence. In addition, plant quarantine laws are formulated and enforced to ensure that seeds that are imported or exported do not carry organisms that are injurious to crops. Credit should be made available to farmers for seed purchase and to seed enterprises for sustaining their businesses when seeds are in store. All these organs must be fully operational to enable the private seed sector takes off and make the desired impact on the national economy.

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Comments on previous issues

End of saving seed on-farm?

With reference to the article in WASEED (English edition) No. 3 of January 1999. Most farmers in developing countries are subsistence farmers and prefer the use of on-farm saved seed (except for some garden crop seeds). This results in poor productivity of the crops concerned. Advice given by agricultural extension staff against this practice has not changed farmers' attitudes. The terminator seed technology may stop the practice of saving seed on-farm as all farmers producing crops will be obliged to change their seed yearly.

Subsistence farmers are rational and often use seed, which can be used for about three successive cropping generations before the seed needs to be replaced. This takes advantage of the cost of seed and other inputs, as well as the management practices necessary in their production system. The introduction of the technology protection system (TPS) patent may, therefore, not affect the production systems of subsistence farmers much. This also implies that biodiversity conservation in developing countries will not be affected much in the short run.

In the long run, agricultural production in developing countries will probably shift from subsistence to production agriculture. This will result in a change in farmers' attitudes from the use of traditional varieties to the use of improved varieties with or without the terminator seed characteristics. The TPS patent will only enhance competition between domestic (and international) seed companies using TPS and those not using the TPS patent license.

The evolution of the agricultural sector, and particularly the seed subsector in developing countries, does not need to be held hostage by a simple ban on the TPS patent. If one considers the rationality of the farming population and the need to conserve genetic diversity, then the essential question may be: "How can biodiversity be conserved while the TPS patent is recognized and registered by government of developing countries?" In this light, seed banks may be created by governments, agronomic research institutions, and seed companies. Even then, existing subsistence farmers will continue to rely on on-farm saved seed.

Agricultural extension staff will need to be well educated on the nature and exigencies of the terminator seed technology. They will in turn educate farmers on the TPS and its effects on crop production systems. Such awareness creation may include a minimum isolation distance between fields of farmers using traditional varieties (with the intention of saving seed on-farm) and fields of farmers using varieties containing the seed terminator characteristic. Isolation may also be in time.

Farmers using TPS seed may be encouraged to identify their fields with a small information board (painted) that gives sufficient agronomic information on the particular seed used. This implies that the packets containing TPS seed must contain the agronomic information provided by the seed companies.

It may therefore be reasonable for the Government of the Republic of Cameroon, and the governments of the other developing countries to recognize and register TPS when the time comes.

The inventors of the technology protection system are highly encouraged and appreciated. The TPS imposes rationality in the world seed industry and will benefit farmers (producers), consumers, and particularly, researchers and seed companies.

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World seed market

The global seed market, which can be evaluated at US\$30 billion, is relatively stable, disposing, however, an increased potential because of the increase in volume in developing countries and the new value added to seeds through new technologies.

International movement of seeds, in spite of some sanitary barriers, is increasing steadily and is currently reaching US\$3.5 billion. Horticultural seeds are exported the most. The seed industry is still concentrated, the first 10 companies representing only 20% of the world market. However, within the last few years, concentration has become more pronounced. In addition, global analyses are hiding the reality at the level of groups of species where there is a strong concentration developing. Finally, the transgenic seed market is increasing rapidly. This phenomenon will certainly have an impact on the market itself and also on the structure of the global seed industry.

B. Le Buanec, FIS Congress, Monte Carlo, 1-3 June 1998.

Legal considerations in establishing small-scale seed enterprises

Peter Witthaut

In setting up a new seed enterprise the first step is to complete the necessary market research and prepare a business plan. Then, it is essential to look at the legalities involved when setting up the business.

Starting a business must not only take into account financial, economic, and marketing factors, it must also consider the legal status of the business, in order to protect the owner's capital and investment. In most countries, there are different types of legal structures for enterprises; these are usually defined in company laws. The manner in which a seed business conducts its affairs, borrows money, and generates or disseminates financial information is determined by the legal status of the business. There are two major legal frameworks for private persons who form a business for profit: partnerships and companies.

Partnership law is based on contract. Partnerships are only suitable for a relatively small number of persons who know and trust each other. Company law allows establishment of companies, that is, associations with a legal personality distinct from that of their members.

Choosing the most suitable legal framework for a small-scale seed enterprise depends on a number of factors:

- The amount of capital needed to start the business—considering the investment in equipment and infrastructure, sources of finance must be available and secured. Financing the required working capital to start the business is another important issue to be considered.
- The amount of financial risk involved—if a venture is risky spreading the chances for financial failure is required.

A person business could be a sole trader, i.e., self-employed or a limited company. When several "bosses" are involved, the form could be a partnership, limited company, or a cooperative.

Sole trader. This is probably the most common form for a new business. The

owner may trade under his own name or a business name, which usually does not have to be registered. In case a business name is used, the owner's name should appear on all letterheads, etc. The owner of the business solely holds all profits (and losses), and is fully responsible for the business. He may decide to employ people to work for him or to manage the business for him, but they will remain employees and he has the final responsibility.

When starting the business, finance must be provided. If an individual's savings are insufficient, money can be borrowed. Banks and other financial institutions usually require detailed plans of the proposed business (business plan). If the business runs into financial problems, the owner will be personally responsible for paying the debts, even if this means selling a house, car, etc. A sole trader has very few legal requirements to fulfil. If the value of the taxable supplies (per annum) is over a certain sum, the business must be registered with the tax authorities (depending on the tax laws in the country). It then becomes a legal requirement to maintain accurate records.

However, to ensure that the correct amount of tax is paid, proper accounting records must be kept. Generally, taxes are paid only on profit. The sole trader may well be interested in the amount of profit the business makes in the year, but there is no legal requirement to produce a statement showing this.

Partnership. A partnership is two or more people carrying out a business for profit. The number of partners should not exceed 20, but this depends on country specific legislation. The partners are all owners of the business and jointly make decisions on running the business. They may operate under a business name, which does not have to be registered. Depending on the laws of the country, the names of the partners may have to appear on the firm's stationery.

It may be easier for a partnership to raise the funds to start a business (sharing the investment). All partners

will share any profit and share any losses. Partners normally ask a solicitor (attorney at law) to draw up a legal agreement showing the proportions in which they share profit or loss and other matters.

If partners invest different amounts of capital, they can choose to either apportion the profits in the same ratio as the amounts invested or to allow time (say 6 months) for the partners to equalize their investments. In both cases, voting rights should be equal to the individual investment amount.

Partners are personally responsible for the debts of the business, but if one partner disappears, the remaining partner(s) is/are liable for all the debts. Requirements listed above on tax and financial statements for sole traders are similar for partnerships. In addition, countries may have a Partnership Act, which lays down the following:

- Proper books of accounts must be kept
- Capital must be distinguished from profits and losses
- A record must be kept of profit shares and withdrawals
- Partners are bound to render true accounts and full information of all things affecting the partnership to any partner or his legal representative.

Limited liability company. Unlike a sole trader, a limited liability company is a legal entity in its own right. The most important consequence is that the company only is responsible for the debts incurred in trading. If the company is unable to pay its debts, then the company can be sued in its own name. The owners (shareholders) are responsible for the amount of money they have invested in the company, but their liability is limited to that amount. Their personal assets are not subject to takeover, therefore, a number of legal requirements confront a limited company.

Its shareholders and directors may change, but the company will continue to exist until legally disbanded. Companies have many laws to regulate them. No one should set up a company without understanding

the implications and getting professional advice. If the company is unable to pay its debts, then it may go into liquidation.

A company must have at least one director and a company secretary who could be a second director, another shareholder or accountant or solicitor.

In the formation of the company, certain documents (articles of association, memorandum of association) and the name of the business (no two companies can have the same name) must be registered with the Registrar of Companies. In addition, every year a limited company must send certain financial information to all shareholders and to the Registrar. As any person may consult the files of the Registrar, the data submitted by the company become public documents.

Companies limited by shares are the most important form of business organization, not because of their number, but because of their size. Companies whose shares can be offered to

the public are known as public limited companies (Plc) and these letters must appear after the name. There are also private limited companies whose shares may not be offered to the public, and in most cases the founders and owners hold all shares (limited must appear after the name).

A public company can offer its shares to the public through the stock exchange; a private company cannot do this. Legal reporting requirements for limited companies are complex; these are contained in the Company's Act. These vary, depending on the type of company and its size, but general provisions are:

- Accounting records must be kept to show and explain the company's transactions.
- At the end of each financial year, accounts must be prepared which comprise:
 - Profit and loss account
 - Balance sheet
 - Auditor's report
 - Director's report

These accounts are given to each shareholder, debenture holder, and any other person entitled to attend the annual general meeting. These should also be filed with the Registrar of Companies. In this way they become public documents; for a small fee, anyone can obtain a copy of them.

There are also certain accounting standards (national and international), which are guidelines issued by the professional accounting body in each country. These standards do not have the force of law, but are recommendations as to how certain accounting matters should be dealt with by limited companies.

Cooperative. A cooperative or "worker's cooperative" is a specialized form of limited company. Cooperatives are run like any other small business with managers or supervisors, the difference being that the business is owned by everyone who works in it and decisions are made democratically. Laws and regulations apply to a cooperative the same as for a limited company.

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How to bridge the public and private seed sectors by regional support

Karl J. Neddenriep

For many years, various development programs and donor agencies have emphasized the public seed sector with a number of success stories. Breeding, variety testing, seed processing and storage, seed certification, and seed legislation have been well established in several cases. However, the missing link is still adequate support to individual farmers to meet their seed demand in terms of crop, variety, quantity, quality, and delivery time. The introduction of certified seed helped, but farmers still depend mainly on their own initiatives for seed supply with all its limitations.

The private seed sector has a number of advantages due to its close links with farmers and better-adapted crops, varieties, and production techniques. Any use of experience gained from "farmer's fields" leads to a more gradual and sustained development. There is much less risk on investments, cultivation practices, production of seed, planting material, etc., if the activities get the right follow-up. Nevertheless, research activities should remain the responsibility of the public sector.

Need for support. Since the private seed sector consists of numerous individual efforts, collaboration of individ-

ual members (villagers) is essential in order to arrive at a reasonable framework and production figures as a precondition for investment and cost sharing. Support to the private seed sector should concentrate on the most urgent needs (training, appropriate equipment, suitable varieties, etc.) and facilitate organizational structures that mobilize forces for sustainable development. It is also necessary to enable effective "bridge-building" between the public and private seed sector in a partnership for mutual understanding and more effective use of the research results.

Future perspective of the private seed sector. Since the demand for quality seed and planting material will increase in line with the growing demand for food, it is a challenge for the private seed sector to develop its set-up, products, and marketing channels for the welfare of the rural people. The dynamics of the private sector will be the impulse for a more decentralized and need-oriented development of seed supply to farmers. This is the key to promoting commercial areas of the "seed business" which cannot be well covered by the public sector.

Recommendations. In conclusion, the private seed sector should be considered as a "nucleus" with great potential

for improving crop/food production and rural development. Therefore, the private seed sector should be supported and regional development schemes which favor a broader collaboration of individual groups or companies for their own benefit (sharing progress and costs, ex-

changing valuable materials, minimizing individual risks, compensating failures, etc.) should be started. Furthermore, collaboration should be based on clear and transparent agreements coupled with monitoring and evaluation and effective follow-up.

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Comments on previous issues

Creation of WASNET and WASCOUNCIL

I refer to the proposal related to the creation of a West Africa Regional Seed and Planting Material Network (WASNET) and the West Africa Seed and Planting Material Council (WASCOUNCIL). The concept of WASNET and WASCOUNCIL is highly commendable. The proposed objectives and methods of intervention of the two bodies are well conceived. The justification for the need to create WASNET and WASCOUNCIL does not need to be reemphasized here. However, it is evident that the creation of WASNET and WASCOUNCIL will lead to expanded regional cooperation to share resources and expertise, increased production of seed and planting material, and increased seed supply, use, and seed trade in and among member countries. The dissemination of technical information on seed and planting material technology will also improve. And in the medium run, the whole of the West African region will witness social and economic growth. It is, therefore, hoped that the year 2000 will witness the birth of WASNET and WASCOUNCIL.

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Is research a global public good?

Per Pinstrup-Andersen

Today, research, and in particular biological research, is very likely to be patented and thus may not benefit the poor in developing countries. Research is no longer a public good. This conflicts with the initial objective of biological or agricultural research to contribute to food security and poverty alleviation. This situation calls for new initiatives to fund public research in general and national and international agricultural research systems in particular.

Are computer chips and improved seed public goods? Knowledge may be embodied in physical technology such as computer chips or improved seed. Is such technology a public good? It depends. If the use of the technology by one person precludes its use by another or if certain individuals or groups can be prohibited from obtaining benefits from the technology, the technology is not a pure public good. Thus, neither computer chips patented by Intel® nor Round Up Ready® soybean seed patented by Monsanto are public goods. Each of the companies has exclusive rights to the technology protected by patent laws. The intellectual property rights are clearly defined. However, enforcement of these rights is likely to be much more difficult in the case of biological technology such as improved seed, because, contrary to computer chips, seeds multiply and the farmer may use his own seed in future planting without paying the original owner, e.g., Monsanto. Although farmers may enter into contracts with seed companies agreeing not to use their own seed, such contracts are difficult to enforce. Therefore, while the benefits to society, including farmers and consumers, may be large, private corporations may be unable to capture enough of these benefits to warrant investment in the research needed to develop the technology.

The importance of property rights. The development of hybrid seed helps the seed company recuperate the research and development costs because, contrary to open-pollinated seed, farmers need to buy new seed every season to maintain the improved traits of the original seed. The much discussed terminator gene, if ever commercialized, would be another way for the seed company to assure that the farmer buys new seed every season because his production is sterile. While the notion that the seed produced by the farmer is sterile is ethically unacceptable, at least for small-scale farmers in developing countries, because of the associated risks and dependency, a more ethical approach involving the ability to turn on specific new traits in a seed is currently being developed. Using such an approach, farmers would have the choice of buying the chemicals needed to activate the improved traits embodied in the seed, e.g., insect resistance, or plant the seed with the original traits. Farmers who choose not to buy the chemicals would presumably be no worse off than before trying the improved seed.

But even if the private research agency could enforce property rights, for example through hybrid seed or built-in gene switches such as those mentioned above, research investments by the private sector would be less than socially optimal. The reason is that groups other than farmers, e.g., consumers, would benefit through lower prices. Since the private research agency does not have the right to tax consumers, the benefits derived by the farmers will set limits for how much the agency can capture. Therefore, relying on the private sector for agricultural research is likely to result in under investment from the point of view of society.

India's transgenic outrage

Farmers in India are furious that field trials of genetically engineered cotton plants are being allowed to take place in Andhra Pradesh and Karnataka, the location of catastrophic crop failures in recent years that have led to farmer suicides. Incensed farmers have set several experimental farms on fire believing that the controversial *terminator* gene was being clandestinely introduced. Suspicion was further fuelled by press reports that the secrecy surrounding the trials and apparently contradictory statements from the company made the trials suspect. Newspapers were quoted as saying that the Indian Council of Agriculture had, "no information about the experiments". For its part, Monsanto denies propagating the terminator gene at any of its 40 trial farms run with their Indian partners, Maharashtra Hybrid Seed Company (MAHYCO). However, farmers, action groups, and NGOs remain unconvinced, and the information or misinformation war seems certain to continue for some time to come. Source: *Asian Seed*, Volume 6(2), April 1999.

Private sector seed companies

Gambia horticultural enterprises

Momodou A. Ceesay

The Gambia Horticultural Enterprises (GHE), established in 1990 as a sole proprietorship, is owned and managed by Mr Momodou A. Ceesay, a trained, professional horticulturist with over twenty years experience in agribusiness. Since its establishment, GHE has been mainly involved in the following activities:

- Grower/exporter of tropical and off-season fresh fruits and vegetables to Europe.
- The Gambia's largest dealer/distributor of inputs such as seeds, mainly vegetable seeds, fertilizer, pesticides, as well as garden tools, equipment, and farm machinery, etc.
- Horticultural services such as landscape gardening, pest control, and estate/farm management.
- Consultancy service in all aspects of horticulture and agribusiness.

All these activities are vertically integrated, complementing each other to provide sustainable cash flow and business activity.

The company has grown from a small home office to a large company-owned head office on the Bajul/Serrekunda highway, consisting of an office complex, shops, and stores. We also have acquired farmlands at Lamin (3 hectares) and Kembujeh (50 hectares). The business is managed by young, dynamic, highly trained, professional staff with a strong technical background through years of experience in the business. It employs 17 full-time staff and the company has a sound financial status with very good cash flow and liquidity and strong financial backup from the two leading banks in The Gambia, Standard Chartered Bank and Trust Bank Ltd.

The Input business is the biggest and most profitable activity of the Company with being most important. The main seed business is the sale of vegetable seeds, which are all imported. We are the sole agent in The Gambia for SVS Holland BV (Royal Sluis) seeds. With their vast worldwide resources and multiple brands we are able to offer good quality seeds and choice of varieties, which gives success and satisfaction to the end users. There are other competitors in the business but GHE is by far the largest dealer in seeds and other inputs in The Gambia.

We do not produce our own seeds. We use good contract growers, such as NARI and NGOs to provide most of the field crop seeds we deal with namely, maize, groundnuts, rice, sesame, and cowpea, which are mainly open-pollinated saved seeds. Hybrid field crop seeds are not yet available in The Gambia. The following table shows the average quantities of seeds sold by GHE per annum: vegetables (2.5 t), peanut (200 kg); maize (700 kg); sesame (200 kg); rice (500 kg), and cowpea (100 kg).

It is estimated that over 80% of farmers keep their own field crop seeds. The Government is still the main supplier of groundnut seeds, the country's main export crop.

GHE has a very good working relationship with public sector seed concerns such as the National Agricultural Research Institute, the Department of Agricultural Services responsible for agricultural extension, nongovernmental organizations, and private seed dealers. However, there is very little government support to the private seed trade as it is often seen as a purely commercial venture.

As the Gambia market is small (population 1 025 867), we also market a good amount of our vegetable seeds in the subregion notably, Guinea Bissau, Guinea Conakry, Senegal, and Sierra Leone. We have dealers in these countries who come to the Gambia and buy our seeds because of our highly competitive pricing policy and range of good adaptable varieties. This is also possible because of The Gambia's liberal trade policy and low tariff rates for agricultural inputs.

Our marketing strategy is to provide the best seed at very competitive prices with a wide choice, available throughout the season and accessible in all parts of The Gambia. To this end we work with dealers throughout the country and in neighboring countries giving them the best wholesale prices, that will increase the margin and profitability of their business.

We used to give credit to some of these dealers, but delay in payments, defaults, and the high cost of loan recovery made us, as a matter of policy, not to give credit. We do, however, give credit on a limited scale to large, well-established grower companies. We do not have other branches in The Gambia. Previous experience taught that it is difficult to control these branches, especially if they are located far from the head office.

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We carry out a lot of promotion and advertising during the growing season. We participate in field days and shows organized by the Department of State for Agriculture and NGOs. We also make use of the media, particularly radio and newspapers and are planning to use TV. Extension officers, research officers, and dealers are used to test and promote new varieties of seed.

Our biggest constraint is the high interest rate (25%) charged by commercial banks for long-term loans. Sometimes, lack of foreign exchange to remit to suppliers can be a problem. The small size of our market is a constraint to the quantity we can sell, hence, the vigorous pursuit to capture some of the neighboring markets using a competitive pricing policy. Our company would operate more successfully if the ECOWAS protocols of free movement of people, goods, and services were adhered to and there was more Government support and commitment to the development of the agricultural sector, particularly the private sector.

Future plans are expansion of our seed business in the main export and food crops such as groundnuts, maize, rice, sorghum, sesame, and cowpea and to introduce hybrid varieties of these seeds to the Gambian market.

Ghanaian seed companies

Aglow Agric Products, Ghana

Kofi Brobbey Kyei



Aglow Agric Products Limited (Aglow) is a private seed and agro-input enterprise established in 1989. The author used to work for the Ghana Seed Company. He was the production officer for seed growers in the transitional zone of Ghana responsible for the inspection of seed farms and seed certification. He was later transferred to the company's head office in

Accra as a sales officer to manage the sales outlets in the coastal zone of Ghana. During that period, he was able to assess the potential in the seed industry through the field experience he had acquired. He was therefore motivated by his working experience to establish his own enterprise.

Production and marketing strategies. Aglow has four outlets with 18 workers and 16 agents. The company supports 3 groups of contract growers with funds and inputs to produce seeds of maize and cowpea. It also contracts 5 individual growers to produce seeds of local pepper, okra, and garden eggs. Growers cost their operations with a 25% margin and negotiate with the company on an agreed price for the delivery of seed to the company.

Aglow gives a discount of 5% to new or first-time sales agents—based upon their performance—while long-term serving agents enjoy a 10% discount on their orders.

Aglow's profit margin ranges from 15 to 20%. The company's trained sellers give agronomic advice to farmers. It also conducts its own internal quality control measures independent of the official quality control activities to make sure that only seed of acceptable quality is sold. It has thus established the necessary confidence with farmers. The company relies on past sales records to determine the demand for seed and the trend has shown an annual increase of 20% in seed demand. With the major customers being seed agents and farmers, Aglow is able to sell between 5 and 10% of maize seed out of the total national sales volume annually.

Aglow also imports vegetable seeds from Denmark, Holland, and Japan. Its main suppliers are Royal Sluis, Daehnfeldt, Takii Company Limited and Tokita Company Limited. Imports increased from 320 kg in 1993 to 3000 kg in 1999.

Lessons and experiences to be shared. Over the years, the company has developed very good business relations with its input suppliers. This offers it the opportunity to purchase most goods on credit. This arrangement also reduces its reliance on commercial banks for operational capital. Seeds of maize and cowpea are packed in small volumes of 1 kg, 2 kg, and 5 kg polyethylene bags. It is, therefore, important to ensure that proper drying is done so as to maintain high levels of seed germination.

Aglow's contract agreements with its seed grower groups recognize the mutual benefits to both parties. For example, the company is assured of its seed supply and growers in turn receive credit and farm inputs and have a ready market for their produce at competitive prices.

The company's survival has depended on good and reliable record keeping of its business transactions with suppliers and customers. Records of previous season's seed and other inputs sales enable the company to forecast sales for the next season. Records also determine the levels of profits, which should be expected. Success has also depended on the operation of proper accounting and auditing systems.

Success has also been achieved through good communication with customers. Aglow takes a personal interest in its customers in order to gain their confidence. It tries to provide the service that will best help the customer. Aglow ensures that a customer is given information on products and constructive advice on choices to suit particular conditions.

Over the years, Aglow has developed closer linkages with public sector seed agents for technical and support services.

Extension agents must increase their activities in seed sector development by promoting the use of good improved varieties. Extension must involve the youth and school children in crop projects. Continuous information

Kofi Brobbey Kyei, Managing Director, Aglow Agric Products Limited, Accra, Ghana.

The Seed Shop, Ghana: the new kid on the block

Kofi Nyantakyi-Owusu

On 17 May 2000, The Seed Shop celebrated its 3rd anniversary with the opening of its 2nd major distribution outlet at Kwamo in the Ashanti region, the agricultural heartland of Ghana. Strategically located on the Kumasi-Accra highway, the new Seed Shop is sited on the busiest highway in Ghana and only a few kilometers to the outskirts of Kumasi. The decision to locate the new shop at Kwamo was based on several reasons:

- To obtain the maximum exposure to the local community as well as to the travelling public a large proportion of which is engaged in agriculture.
- Our customers are able to shop without the pressure and stress associated with
- vehicular and human congestion of downtown shopping. Customers visiting Kwamo are able to relax and discuss their requirements with our resident agronomist in a comfortable atmosphere.

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Welgro Agricultural Products Tema, Ghana

E.O. Boakye

This company started about 35 years ago with a little capital, buying seeds from the local market and selling to farmers on

dissemination through advertising fact sheets, brochures and posters, especially in local languages, will create awareness among farmers to buy improved seed.

Future prospects in the seed market. Aglow Agric Products Limited plans to expand its business to northern Ghana in order to win its large market for seed. It will strive to increase its outlets throughout Ghana from 4 to 16 and its discount rate for seed agents from 10% to 15% for advanced orders by the year 2004. The company will adopt a vigorous marketing strategy in order to sell large volumes of seed at very moderate prices. There will be sales of other planting materials such as cashew, groundnut, soybean, and rice. These objectives will be achieved, to a large extent, if the banks, especially state-owned banks, are flexible in providing credit at low interest rates and establish credit facilities for seed businesses.

Conclusion. The role of medium-scale seed entrepreneurship has been crucial in meeting seed needs of farmers since public sector seed activities were curtailed. This trend is likely to continue and should prove very beneficial in nurturing growing private sector involvement in the seed industry. The ability to more precisely and efficiently address the needs of small-scale farmers, who are in the overwhelming majority in Ghana, places the medium-scale businessman in a unique role to deliver better services to the farming community. Aglow Agric has endeavored over the past several years to play that role.

- Last but not least is the proximity to the Crop Research Institute at Fumesua, Kumasi, only 5 minutes away, which can offer all kinds of technical and research assistance to our company and our customers.

In response to market demands, this year the Company will, import new varieties of Tinda, Turia, and other oriental vegetable seeds from India for field trials by the Department of Crop Services, MOFA to determine suitability and subsequent distribution to vegetable exporters. These varieties will soon be available to farmers from The Seed Shop.

The second distribution outlet coincides with our introduction in July 2000, of our new range of agrochemicals from Efekto, South Africa one of the largest distributors of agricultural products in South Africa. The additions of the Efekto range will no doubt make The Seed Shop the most comprehensively stocked 'agrosop' in the country.

farms and at the shop. We raised a demonstration platform in front of the shop where interested individuals visited to study

our nursing/planting methods. By this we attracted customers. We interacted with customers, visiting them on their farms to acquaint ourselves with their farming methods and practices and we offered advice where necessary. Using sound business practices, we started the importation of vegetable seeds from overseas suppliers and are now importers, wholesalers, and retailers of vegetable seeds. The company is a member of the Vegetable Producers and Exporters Association of Ghana, comprising 40 vegetable growing and exporting enterprises.

In spite of all the progress, certain problems still exist. Our capital is hardly able to cope with the volume of

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Obek Agro Services, Kumasi, Ghana

Yaw Owusu Berko

OBEK Agro Services, a sole proprietorship, was incorporated in 1989 to transact business in agrochemicals, fertilizers, seeds, and agricultural equipment. Since its inception, OBEK Agro Services has actively participated in the government of Ghana's ongoing privatization of agricultural inputs and its distribution program.

Currently, the company has two main shops in Kumasi in addition to a number of agro-input dealers in four regions in Ghana. From an initial workforce of four, the company now has 15 full-time employees. The company does not import inputs on its own but depends on key and reputable distributors for all its imported items.

Initially, the company's activities were centered round the distribution of agrochemicals and fertilizers. It was, therefore, with much enthusiasm that we embraced the deregulation of the production, procurement, and distribution of certified seed in order to give a complete package to our valued farmers. At present, OBEK Agro Services does not directly produce improved seed, but the company depends on selected seed growers, who produce for us on contract, crops such as maize, cowpea, etc. The company, however, has advanced plans to enter into seed production on our recently acquired fifty acres of land.

The company's main strategy is that we work in close collaboration with research in establishing demonstration

business we have developed and we find it difficult to meet the increasing demand of our customers. Funding for expansion of services to farmers is required.

It is important to note that most of the imported vegetables are unknown to our local consumers, therefore, we need an assurance of a steady market for these products. This will prevent a repetition of an unfortunate incident where our clients, to meet serious demands from overseas buyers, went heavily into production of specific crops for which the prospective buyers failed to turn up. We need an organization, such as Ghana Export Promotion Council to come to our aid in this matter.

plots at selected sites where farmers and extension staff have the advantage of evaluating most of our materials first hand. Other strategies include attending open and field days by research and other seed industry partners where the company displays its goods for the public.

In 1999, the company could not sell all its stock. Faced with that experience, this year the company used radio advertising and a van mounted with a public address system to reach the farmers. This strategy enabled us to sell almost one hundred tonnes of seed, thereby enabling us to dispose of all the seeds we could not sell during 1999 farming season.

There are, however, several problems facing private seed dealers in Ghana. If privatization of agricultural inputs such as seeds and its associates is to achieve its envisaged results, then all stakeholders must put their hands on deck to find solutions to identified problems such as:

- Lack of education on the availability of improved seed for the average Ghanaian farmer.
- High cost of storage and unavailability of storage facilities in vintage areas.
- Poor infrastructural development such as roads.
- High cost of credit.

When these problems are attended to, the seed program of Ghana should have a very bright future.

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Nigerian Seed Companies **UAC Seeds, Nigeria**



UAC Seeds is a division of UAC of Nigeria Plc, whose origin is deeply rooted in agriculture. It was established in 1994, to develop, produce, process, and market agricultural seeds, especially hybrids, to farmers in Nigeria and other ECOWAS countries. With an employee strength

of about 41 (December 1999), we are currently a leading seed company in Nigeria. Our vision is to be the leading seed company in Nigeria, ensuring the reward of agricultural technology to its stakeholders. Pannar Seed (Pty) Limited, South Africa is the technical partner of the division, providing research and development backstopping and assisting in market development, the introduction and registration of new products, and training and human resource development.

We collaborate with national and international research institutes such as IITA, ICRISAT, CIMMYT, and WARDA for the development of other crop seeds such as rice, soybean, sorghum, cowpea, wheat, sunflower, millet, and cotton. We produce various generations of seed (certified seed, foundation seed, and breeder seed).

Our products are seed of hybrid maize, open-pollinated maize, soybean, sorghum, rice, cowpea, and vegetables.

Hybrid maize varieties. PAN 6195 (white, high yielding, medium season, streak resistant), PAN 6193 (white, high yielding, short season, streak resistant), PAN 10 (yellow, high yielding, medium season, streak resistant), and MEGA Hybrid 70 (white, high yielding, medium season, streak, downy mildew resistant).

Open-pollinated maize varieties. TZPB (white, high yielding, medium season, streak resistant), DMRL (white and yellow, high yielding, medium season, streak and downy mildew resistant), DMRE (white and yellow, good yield, short season, streak and downy mildew resistant), SUWAN-1 (yellow, high yielding, medium season, streak and downy mildew resistant), and TZE Composite (white, good yield, short season, resistant to streak and many other diseases).

Soybean (open-pollinated) varieties. Samsoy 2 (high yielding, medium season, low shattering, uniform) and GX-02-D (high yielding, medium season, low shattering).

Sorghum (open-pollinated) varieties. ICSV 400 (high yielding, medium season, excellent brewing quality), ICSV 111 (high yielding, medium season, appealing flour), KSV 8 (high yielding, medium season, moderately tolerant to headbugs), and SK 5912 (high yielding, long season, excellent brewing quality, moderately tolerant to headbugs).

Rice (open-pollinated) varieties. ITA 315 (upland, high yielding, medium season, blast resistant), ITA 150 (up-

land, good yield, early season, blast resistant), and SIPI 692033 (lowland, high yielding, early season, blast resistant).

Cowpea varieties. IAR 48 (high yielding, medium season, semi-erect, moderately susceptible to several pests and diseases), Ife Brown (brown seeds, medium season, semi-erect, moderately susceptible to several diseases and pests), and Kananado (white seeds, late season, susceptible to several diseases and pests).

Vegetables. Tomato (UC 82B and Roma VF), carrot, sweet pepper, okra, water melon, cabbage, onion (red creole), and lettuce.

Seed quality is our driving force. An internal seed testing and quality control laboratory is complemented by the National Seed Certification Scheme in line with statutory requirement. Quarantine and export standards and conditions are therefore easily achieved and can be certified by regulatory authorities of importing countries. Our internal standards conform to ISTA (International Seed Testing Association) and FIS (Federation of International Seed Trade) standards. Production is done on outgrowers farms and the divisions' research farm with strict genetic and physical quality monitoring by production officers. In our seed production program, we use both locally bred and imported genetic materials. Over 2000 tonnes of seed is produced and sold annually.

Every product is processed and packed according to customers' requirement and delivered in UAC seeds bags and labels. Customers are supplied through an extensive product stewardship and extension program by company staff and trained stockists. We undertake sales promotions, demonstrations, and farmers' field days.

We are located in the following towns in Nigeria: Bauchi, Benin, Enugu, Jos, Kaduna, Kano, Minna, Yola.

For further enquiries contact: The Divisional Managing Director, UAC Seeds, Chikaji Industrial Estate, PO Box 207, Zaria, Nigeria. Tel: (+234-69) 333037, 332511; Fax: (+234-6) 332510

Alheri Seed, Nigeria

Alheri Seed (Nig) Ltd. is the third seed company in Nigeria, registered in September 1997. Management staff includes a general manager, a production officer, a marketing officer, and 12 other staff members. The mandate of the company is the production, processing, and marketing of quality seed of cereals, legumes, and vegetables. Breeder seed originates from IITA and foundation seed from the National Seed Service (NSS) and other research institutions. Single-cross hybrids and improved composites are produced through contract growers or outgrowers. Vegetable seed is processed and packed into small sachets for sale to farmers. Our main products are cowpea, DMR maize, hybrid maize, rice, sorghum, soybean, and vegetables.

The internal quality control unit of the company works closely together with National Seed Service (which is that quality seeds are produced. Alheri Seed (Nig) Ltd. Markets its products through ADP outlets, distributors, responsible for certification and quality control) to ensure NGOs,

government organizations, etc, and marketing staff are posted at strategic locations/branches. Distributors are allowed a simple credit of 30% of their total purchases. Efforts are made to ensure that points of sale are located throughout the country.

Year	Crop	Quantity produced (in mt)
1999	Maize	127
	Sorghum	10
	Cowpea	8
	Soya Bean	11.2
	Rice	25
	Vegetable	-
Total		181.2

Nagari Seed, Nigeria

A. Boman

Nagari Seed Nig. Ltd. is a recently established seed company (1999) and is based in Funtua, Kaduna State, Nigeria. The temporary head office is located in Zaria, Nigeria and management staff consists of a managing director, a production/research manager, a marketing officer, and an account/ administrative officer. The company is supported by national and international research institutes such as the International Institute of Tropical Agriculture (IITA). Its mandate is production, processing, and marketing of seed, as well as importation and sales of vegetable seed. Facilities of the company include 35 hectares of land for research purposes, 2 warehouses, a processing complex (on lease from ADP, Katsina State Government), and a truck for seed distribution.

Hybrid breeder seed (maize) is obtained from IITA, Ibadan and foundation seed from the National Seed Service (NSS) and other research institutes within the country.

A. Boman, Managing Director, NAGARI Seed Nigeria Limited, No 24 Rwafl Road, PO Box 141, Zaria, Nigeria.

Seed is produced through contract growers, located in Kaduna and Katsina states. Vegetable seeds are imported, processed, and packed for sale to farmers. Seed is marketed through ADP outlets, distributors, retail sellers, NGOs, sale representatives, etc. Distributors enjoy 10% discount on all purchases made. The company tries to avoid consignment sales.

Constraints include the lack of adequate trained manpower and mobility. At the national level, government support is required to help create markets for seed producers and consumers. Research institutes must be adequately funded to provide breeder and foundation Seed to private sectors. The agricultural extension service needs to be reactivated and properly funded. Furthermore, community seed-production programs should be handled with care to avoid being a threat to private sector programs.

EGFAR - Electronic global forum on agricultural research

The main objective is to establish a communication platform via the Internet that facilitates the exchange of information and knowledge among the stakeholders of agricultural research for development (ARD). From an operational point of view, EGFAR is conceived as a system of web pages that fulfill three main functions:

1. A gateway function, whose purpose is to provide an internet platform to facilitate the interaction among the members of GFAR, as well as a gateway to the information and knowledge resources of the various stakeholders of ARD.
2. An electronic forum discussion on topics relevant for GFAR stakeholders, at regional and global levels. The first electronic fora are already being prepared.
3. The system of web pages that constitutes EGFAR offers specialized information services to the stakeholders of ARD.

One of the most interesting services that is being developed is that of the NARS Forum, which is aimed at the development of user-driven knowledge marketplaces on topics of specific interest to the management of NARS. EGFAR is developing in close coordination with FAO/WAICENT, with the CGIAR, and with the information services of the various stakeholders of GFAR, especially the regional/subregional fora and their databases and information systems. In fact, these information facilities constitute the backbone of EGFAR. **Consult the following web sites:** <http://www.fao.org/nars>; <http://www.egfar.org>

Two vegetable seed companies from Holland



Enza Zaden. Enza Zaden is one of the well-known Dutch vegetable seed companies, specializing in breeding horticultural crops such as tomato and sweet pepper. The company was founded in 1938, specifically for the Dutch market, but nowadays has branches throughout the world and has roughly 350 employees worldwide. In the

department of plant breeding, different plant breeding teams are working on tomato, cucumber, pepper, and lettuce as main crops, but also on crops such as endive, chicory,

spinach, leek, cauliflower, and radish. Besides the modern laboratory facilities, 3.5 hectares of heated modern glasshouses as well as 20 hectares of open field are available for research activities.

The company has traditionally focused on glasshouse and plastic multispan varieties for "protected crop cultivation". Nowadays, however, Enza Zaden has excellent breeding programs for open field varieties of tomato, sweet pepper, squash, and lettuce.

For humid tropical areas, the Indonesian breeding program produces a wide range of varieties, some of them potentially interesting for West Africa. Enza Zaden's top varieties can be found in sweet pepper (Spirit and Fiësta for greenhouses; Neptune, Orion, Inia, and Diego for the open field) and in tomato (taste tomatoes for greenhouses and Belle, Pretty, and Gironda for the open field). Up till

now, the activities of Enza Zaden in West Africa have been rather limited. There is however a sincere interest to set up some trial programs in West Africa. For organizations interested in the Enza product program and eventually some kind of cooperation, you can contact: **Enza Zaden, Jan Panman, Postbox 7, 1600 AA Enkhuizen. Tel: (+31-228) 315844; Fax: (+31-228) 315960; E-mail: j.panman@enzazaden.nl**

Bejo Zaden. Bejo is a well-known Dutch vegetable seed company established in 1978. Bejo Zaden has acquired an international reputation for hybrid vegetable varieties such as brassica, onion, shallot, carrot, and red beet. Breeding work in the tropics not only resulted in successful varieties of above-mentioned crops but also in tomato, hot pepper, and okra. Bejo is customer focused, i.e., it listens to the wishes of growers and consumers and responds quickly. Bejo has about 350 employees and is working worldwide through 15 daughter companies. Our slogan is "Bejo, a name that stands for quality".

Since 1995, Bejo started trials in West African countries like Burkina Faso, Côte d'Ivoire, Ghana, Nigeria, Senegal, and Togo. We mainly introduced hybrid onions and shallots (*Allium ascalonicum*). Our hybrid Red Bombay onion variety Orient F1 (BGS 71) is very successful in many countries. Advantages of Orient F1 are that it is high yields, has high uniformity, and long storage ability. In 1997 we started commercial activities in Senegal first

through Senchim AG and gradually other countries are getting interested in our hybrids.

In Ghana, we are carrying out experiments through the Crops Research Institute in Kumasi. Good results were obtained here with onion (Orient F1), shallot (Rox F1 and Tropix), and cabbage (Adelita F1, Fresco F1, and Fieldwinner F1).

Shallot is an important crop (Ghana, Togo), and has many virus problems. Bejo introduced hybrids from true seed, which are very healthy.

Is the West African market ready for hybrids? For cabbages, hybrids are already accepted in the market like Africa Cross F1 and KK Cross F1. Important characteristics are heat tolerance and black rot tolerance. For onions and carrots acceptance takes longer. Reasons are: (a) relative high prices (people tend to look at price only instead of comparing outputs), (b) lack of mechanization, (c) lack of marketing systems, (d) currency problems (high US dollar rate), and (e) lack of extension. Research and extension institutes could play a role to both private companies and farmers. Every year, Bejo organizes open field days and the students of the International Vegetable Production course of the International Agricultural Centre, Wageningen spend one day with the company. **Bejo Zaden B.V., Cees Keppel, Postbus 50, 1749 ZH Warmerhuizen, Holland. Tel: (+31-226) 396162; Fax: (+31-226) 393504; E-mail: c.keppel@bejo.nl**

Country reports on privatization

Ghana

V.K. Ocran



The policy objective of the Government of Ghana is to transform seed and other input suppliers into a private sector activity. This is based on the premise that the private sector could provide a competitive market that would ensure availability and timely supply of inputs. The policy also encourages local production of seed to free agriculture from imports

since this will guarantee seed supply, minimize foreign exchange allocation to importation of seed, reduce the importation of possible sources of dangerous diseases and pests, and reduce the problems of finding suitable varieties.

Thus seed production and sales have become private sector commercial activities being operated as small- and medium-scale seed enterprises. Seeds of maize, rice, sorghum, groundnut, cowpea, and soybean are being offered for sale. Producers of improved planting materials for cassava, yam, cocoyam, sweet potato, and plantain are also being encouraged.

Seed growers and dealers have organized themselves into three seed grower associations based on the ecological zones of Ghana with separate elected executive members. Total membership is about 350 and members of each association meet at different times to discuss matters pertinent to the development of the seed industry.

In addition to government support, the private sector has received both financial and advisory services from donors and nongovernmental organizations. Notable among these is the United States Agency for International Development (USAID), Sasakawa Global 2000, and GTZ.

In order to provide effective support to the private sector, government has strengthened the following public sector institutions from research through foundation seed production to quality control and certification and information dissemination:

The National Seed Services (NSS) coordinates activities on seed production, marketing, and training programs of stakeholders in the seed industry. The Ghana Seed Inspection Division (GSID) is empowered to register seed

producers and dealers, conduct field inspections, monitor seed quality, and certify seeds. Production of breeder seed and primary planting materials is undertaken by the Crop Research Institute (CRI) at Fumesua in the forest belt, the Savanna Agricultural Research Institute (SARI) in the savanna zone, and the Crop Science departments of the universities. The Grains and Legumes Development Board (GLDB) and other organizations produce foundation seed from breeder seed released by the variety release committee. Extension agents assist farmers to gain renewed appreciation of the use of good quality seed as planting material through education and information dissemination.

Support to the private sector has been provided in diverse ways:

- Public sector agencies conduct promotional activities through on-farm demonstrations, field days, advertisements, and awareness campaigns on the virtues of improved seed.
- Frequent training programs are conducted for seed growers and dealers in seed production and business management.
- The seed associations are also assisted in holding meetings and workshops on matters aimed at improving on their entrepreneurial skills. The associations have also been allocated offices, some small-scale processing equipment, and logistics for their effective operation.

V.K. Ocran, National Seed Service, Ministry of Food and Agriculture, Accra, Ghana.

Benin

Aguar Urbain

Under the Agricultural Services Restructuring Program (PRSA), the seed sector was restructured based on a formal production system with the involvement of professional seed growers. Following the new impetus given to the sector in 1994, it has been possible to further specify the role of each stakeholder in terms of supervision.

Through several specialized technical institutions, the Government plays a major role in the seed sector. The National Institute of Agricultural Research of Benin (INRAB) is responsible for the development of varieties and the production of breeder seeds.

The Directorate of Agriculture produces foundation seeds on its farms. It is also responsible for the technical coordination of the following activities: planning, program planning, packaging, storing, distribution, and marketing of the seeds through the Seed and Plant Service in charge of seed laws at the national level.

The Directorate of Agricultural Produce Promotion, Quality, and Packaging (DPQC) is in charge of quality control (control and certification) of all the categories of seeds (breeder, foundation, and certified seeds).

The Regional Centers for Rural Development (CARDER) provide technical assistance to individual farmers, farmers'

- Seed growers receive financial and technical assistance to construct on-farm narrow cribs to store seed maize on cobs over a period so that the maize will dry. Government also provides customs services for seed processing and storage to the private sector.

Potential for private sector development. There is much potential in investing in private sector seed enterprises if the following issues are adequately addressed:

- Expanding the number of retail outlets should increase market penetration. Seed enterprises should be encouraged to have several seed sellers linked to them. This will provide a guaranteed market for seed growers. The dehumidified seed drying and vapor proof packaging techniques being promoted by the IITA/GTZ West Africa Project will also enhance seed sales in remote areas.
- Providing sufficient credit to seed producers and marketers is important. A government credit policy must be implemented whereby private sector enterprises can obtain easy access to credit from banks at moderate interest rates for business.
- There should be more aggressive awareness campaign regarding quality aspects of seed. This should include frequent development and distribution of technical information brochures, pamphlets, and fact sheets on crop production practices. Special posters in local languages will also attract farmers to buy improved seed.

organizations, and community-based supervision. Their mission in the seed sector is as follows:

- To increase farmers' awareness regarding the use of improved seeds in order to stimulate their adoption
- To sensitize/encourage farmers to become professional seed growers
- To strengthen supervision and monitoring of seed growers
- To improve seed and plant quality control in the fields
- To plan training for professional seed growers and supervisors involved in seed and plant production in collaboration with specialized bodies.

In the national system, farmers' organizations (FO) (FUPRO, UDP, USPP, GV, GF etc.) have as a mandate to organize and supervise certified seed production in their respective locations. In this respect, they are in charge of awareness campaigns aiming at empowering farmers as the real actors of their own development (self-promotion).

Following the Government withdrawal from the sector, farmers' organizations were exclusively in charge of distribution activities based on a distribution of roles at various



levels, from the Department to the village. Under this mechanism, the Association of farmers at sub-Prefecture level (USPP) plays a crucial role. It is involved in the selection of seed growers in supplying foundation seeds, in the collection and distribution of certified seeds, and in the implementation of credit systems. If this mechanism has an advantage in terms of geographical distribution, the fact still remains that farmers' organizations are yet to be equipped to fulfil all the above mentioned functions. During the early years of this experience, the USPPs got into debt. Economic operators are yet to be involved in seed production and distribution.

Increasingly, NGOs are interested in the seed sector through:

- sensitization and supervision of farmers to make them use improved seeds
- training and organisation of study visits for seed growers, extension workers, and even scientists
- availability of inputs (seeds and fertilizers) based on credit payable in kind
- funding of the production of foundation and certified seeds of selected varieties and support to packaging, storage, and distribution of certified seeds.

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Niger

Paul Buckner



Niger covers an area of 1 267 000 km² of which 3/4 are located in the desert. Out of 15 000 000 ha of arable land, about 10 000 000 ha are hardly cultivated. Seed demand is highly correlated to cropping

season surpluses or deficits. Given the area of cultivated land, not more than 0.3% of the need for improved seeds is met.

In Niger, both the technical and financial support received by the seed sector for more than 17 years from development agencies was translated into operational seed projects. Breeder seeds (M0) were produced by INRAN, foundation seeds (M1) by the LOSSA seed farm, certified seeds (M2) by the Seed Multiplication Centre (CMS), and M3 seeds by the network of seed growers under the supervision of the centers. Annual multiplication programs were centrally established by the project and later by the regional seed committees in a decentralized manner in collaboration with the departmental agricultural directorates.

Purchase price of seeds from seeds growers was unilaterally fixed by the seed centers.

Since the end of the seed project 'Support to Agricultural Production' in 1990, the sector steadily deteriorated mainly due to the poor financial capacity of the operators (seed farms, seed centers, and cooperatives).

The NGOs include:

- Sasakawa Global 2000, which started the promotion of improved seeds of maize, rice, sorghum, cassava etc., a decade ago throughout the country. This NGO also tried to organize farmers to set up their own credit system through the creation and supervision of rural savings and credit banks (CREP) in the whole country. Now, 50 functional CREPs exist and have set up at national level a federation called National Federation of Rural Savings and Credit Banks (FENACREP)
- Entraide Universitaire Mondiale du Canada (EUMC)
- Mani Tese (Italian NGO)
- Borne Fondaine (Danish NGO)
- SNV (Dutch NGO)

The convergence of NGOs and FOs in community-based activities highlights the necessity to coordinate actions in order to turn the national seed system into a private or parastatal system under which, the Government, FOs, private operators, and NGOs become privileged partners capable of offering better guarantees in terms of promoting high quality seed production at low costs with the view to enabling small-scale farmers to have access to improved seeds varieties.

Under such circumstances and given the ever-increasing needs in seeds, a private seed sector has emerged with several categories of growers.

- Farmers' organizations (FO): Some FOs are well organized at village level given that they receive appropriate support from the projects operating in the localities. A few examples are the GTZ supported Agro-Sylvo-Pastoral Project (PASP), the World Vision Project, and the IFAD Project. However, the production of these FOs only meets the needs of the villages concerned.
- Groupings—In the districts, there are about 15 growers' groupings in the location of the seed centers. These groupings are yet to be formally registered and their production is not important even if it contributes significantly to the seed supply of the villages concerned.
- Professional seed growers—Individual growers, mainly former senior civil servants are investing in the seed sector and sell their production through development projects.
- Associations—A growers' association has been recently set up—the Association of Professional Seed Grower of Niger (APPSN). APPSN is currently occupied with establishing in the villages in order to stimulate the involvement of specialized groupings. This association, whose head office is located in Niamey, has representatives in all the Departments in

the country. It is composed of landowners who are more or less well equipped. The existence of this association made it possible to identify various stakeholders in the seed sector.

The public sector supports the development of the private seed sector. In Niger, the general strategy of seed policy aims at injecting professionalism into the various components of the seed sector, i.e., production, multiplication, and production. The set objective is the withdrawal of the Government from the sector and active involvement of the private sector in its development process. The role of the Government would be limited to the coordination and general orientation of the policy based on all related laws.

Support from the public sector is ensured through key activities under its responsibility including:

- variety development by research institutes
- supervision by extension services
- strengthening of enterprises, cooperatives, and farmers' organizations
- agricultural input supply.

With respect to the development of seed enterprises aimed at supporting seed growers, the Government carried out several activities this year:

- availability of 15 tractors and 50 power-driven cultivators at low cost with soft payment conditions for farmers, in order to increase their production capacity and strengthen the multiplication system.
- purchase of more than 500 tonnes of improved seeds from growers in May 2000.
- timely availability of sufficient quantities of improved seeds in all the regions and at subsidized prices for the 2000 season.

Paul Buckner, Chef de Service de Contrôle de Conditionnement et de la Législation Agricole, Direction de L'agriculture, Ministère du Développement Rural, Niamey, Niger.

- installation of more than 500 draught farming units in farms.

In addition to these activities, the Ministry of Rural Development is planning to test a lease-back system with the Association of Professional Growers on a few plots to be developed at the foundation seed farm under the supervision of an official from the Ministry. If this experience is successful, this initiative will be extended to the seed centers. This is in line with both the withdrawal of the Government from the production sector and the promotion of the public sector.

Public enterprises or companies. In Niger, there are no public seed production enterprises. The official bodies involved in the sector are the National Agricultural Research Institute of Niger (INRAN) in charge of breeder seed (M0) production, the foundation seed farm under the National Directorate of Agriculture, which produces foundation seeds (M1), and the seed centers under the Departmental Directorates of Agriculture in charge of certified seed (M2 and M3) production for distribution. These bodies do not operate like enterprises given that the seeds they sell are subsidized by the Government.

Addresses of some stakeholders in the seed sector:

- Agrimex Intrants Agricoles, BP 10.091, Niamey, Niger; Tel: (+227) 740481; Fax: (+227) 740748. This is an enterprise specializing in agricultural input distribution: (a) seeds (especially vegetable seeds), (b) phytosanitary products, (c) fertilizers, and (d) agricultural implements. It is hardly involved in cereal seed production.
- Association des Producteurs Privés de Semences (APPSN), BP 2.253, Niamey, Niger; Tel: (+227) 72.47.33; Fax: (+227) 72.47.32; E-mail: appsn@int.net.ne

Newspaper excerpts

Scientists seek crop asexual reproduction *The New York Times*, 25 April 2000

Dandelions, crab apples, citrus, blackberries, and the grass used on many lawns can do it. But the world's major food grains can't. If the major food grains could reproduce asexually, it would enable farmers to use just a few seeds to make numerous perfect copies season after season. Apomixis (where the seed contains a full set of chromosomes from the female) also would enable farmers in developing countries to plant high-yielding corn, wheat, or rice plants that would reproduce unchanged for generations and feed many hungry people. So far researchers have not been able to induce the food grains to reproduce asexually. Dr Wayne W. Hanna (USDA, Tifton, Georgia) has succeeded in growing apomictic offspring that are more like the crop and less like the wild relatives. But after breeding eight generations of variations in crosses between pearl millet and naturally apomictic wild relatives, Dr Hanna notes the offspring do not produce enough seeds to be suitable as a viable crop! Other researchers are pursuing apomixis with different strategies. Dr John G. Carman (Utah State University) is trying to achieve apomixis by crossing two plant varieties, neither of which is apomictic, in the hopes that the resulting confusing signals in egg development will result in no egg and an embryo with a full set of maternal chromosomes. Still other scientists are attempting to use modern gene-sequencing and gene-mapping techniques to find the gene or genes responsible for apomixis.

Courses, meetings, publications

Courses and meetings



International Course on Seed production and technology, 8 April to 14 July 2001. International Agricultural Centre (IAC), Wageningen, the Netherlands. The objective is to provide participants with the knowledge and skills to identify, plan, and implement seed programs. The course program is built around six modules: (1) Introduction, (2)

Quality assurance in the seed sector, (3) Plant variety protection, (4) Seed Production in developing countries (5) Seed quality control, and (6) Seed production and agronomy. Fellowships are available for nationals of developing countries from the Netherlands Fellowship Programme (NFP). For participation in individual modules no NFP fellowships are available. Applicants for a NFP fellowship should submit their application to the Netherlands Diplomatic Representative (Embassy/Consulate) in their home country. Application deadline is January 1, 2001. **Information:** International Agricultural Centre (IAC), PO Box 88, 6700 AB Wageningen, The Netherlands. Tel: (+31-317) 490111; Fax: (+31-317) 418552; E-mail: training@iac.agro.nl

Course on Sustainable agriculture in an environmental perspective, 4 September to 20 October 2000. Contents: The Challenge, Ecological basis of agricultural production, Plant breeding and biotechnology, Planning and monitoring, Agriculture in a sustainable society, Policy instruments. Participation fee and costs for accommodation and meals will be paid by the program for participants coming from developing countries at the lower income level. Costs for other countries: participation fee (USD 7633), accommodation (USD 4073). International travel to and from Sweden is not included. **Information:** Svalöf Weibull AB, Consultancy Department, SE-268 81 Svalöv, Sweden. Tel (+46-418) 667000; Fax: (+46-418) 667109; E-mail: consultants@swseed.se; Director of Program: Per Andersson; Administration: Marie Hardfors.

Report of the 'International course on Postharvest treatment and marketing of agricultural produce', 1-29 March 2000, Israel. This course was organized by the Centre for International Agricultural Development Cooperation (CINADCO) of the Ministry of Agriculture and Rural Development of Israel. Twenty-three participants from 11 (mainly) African francophone countries participated. Participants came from the public and the private sector as well as from NGOs. CINADCO hosts more than 700 trainees from 130 countries and offers various short courses in 4 languages: English, French, Russian, and Spanish. The course curriculum included postharvest technology and care for grains as well as for fresh produce. Various aspects of marketing (local, export) were studied, particularly in the light of import regulations and restrictions related to pesticide residues and quality criteria.

Farm economics and entrepreneurship were part of the program to open up new avenues in participants' minds. Documents, names, and addresses are available on request from ashefayf@netvision.net.il. **Jonathan Donahaye**, Department of Stored Products, Agricultural Research Organisation, PO Box 6, Bet Dagan 50 250, Israel. Tel: (+972-3) 9683587/52; Fax: (+972-3) 9604428; E-mail: vtshlo@netvision.net.il

Report of the Founding Congress of the African Seed Trade Association (AFSTA). The South African National Seed Organization (SANSOR) in close cooperation with the Seed Trade Association of Kenya (STAK) and the International Seed Trade Federation/International Association of Plant Breeders (FIS/ASSINSEL) organized the founding congress of the African Seed Trade Association (AFSTA) held in Pretoria, South Africa, 20-21 March 2000.

This unique event was attended by 120 delegates from 21 African countries and 7 other countries. FIS/ASSINSEL, the International Seed Testing Association (ISTA), FAO, and the World Bank were represented, and good wishes were conveyed by the International Union for the Protection of New Varieties of Plants (UPOV) and the Organization for Economic Cooperation and Development (OECD). The interest in the new association was further expressed by the fact that 42 applications for membership were submitted on the first day. These applications comprised nine African national and sub-regional seed associations and 25 African seed companies. Applications for associate membership were also received from two government seed divisions, one NGO, two service providers to the seed trade, and three parties from outside Africa. The delegates reviewed the constitution and byelaws of AFSTA and adopted the mission and objectives of the association.

AFSTA mission. Provide a forum for interaction and information exchange within the African seed industry. Represent interests of the African seed industry, within Africa and globally. Promote the development of the seed industry for the betterment of crop production in Africa.

AFSTA objectives

- Promote use of improved quality seed
- Strengthen communication within the African seed industry and with the world
- Facilitate the establishment of national seed trade associations in Africa
- Provide information to members
- Interact with regional, governmental, and nongovernmental organizations involved in seed activities in order to promote the interests of the seed industry
- Promote activities that lead to regulatory harmonization throughout Africa to facilitate movement of seed

- Develop a statistical database on African seed production and trade
- Facilitate exchange of germplasm within the continent, subject to national laws and international conventions.

For more information contact: Seed Trade Association of Kenya (STAK), PO Box 2581, Nairobi, Kenya. Tel: (+254/2) 713 619; Fax: (+254/2) 713 671; E-mail: stak@form-net.com; <http://www.worldseed.org/afsta.html>

Publications



The Asia and Pacific Seed Association debuts its new publication, **SNAPSHOT**, in November. The publication is published 6 times a year for APSA Members only. APSA's flagship publication, **AS and PM**, continues to push the envelope in world seed publishing and looks

as if it will go from strength to strength in 2000. For all the details go to www.apsaseed.com/snap.html. **APSA**; Tel: (+66-2) 940 6464; Fax: (+66-2) 940 5467; E-mail: apsa@apaseed.com

Producing bean seed: handbooks for small-scale bean seed producers. Handbook 1 by S. David (1989). Network on Bean Research in Africa No. 29, CIAT, Kampala, Uganda. 69 pp. Copies are available for \$8 (including postage). This training handbook is intended for use by farmers and local institutions involved in bean seed production on a commercial basis. Handbook 1 covers production and postharvest issues. Illustrations from Handbook 1 are available on diskettes (\$20 for a set of 13 diskettes) to permit reproduction of the materials in local languages. Contact: CIAT (Sonja David), PO Box 6247, Kampala, Uganda. Fax: (+256-41) 567 635; E-mail: s.david@cgiar.org

Improving technology delivery mechanisms: lessons from bean seed systems research in eastern and central Africa by S. David and L. Sperling. 1999. Agriculture and Human Values. 16: 381-388.

Seed production manual for the informal sector by B.R. Gregg and A.J.G. van Gastel, WASDU Publication 4, 2000. Contact: IITA/GTZ West Africa Seed Project (WASDU), PO Box 9698, KIA, Accra, Ghana.

Seed operations cost and income analyses sheets by B.R. Gregg and A.J.G. van Gastel, WASDU Publication No 5, 2000. Contact: IITA/GTZ West Africa Seed Project (WASDU), PO Box 9698, KIA, Accra, Ghana.

Seed policy and programs for sub-Saharan Africa, FAO. 1999. Proceedings of the Regional technical meeting on Seed policy programs for sub-Saharan Africa, Abidjan, Ivory Coast, 23-27 November 1998. FAO, Rome, Italy.

Seed biology and the yield of grain crops by D.B. Egli. The book covers variations and regulations of both seed growth rate and seed fill duration, the regulation of yield components by the seed, and finally the relationship between seed, crop management, and yield. The focus of the book is at the organ, plant, and plant community levels. CAB International, 198 Madison Avenue, New York, NY 10016-4314. Hard back, 178 pp. \$165. ISBN 0-85199-241-2.

Agriculture and intellectual property rights: economic, institutional and implementation issues in biotechnology by V. Santaniello, R.E. Evenson, D. Zilberman, and G.A. Carlson. 2000. The book is recommended for agricultural economists, policymakers, legal advisers, and researchers in plant and animal breeding and biotechnology. It presents the perspectives of policymakers and economists on a highly topical subject. Plant breeding, patents, the ownership of biological innovation, and associated intellectual property rights (IPR) are the subject of increased attention worldwide. IPRs are particularly relevant in the field of agricultural biotechnology but until recently they evoked little policy analysis. They are issues affecting public and private sector organizations and companies, and are significant for developing as well as developed countries. 280 pp. ISBN 085199 457 1. Price \$85.

Free proceedings!!

Dr Navarro and myself are coeditors of a 559-page book entitled "**Proceedings of an international conference on Controlled atmosphere and fumigation in grain storages (CAF Conference)**". The conference was held in Winnipeg, Manitoba, Canada in June 1992, and brought together the latest research findings on these subjects. We still have a considerable number of the proceedings at hand, which we are willing to offer free of charge (including surface mail) to interested readers of the West African Seed and Planting Material Newsletter. **Jonathan Donahaye, Department of Stored Products, Agricultural Research Organisation, PO Box 6, Bet Dagan 50 250, Israel. Tel: (+972-3) 9683587/52; Fax: (+972-3) 9604428; E-mail: vtshlo@netvision.net.il**

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