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# LEGISLATIVE, REGULATORY AND SERVICE FRAMEWORK FOR THE EGYPTIAN SEED INDUSTRY (Seed Legislation and Certification Consultation)

*by*

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## **ACRONYMS**

The following acronyms are used in this report:

**ARC:** Agricultural Research Center (MALR)

**ARE:** Arab Republic of Egypt

**CAS:** Central Administration for Seeds (MALR)

**CASC:** Central Administration for Seed Certification (MALR)

**CASP:** Central Administration for Seed Production (MALR)

**DUS:** Distinctness, uniformity, stability, essential criteria for new crop varieties

**GATT:** Global Agreement on Tariffs and Trade

**GTZ:** German technical assistance agency.

**MALR:** Ministry of Agricultural and Land Reclamation

**NSC:** National Seed Council

**NARP:** National Agr. Research Program (USAID)

**OECD:** Organization for Economic Cooperation and Development

**PBDAC:** Principal Bank of Development and Agricultural Credit

**PBR:** Plant breeder's rights, intellectual property rights

**UPOV:** Union for the Protection of Plant Varieties

**USAID:** U. S. Agency for International Development

**VCU:** Value for cultivation and utilization

# LEGISLATIVE, REGULATORY AND SERVICE FRAMEWORK FOR THE EGYPTIAN SEED INDUSTRY

## 0. EXECUTIVE SUMMARY

### 0.1 Purpose and Emphasis of Consultation

The main purposes of this consultation were to a) assist in advancing reforms underway in the legislative, regulatory and service framework for the Egyptian seed industry, b) identify unresolved policy issues and additional reforms needed, c) establish and define problems and constraints in implementation of seed certification, market control, and service functions of CASC, and d) recommend actions for their resolution. Major emphasis was given to: a) advancing revisions/amendments in the seed law needed to adequately undergird the regulatory framework being elaborated for the seed industry through the legislative process in the People's Assembly before which they have been for more than a year; and b) comprehensive review of the organization, functions, operational procedures and aspirations/opportunities of CASC, principal issues and problems, and relevant Ministerial decrees that pertain to CASC in the light of reforms and changes during the past 8 years and developments in other countries in the region and globally.

### 0.2 Background

Very substantial progress has been made in the seed sector reforms begun in 1990-91. The crucial reform was decreed in 1993 but not implemented until 1996. In 1996 the Central Administration for Seeds (CAS) was finally separated according to function into a Central Administration for Seeds Production (CASP) and a Central Administration for Seeds Testing and Certification (CASC). This long-recommended (beginning in early 1980's) and long-delayed (since 1993) reform was viewed as the key element in a package of reforms intended to liberalize and modernize seed production and supply in Egypt. It cleared the way for installation of an appropriate legislative, regulatory, and service framework within which an effective and efficient seed industry could develop with participation of the private sector to the extent it determines to be economically feasible.

Seed legislation establishes a legal basis for and authorization of government regulation, control and servicing of seed production and supply arrangements and operations in the country, and, very importantly, defines their aims and limits.

Egypt has a long history of seed legislation strongly influenced by real and perceived needs to safeguard the economic and biological integrity of its cotton industry, but gradually and progressively extended to other kinds of seeds. Beginning in the 1920s a series of laws were enacted to control, first, the multiplication and distribution of cotton seed then progressively other kinds of seeds important in Egypt's agriculture.

*Law 53 of 1966*, known as *Agriculture's Law*, contains relatively comprehensive provisions for control and regulation of seed multiplication and production, domestic seed trade and seed imports and exports, but, as in the case of previous laws, emphasis in terms of both provisions and implementation was on cotton. The law and many Ministerial decrees promulgated thereunder constitute the present authority for the regulatory framework of the seeds sector that has been gradually established since about 1980. While many of the provisions of *Law 53* are still fully applicable and provide ample legal support for the procedures and regulations issued in Ministerial decrees for their implementation, others are inadequate and contain totally out-of-date terms and items, e.g., 1966 monetary value of penalties. And, a few key provisions that have become very important components of the regulatory framework essential for development of a seed industry during the past 20 years or so are absent in the present law.

It was determined very early in the seeds sector reforms and reorganization begun in 1990-91 under the **APCP** and **NARP** projects that *Law No. 53* and many of the ministerial decrees promulgated thereunder needed to be revised, amended and updated to: **a)** support reforms and liberalization of the agricultural economy underway and contemplated; **b)** provide an appropriate and equitable regulatory environment for the increasing involvement of the private sector in seed production and marketing envisaged as a result of sector reforms; and **c)** take into account extraordinary advances in production technology, plant breeding and biotechnology and globalization of important segments of seeds production/supply, e.g., vegetables, hybrid varieties and specialty crops. Accordingly, revision of seeds legislation to include both *Law No. 53* requiring parliamentary action and implementing decrees requiring Ministerial action were given high priority in the policy reforms under **NARP** and **APCP** and this has continued to the present under successor programs.

A draft revision of the seed law provisions requiring parliamentary action was prepared in 1993-94 by a special committee of the National Seeds Council (NSC), reviewed by the NSC, other relevant and interested agencies in **MALR** including its legal department, and the cooperative and private sectors in 1994-95, packaged with revisions of other non-seed related components as the draft revision of *Law No. 53*, and submitted by **MALR** in late 1996 to the State Council for review and action by the People's Assembly. The delay in parliamentary action up to the present time is generally attributed to the multiple areas covered in *Law No. 53*, their complexity, and opposition to some of them. In the meanwhile considerable efforts were devoted to the review, revision and or preparation of Ministerial decrees needed to provide for and accommodate the reforms and reorganization of the seeds sector underway and contemplated. These efforts have been generally successful as discussed in detail in the main report.

### **0.3 Seed Law Revision**

Since there is widespread and strong support for the revised and new provisions *related to seeds* in the draft revision of *Law No. 53* before the People's Assembly and little opposition, a strategy to "separate" the seed related provisions from the others is being implemented. An informal meeting was arranged on February 18 of an **APRP** group headed by Max Goldensohn and including James C. Delouche, seed legislation consultant, and a **USAID** group headed by Tom Olson with Eng. Abo Bakr El Bassel, Chairman, **Agriculture and Irrigation Committee**, People's Assembly, key members of his committee and staff. The Chairman informed the groups of his committee's intention to hold

hearings on the “separated” seed provisions of *Law No. 53* and to bring them up for parliamentary action by the end of June, 1998. A follow-up informal work session was arranged for February 21 in the Committee’s office in the People’s Assembly to review in detail the seed law revisions that would be placed on the calendar for hearings. Participants in the work session included Jane Gleason, Sayed Hussein, and James C. Delouche (consultant) from APRP, Mohamed I. El Hawary from CASC and APRP, Dr. Helmei Gaber and Eng. Ezz Eldin Nassar, members of the Agriculture and Irrigation Committee, and Eng. Ahmed Kutb, Committee Secretary. Tom Olson, Glenn Rogers and Ali Kamel, USAID, participated in introductory and general discussions. The detailed review of the draft revised seed related provisions of *Law No. 53* established that *the essential revisions and amendments long recommended were in the draft.*

The three areas/provisions in the present seed legislation subjected to major revision or added by amendment are *Plant Variety Registration, Penalties for Violations, and Plant Breeder’s Rights.*

### 0.3.1 Plant Variety Registration

The compulsory registration of plant varieties before seeds can be produced and distributed is required under *Law No. 53*. Although many varieties have been “registered” in Egypt, the system has not worked well in terms of thoroughness, consistency, and fairness. Indeed, in most respects it has had little meaning. The weaknesses and deficiencies in the process of plant variety examination and registration in Egypt are related in only a small way to the relevant provisions in *Law No. 53*. They also needed to be comprehensively addressed and were in *Ministerial Decree No. 82* issued in January, 1998, with, unfortunately, one significant issue still unresolved as discussed in detail in the main report.

Under *Law No. 53* a *minimum three (3) year testing period* is specified for registration of varieties of all crop species including vegetables. A 3 year period is unnecessarily long for many crop varieties, especially for varieties that are registered, protected and in use in other countries with similar climate to Egypt, and most vegetable varieties for which the risks associated with introduction and/or release are small while the benefits derived from non-delayed release can be very substantial.

*The main draft revision in the provisions for variety release and registration in the present law is small but crucial: the 3 year test period was deleted and the period left to the judgement of the Variety Registration Committee established by and under the purview of the MALR. This provides the necessary flexibility to establish examination procedures that will not unnecessarily delay the benefits of superior crop varieties to Egyptian farmers and agri-business. Other revisions include the specification of homogeneity, reliability and excellence as additional criteria (conditions) for variety registration.*

### 0.3.2 Penalties for Violations of the Seed Law and Regulations

The penalties for violations under the present *Law No. 53* and regulations decreed thereunder have 1966 values. The main penalties are fines as they should be. The fines that can be assessed range from LE 5 for most violations to LE 100 for rather serious and repeated violations. In present day

values, these fines represent negligible punishment and hardly constitute a deterrent to potential violators.

*In the draft revision of the seed law all penalties for violations of provisions and regulations related to seed production, certification, distribution and marketing are consolidated in a single chapter and the schedule of monetary penalties (fines) is increased from a minimum of LE 100 to a maximum of LE 10,000. Other penalties stipulated include cancellation of licenses, seizure and confiscation of seeds in violation of regulations and standards, and imprisonment.*

### 0.3.3 Plant Breeder's Rights (Plant Variety Protection)

There has been general agreement on the need for a plant breeder's rights (PBR) law, or plant variety protection (PVP) as it is often termed, in Egypt for the past 5 years or longer. The lack of PBR in Egypt presently deprives Egyptian agriculture and consumers of very productive, high quality, food and feed varieties available in the segments of the global market with PBR or equivalent patent protection, limits investments by the private sector in plant breeding and varietal development research in Egypt, and increases the probability that good varieties produced by Egyptian research will be legitimately but unethically protected by other parties in other countries.

Since PBR was just emerging as a concept and issue at the time Law No. 53 was enacted in 1966, there is no mention of it in the law. PBR, therefore, must first be legally sanctioned by parliamentary action. It should be noted that under terms of the TRIPS agreement under GATT, Egypt and other signatories will have to have patent protection or a *suis generis* system (i.e., similar to UPOV convention) in place by year 2000 for protection of the intellectual property rights resident in new plant varieties.

*The draft provisions in the seed law revision provide for a) granting of PBR under conditions generally similar to those stipulated in the laws of other countries, b) establishing a sub-committee for granting PBR constituted from the membership of the Committee on Registration of Plant Varieties and other persons known for their experience and specialization in plant breeding, c) authority of the MALR to establish protocols, criteria, procedures and fees for PBR, d) maintenance of a Registry of Protected Varieties in the office responsible for implementation of PBR, e) appeals and annulment of rights under prescribed conditions, f) the ownership period, g) obligatory licensing of rights in the interests of the "common good", and h) penalties for violations of the rights of the owners of protected varieties.*

### 0.3.4 Recommendations and Suggested Actions

(1) First priority in the seeds legislation area should be give to draft revision of the seed law presently before the Agriculture and Irrigation Committee of the People's Assembly. The informal visits with the committee and review of the seed law revision were very important in highlighting the great interest in and importance of the legislation before the committee and the need for early action.

Contact with the committee and key advisors to the Minister should be maintained to sustain the present momentum, assist as needed in preparing for hearings, garner support from other donors, e.g., Germany, World Bank, as might be needed, and detect early any move to untrack things. The goal should be enactment of the law by the end of June.

(2) The draft protocols, rules, procedures and implementing particulars for Plant Breeder's Rights (PBR) should be completed as soon as possible without waiting on enactment of the seed law revisions and submitted to UPOV for review to determine conformity to the 1978 or 1991 conventions as elected and available. Revisions needed after the UNOV review can be made with its assistance so that a ministerial decree can be issued soon after the revisions are enacted and come into effect. The agency or unit designated to organize and carry out the PBR process *should not be involved in plant breeding, variety development or seed production and distribution.*

#### 0.4 Seed Certification, Market Control and Services

0.4.1 Situation. The core operational tasks of CASC are *seed certification, seed testing and regulation of seed marketing*. Other important functions are *advisory, e.g., participation in many committees, secretariat for the National Seeds Council and Plant Variety Registration Committee, administrative, e.g., collection and maintenance of seed statistics, issuance of licenses, projects and investments, liaison with national and international organizations, service, e.g., seed extension and training, problem solving studies, seed testing*. CASC is also a new organization with an endowment of new resources and new roles and responsibilities, not fully defined and somewhat uncertain, with which it is trying to come to terms. The deficiencies, issues and problems that confront it and must be dealt with as it moves into its planned and proper position as the ARE government's technical advisor, monitor, and regulator of seed production, trade and related matters are identified, reviewed and analyzed in detail in Sections 3.2 and 3.3 in the main report. Recommendations and suggested actions that emerged from this review and analysis are in the following section.

#### 0.4.2 Recommendations and Suggested Actions

(1) Organization of Plant Variety Registration. The organization and initial implementation of *Ministerial Decree No. 82 of 1998* concerning plant variety registration should be closely monitored to determine if ARC assumes the dominant and determining role. If this is the case, maximum effort should be made to get the decree revised to: a) reduce ARC's roles to purely advisory and technical; b) position the Plant Variety Registration Committee in the the Agriculture Services Sector chaired by the First Secretary or high level officer designated by him; c) designate a Secretariat in CASC to operate under the purview of the Plant Variety Registration Committee with responsibilities for processing of applications, supervision of DUS and VCU testing, analysis and summarization of results, and maintenance of the Registry of Plant Varieties; d) and reserve function of recommending varieties for registration to the Minister (MALR) to the Plant Variety Registration Committee. The Plant Variety Registration Committee should include representation from ARC research institutes, extension, CASC, CASP, the universities, private seed companies, seed traders, cooperatives, PBDAC, farmer associations, and other interest groups.

- (2) DUS and VCU Testing. DUS and VCU testing should be installed as part of the variety registration process as per *Ministerial Decree No. 82 of 1998* with initial implementation this year (1998).
- (3) CASC Roles and Authority. The authority and roles of CASC, especially in the certification and market control of seeds, needs to be clarified as might be necessary and reaffirmed at the high MALR level.
- (4) CASC and CASP Equity. The matter of equity between CASC and CASP personnel in terms of remuneration and status should be reviewed by a small task force appointed by the First Secretary, Agricultural Services Sector, with recommendations for correcting any inequities detected. Additional funds for achieving equity in incentives could be generated by increasing certification, inspection and testing fees and licenses as per the next recommendation.
- (5) Certification and Testing Fees. The certification and testing fees should be reviewed in the light of the recent study on the costs of certification in Egypt and the portion of costs recovered in fees and licenses. It appears that the fees could be substantially increased (50 to 75%) without significant upward pressure on seed prices. The goal should be to gradually increase the portion of costs recovered from the present 35% level to about 75%, say in the next 5 years.
- (6) Seed Testing and Sampling. The revision of seed sampling and testing procedures to update them and bring them in conformity with the Rules for Testing Seeds of International Seed Testing Association should be completed, reviewed and issued as a ministerial decree by the end of 1998.
- (7) Adherence to Appeals Process. A clear and unequivocal policy and procedures relating to appeals of findings, determinations and decisions in certification and market control should be installed and strictly followed so that they are not reversed or any exceptions from rules and procedures allowed without full justification established in a complete and open appeals hearing.
- (8) Office of Plant Breeder's Rights. Decision on and authorization for organization of an office or secretariat for handling applications, conducting DUS tests and related examinations for the award of ownership of plant varieties under Plant Breeder's Rights should be made not later than September, 1998 to avoid delays in implementing the legislation and decrees issued thereunder. The Office or Secretariat of Plant Breeder's Rights should be located in CASC with supervision by the Plant Breeder's Rights (or Plant Variety Protection) Committee provided for in the relevant provisions in the seed law revision.
- (9) Certification of Vegetative Propagating Materials. Important vegetative propagating materials in addition to potato such as those of citrus and strawberry should be taken into CASC's certification system. Certification should be in cooperation with the Horticulture Research Institute of ARC.
- (10) OECD Review of Certification. The review of the certification system and process in Egypt by a team from OECD-Agriculture during the period 2 - 8 March should be assisted to the extent possible through cooperation with CASC and the GTZ-CASC Seed Certification Project. The team's review is in response to the MALR's declared interest to join the OECD seed certification

schemes for cereals, maize and sorghum and vegetables. The findings of the team will provide important information on any deficiencies in organization, protocols, rules and procedures for certification and that can then be incorporated into an the "improvements" agenda. It should be recognized that the review will necessarily focus on the decreed procedures and measures for certification, *i.e.*, the paper trail, with only minimal observations on how and to what degree they are implemented.

(11) Principles of Seed Certification and Market Control. The *Principles of Seed Certification and Market Control* derived from experiences in many other countries and set forth in Section 3.4 of this report should be reviewed and revised to enhance their relevance to conditions in Egypt, endorsed by the MALR, adopted by and for CASC as its *standard operating principles*, and made known to personnel in CASC and sister agencies, the private seed companies, cooperatives, and seed association.

## 0.5 Seed Imports (Vegetable Crops)

**0.5.1 Situation.** The regulations covering the introduction of varieties and import of seeds for vegetable crops were recently revised by Ministerial decree to reduce the required testing period for registration (compulsory) of an imported variety from two years to two seasons (effectively one year since plantings in two seasons per year are possible) and the fee for registration from US\$5000 to US\$4000. These "reforms" if strictly enforced will still prevent many high quality varieties of minor vegetable crops from being introduced into Egypt. Vegetable growers and consumers in Egypt would realize considerable benefits in form of sales revenues and greater quantities of a variety of quality foodstuffs from more progressive reforms in the introduction of vegetable varieties and importation of seeds.

**0.5.2 Recommended Action.** Eliminate the two season testing period for varieties of *vegetable crops* other than those declared as "Reserved" (the 4 - 5 most important vegetable crops) *that are registered or protected* (plant breeder's rights) in another country. This will be permissible under the seed law revision when enacted since the testing period for registration is left to the discretion and judgement of the Plant Variety Registration Committee, and thus can be zero. A substantially reduced and differential schedule of registration fees should be established for the different kinds of vegetable crops based on their importance and the quantities of seeds imported ranging from the equivalent of US\$100 for minor crops to US\$2500 for major crops. Procedures for obtaining import licenses should be simplified and the license fees rationalized. Phytosanitary standards and requirements should be realistic and in line with those in the European Union and other North African countries.

## LEGISLATIVE, REGULATORY AND SERVICE FRAMEWORK FOR THE EGYPTIAN SEED INDUSTRY

### 1. INTRODUCTION

Very substantial progress has been made in the seed sector reforms begun in 1990-91<sup>1</sup>. The crucial reform was decreed in 1993 but not implemented until 1996. In 1996 the Central Administration for Seeds (CAS) was finally separated according to function into a Central Administration for Seeds Production (CASP) and a Central Administration for Seeds Testing and Certification (CASC). This long-recommended (beginning in early 1980's) and long-delayed (since 1993) reform was viewed as the key element in a package of reforms intended to permit and promote establishment of an effective and efficient seed industry in Egypt with participation of the private sector to the extent it determines to be economically feasible. It had long been recognized and appreciated by most expatriate advisors and many Egyptians involved in seeds production and supply that the seeds industry could not develop in an orderly and progressive manner and serve Egyptian farmers as they should and need to be served as long as both the government's huge seed production and distribution operations and seed control, regulatory and service functions were carried out in the same MALR agency, *i.e.*, CAS, under the same management. Therefore, reorganization of CAS to separate seed production and distribution from regulatory functions (*e.g.*, seed certification) and related reforms in seed legislation, regulations, and seed industry services were strongly advocated and supported as priority seed sector reforms.

Preparations for the separation of CAS with increased opportunities for private sector involvement on the production and distribution side, and installation and/or improvement of regulatory, control and service functions and activities that are properly within the government sphere were begun in the late 1980s under the USAID/NARP "seeds component" and the lead GTZ seed improvement project. These preparations included substantial training of several types and depths, in-country and off-shore, rehabilitation of existing seed testing laboratories and the establishment and equipping of eight additional labs, vehicles for field inspectors and a lot of technical advice and assistance under NARP and its follow-up and a series of GTZ seed projects several of which are on-going. Much has been accomplished but much remains to be done to establish an appropriate legislative, regulatory and service framework for further development of a responsible, responsive seeds industry in a free market format with full participation of the private sector. CASC must move beyond the unsettling times and traumas of reform and separation to take the lead position and role in this effort. This will require completion of long delayed reforms in policy, legislation, regulations and organization and stronger support from MALR.

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<sup>1</sup>Seed sector reforms were addressed early in: Delouche, J.C. 1985. Recommended "Seed" Component for NAPP. Rept. to USAID/Egypt & Gov. ARE. Miss. State Univ. Report No. 85-3; and Fitch, J., J. C. Delouche and J. Roumasset. 1986. Improved Seed: An Analysis of the Seed Industry in Egypt. Winrock Int. Rept. to USAID/Egypt and Gov. ARE.

The main purposes of this consultation were to assist in advancing reforms underway toward completion, identify unresolved policy issues and additional reforms needed, establish and define problems and constraints in implementation of seed certification, market control, and service functions of CASC, and recommend actions for their resolution. Major emphasis was given to: a) advancing revisions/amendments in the seed law needed to adequately undergird the regulatory framework being elaborated for the seed industry through the legislative process in the People's Assembly before which they have been for more than a year; and b) comprehensive review of the organization, functions, operational procedures and aspirations/opportunities of CASC, principal issues and problems, and relevant Ministerial decrees that pertain to CASC in the light of reforms and changes during the past 8 years and developments in other countries in the region and globally.

## 2. SEED LAW REVISION

### 2.1 Background

Seed legislation establishes a legal basis for and authorization of government regulation, control and servicing of seed production and supply arrangements and operations in the country, and, very importantly, defines their aims and limits. Ideally, seed legislation is embodied in a law which establishes its authority, defines its purposes and application, sets forth its terms and limits, and "enables" or authorizes the decree and promulgation of protocols, procedures, regulations and standards required for its implementation. In this way changes in the "implementing particulars" can be effected through prescribed hearings and decrees rather than through the long and difficult route of parliamentary action.

Egypt has a long history of seed legislation strongly influenced by real and perceived needs to safeguard the economic and biological integrity of its cotton industry, but gradually and progressively extended to other kinds of seeds. *Law No. 5 of 1926* was enacted for control of cotton seeds. The scope of regulation and control was expanded to include seed inspections and handling (*Law 52, 1932*), selection and use of planting seeds (*Law 123, 1946*), additional controls on cotton seed production and propagation (*Law 158, 1958*), and registration of plant varieties (*Law 146, 1960*). While controls and regulations for crops in general were introduced, the main emphasis continued to be on cotton.

*Law 53 of 1966*, known as *Agriculture's Law*, contained relatively comprehensive provisions for control and regulation of seed multiplication and production, domestic seed trade and seed imports and exports, but, as in the case of previous laws, emphasis in terms of both provisions and implementation was on cotton. *Law 53* is a combination of an enabling law and rather detailed specifications for implementation. The law and many Ministerial decrees promulgated thereunder constitute the present authority for the regulatory framework of the seeds sector that has been gradually established since 1980. Many of the provisions of *Law 53* are still fully applicable and provide ample legal support for the procedures and regulations issued in Ministerial decrees for their implementation. Some provisions, however, are inadequate and contain totally out-of-date terms and items, e.g., 1966 monetary value of penalties. And, a few key provisions that have become very

important components of the regulatory framework essential for development of a seed industry during the past 20 years or so are absent in the present law.

It was determined very early in the seeds sector reforms and reorganization begun in 1990-91 under the **APCP** and **NARP** projects that *Law No. 53* and many of the ministerial decrees promulgated thereunder needed to be revised, amended and updated to: **a)** support reforms and liberalization of the agricultural economy underway and contemplated; **b)** provide an appropriate and equitable regulatory environment for the increasing involvement of the private sector in seed production and marketing envisaged as a result of sector reforms; and **c)** take into account extraordinary advances in production technology, plant breeding and biotechnology and globalization of important segments of seeds production/supply, e.g., vegetables, hybrid varieties and specialty crops<sup>1</sup>. Accordingly, revision of seeds legislation to include both *Law No. 53* requiring parliamentary action and implementing decrees requiring Ministerial action were given high priority in the policy reforms under **NARP** and **APCP** and this has continued to the present under successor programs. Revision and modernization of seeds legislation has equally high priority in the German assisted seed projects, i.e., the **GTZ/CASP (Improvement and Decentralization of Seed Production and Marketing)**, **GTZ/CASC (Seed Certification)**, and **GTZ/CASP (Cotton Seed Delinting Program)** projects. The critical importance of modernized seeds legislation for further and future development of the seeds industry in Egypt was most recently highlighted in the recommendations of the Second Egyptian National Seed Conference<sup>2</sup> (December, 1995), the GTZ/USAID Seeds Sector Program Study<sup>3</sup> in March-April, 1997, and in the GTZ Proposal for Steps to Be Followed for Privatization of CASP<sup>4</sup> presented to the Seed Industry Privatization Committee on February 17, 1998.

“Model” provisions of a modern seed law and important decrees for their implementation were prepared in early 1992 to provide examples and guidance for revision of the seed related provisions of *Law No. 53*<sup>5</sup>. A draft revision of the provisions requiring parliamentary action was prepared in 1993-94 by a special committee organized under the National Seeds Council (NSC). The revision was reviewed by the NSC, other relevant and interested agencies in **MALR** including its legal department, and the cooperative and private sectors in 1994-95, packaged with revisions of other components as the draft revision of *Law No. 53* and submitted by **MALR** to the State Council for review and action by the Cabinet. Following actions and approval of the State Council and Cabinet,

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<sup>1</sup>Delouche, J.C. 1992. Consultations with Seeds Component - NARP. Rept. to USAID/Egypt and Gov. ARE. Miss. State Univ. Report No. 92-2. March, 1992

<sup>2</sup>Proceedings of the Second Egyptian National Seeds Conference. Dokki, Giza, Egypt. December 10-14, 1995.

<sup>3</sup>Seed Sector Program Study. Vol. I - Part A, Main Report; Vol. II - Part B, Technical Annexes. GTZ-IDGSP, USAID-APRP, & ICARDA (GTZ-Report). May, 1997.

<sup>4</sup>Proposal for Steps to Be Followed for Privatization of CASP. GTZ/CASP, December, 1997.

<sup>5</sup>Delouche, J.C. 1992. Consultation with Seeds Component - NARP: Reform of Seeds Sector; Seed Legislation. Rept. to CID/NARP and USAID/Egypt. May/June, 1992.

the *Law No. 53* revision was placed on the table of the People's Assembly in late 1996 for hearings and action. The delay in parliamentary action up to the present time is generally attributed to the multiple areas covered in *Law No. 53*, their complexity, and opposition to some of them. In the meanwhile considerable efforts were devoted to the review, revision and or preparation of Ministerial decrees needed to provide for and accommodate the reforms and reorganization of the seeds sector underway and contemplated. These efforts have been generally successful as will be discussed later.

## 2.2 Present Situation and Actions

Since there is widespread and strong support for the revised and new provisions *related to seeds* in the draft revision of *Law No. 53* before the People's Assembly and little opposition, the recently adopted strategy is to "separate" the seed related provisions from the others for hearings and action. This strategy is being implemented. An informal meeting was arranged on February 18 of an APRP group headed by Max Goldensohn and including James C. Delouche, seed legislation consultant, and a USAID group headed by Tom Olson with Eng. Abo Bakr El Bassel, Chairman, Agriculture and Irrigation Committee, People's Assembly, key members of his committee and staff. The Chairman informed the groups of his committee's intention to hold hearings on the "separated" seed provisions of *Law No. 53* and to bring them up for parliamentary action by the end of June 1998. A follow-up informal work session was arranged for February 21 in the Committee's office in the People's Assembly to review in detail the seed law revisions that would be placed on the calendar for hearings. Participants in the work session included Jane Gleason, Sayed Hussein, and James C. Delouche (consultant) from APRP, Mohamed El Hawary from CASC and APRP, Dr. Helmey Gaber and Eng. Ezz Eldin Nassar, members of the Agriculture and Irrigation Committee, and Eng. Ahmed Kutb, Committee Secretary. Tom Olson, Glenn Rogers and Ali Kamel, USAID, participated in introductory and general discussions. The detailed review of the draft revised seed related provisions of *Law No. 53* established that *the essential revisions and amendments long recommended were in the draft*. These are set forth and discussed in sections that follow.

## 2.3 Seed Components and Provisions in *Law No. 53*

The main seed related components in the present, i.e., unrevised *Law No. 53*, are given below.

### ◇ Registration of Crop Plant Varieties (Articles 10 - 15)

### ◇ Seed Production and Marketing (Trade)

- Chapter 1, Seed Production, Articles 16 - 19 for seed kinds in general and Articles 20 -21 for cotton seed.
- Chapter 2, Certified Seed Concentration Areas, Articles 22 -26 contain some provisions for seeds in general but the focus is almost wholly on cotton seeds.
- Chapter 3, Weeding Alien Plants, Articles 27 - 29 primarily for cotton.

- Chapter 4, Seed Cleaning Stations, Articles 30 - 32 for seeds in general.
- Chapter 5, Extraction and Treatment of Cotton Planting and Commercial Seeds, Articles 33 - 41 for cotton seeds.
- Chapter 6, Commercial (Oil Mill) Cotton Seeds, Articles 42 - 47 control cotton seeds for industrial uses and not for planting.
- Chapter 7, Seed Testing, Quality Standards, Labeling (Market Control), Articles 48 - 52 constitute the core provisions for the quality control of seeds offered for sale in the market.
- Chapter 8, Seed Imports and Exports, Articles 53 -54 for seeds in general, Article 55 for export of cotton seeds (requires presidential decree!)
- Chapter 9, Seed Trade and Selling (Marketing), Articles 56 -58 are additional provisions for control and quality assurance of seeds offered for sale in market
- Chapter 10, Penalties, Articles 95 -102 specify penalties for violations of provisions of the legislation and regulations promulgated thereunder.

◇ Plant Breeder's Rights (or Plant Variety Protection) - this provision was not mentioned in Law No. 53 which was enacted in 1966 when only a few European countries had addressed the matter of property rights for crop varieties.

As previously mentioned, many of the provisions in the present *Law No. 53* are still fully applicable and legally supportive of relevant Ministerial decrees for their implementation. Only minor changes have been made in the draft revision for these, primarily to update terminology and terms and recognize the participation of the private sector in seed production. Major revisions and/or amendment, therefore, were properly confined to the three provisions *italicized* in the above list for which major revision and modernization were deemed essential for further development of the seed industry and crop agriculture in Egypt.

## 2.4 Draft Major Revisions in *Law No. 53*

The three areas/provisions in the present seed legislation subjected to major revision or added by amendment are *Plant Variety Registration, Penalties for Violations, and Plant Breeder's Rights*. (The draft revision is in ANNEX C.)

### 2.4.1 Plant Variety Registration

New and improved crop varieties have been the dominant contributor to advances in crop agriculture since the early 1960s. Continued reliance on varietal improvement and maintenance of a full schedule of benefits, however, require an orderly system for the release and introduction of new varieties into a country's agriculture, and adequate controls to assure that they are superior to those

in present use in some economically important ways and *provide the essential base for certification of seed production*. The internationally recognized system for accomplishing these aims is legally sanctioned *Plant (Crop) Variety Examination and Registration*. A new or introduced crop variety must be submitted through appropriate application for evaluation and registration. If it is determined to be distinct from other varieties of the same crop and of adequate “crop value” by examination and field trials, it is registered, *i.e.*, entered into the Official Registry of Plant Varieties. The variety examination and registration system including protocols and procedures is very important because with few exceptions *countries with adequate seed legislation restrict seed production and marketing to registered varieties, i.e., production and distribution of seed of unregistered varieties is prohibited under the seed law*. Law No. 53 of 1966 requires the testing and registration of crop varieties before seed production and marketing, *i.e.*, establishes compulsory variety registration in Egypt, prescribes the general and a few specific protocols and terms for variety examination and registration, and enables the Minister (MALR) to decree the procedures and particulars for implementation.

Many varieties have been “registered” in Egypt (see ANNEX D for lists of registered varieties), but the system has not worked well in terms of thoroughness, consistency, and fairness. In most respects it has had little meaning. First, there was no bonafide seed certification until the last several years to extracts benefits from variety registration and additional improvements are needed. Second, the Variety Registration Committee established to implement variety registration has been dominated by ARC. While ARC was the only source of new varieties of mainline field crops for many years, this is no longer the case. Private companies are developing varieties in Egypt or introducing varieties developed by off-shore partners and some of the Universities also have good plant breeding programs. Since ARC is not only the agency responsible for variety examination and registration, but also a major developer of crop varieties and producer of seeds, it is placed in the position of rendering judgements on the validity and suitability of crop varieties submitted for registration by companies and Universities that are its competitors. This is an untenable situation and the source of many complaints from private companies and universities of bias and favoritism toward ARC varieties in the variety registration process. It has been recommended - long, strongly and repeatedly - that the variety registration system and process should be *independent of plant breeding and variety development research and in accord with international protocols and norms*. Third, the examination and release procedures and process have not been very rigorous, far below international standards. Fourth, and most important in terms of seed legislation requiring parliamentary action, *a minimum three (3) year testing period* is specified in Law No. 53 for all crop species including vegetables. This has prevented critical reforms and modernization of the variety registration. A 3 year period is unnecessarily long for many crop varieties, especially for crop varieties registered, protected and in use in other countries with similar climate to Egypt, and most vegetable varieties for which the risks associated with introduction and/or release are small while the benefits derived from non-delayed release can be very substantial.

***The main draft revision in the provisions for variety release and registration in the present law is small but crucial: the 3 year test period was deleted and the period left to the judgement of the Variety Registration Committee established by and under the purview of the MALR. This provides the necessary flexibility to establish examination procedures that will not unnecessarily delay the benefits of superior crop varieties to Egyptian farmers and agri-business. Other revisions include the specification of homogeneity, reliability***

*and excellence as additional criteria (conditions) for variety registration.* The relevant provisions in the draft revision are in Part II, Registration of Plant Varieties and Regulation of Breeder's Rights, Articles 12 - 16.

The other deficiencies in the crop variety examination were expected to be fully addressed in a new Ministerial decree organizing the Variety Examination and Registration Committee, defining the process, specifying procedures and criteria, and providing for arbitration and appeals, which was discussed by interested parties and in the National Seeds Council for almost a year with general consensus on its terms. *Ministerial Decree No. 82* was issued 17 January 1998 on Crop Variety Registration Protocols and Guidelines. It contains essentially all the provisions for establishing an objective, competent and modern variety registration system but *continued ARC as the responsible and supervising agency, which as previously discussed has been the major constraint on reform and the source of most complaints and distrust. If ARC continues to dominate and dictate variety registration, it will be a serious setback in the variety registration and seed certification processes* both critical underpinnings of a responsible and responsive seed industry. This would be most unfortunate because otherwise *Ministerial Decree No. 82* very effectively updates and modernizes the protocols and procedures for variety examination and release.

*Ministerial Decree No. 82* establishes two sorts of examinations or tests for candidate varieties, both in accord with international usage: so-called **DUS** tests for *distinctness, uniformity and stability* of the candidate variety and so-called **VCU** tests for its *crop cultivation and utilization value, i.e.,* field performance compared to varieties in use. **UPOV** model descriptors are specified for the required descriptions of candidate varieties. (Inadequate variety descriptions have long and seriously handicapped efforts to improve and validate seed certification in Egypt). A minimum 3 year period for **VCU** tests is specified as required under the present *Law No. 53*, but this can be easily changed by amendment of the decree to a period prescribed by the committee for the different categories and kinds of seeds as soon as the revisions in the law are enacted by the People's Assembly and come into effect. In the meanwhile, preparations for **DUS** and **VCU** testing are well underway with assistance from the **GTZ/CASC** Seed Certification project. As emphasized above, the most probable and serious short-fall in expectations is continued dominance and manipulation of the Variety Registration process by **ARC**. Perhaps, **ARC** will carefully weigh the importance of objectivity and integrity in the variety registration process, in deed and appearance, and choose to delegate its responsibilities to the unit already established in **CASC** which is not involved in plant breeding, variety development and introduction and seed production, and which was widely expected to be designated the responsible unit in the decree. Implementation of *Decree No. 82* should be closely monitored to determine if there is indeed progress or if the same old problems are going to be dragged into the 21<sup>st</sup> Century.

#### **2.4.2 Plant Breeder's Rights (Plant Variety Protection)**

There has been general agreement on the need for a plant breeder's rights (**PBR**) law, or plant variety protection (**PVP**) as it is often termed, in Egypt for the past 5 years or longer. The lack of **PBR** in Egypt already impedes and limits access to and use of improved varieties. This will undoubtedly become increasingly serious with rapid advances in high yield single cross maize hybrids, much improved vegetable, cereal, food legume, oil seed, and fiber crop varieties including the new

transgenic varieties, which may be protected both by **PBR** and patents, and expansion of private sector research in plant breeding and genetics. These on-rushing developments have important implications for production efficiency and maintenance and even restoration of environmental quality. In other terms, the lack of **PBR** a) presently deprives Egyptian agriculture and consumers of very productive, high quality, food and feed varieties available in the segments of the global market with **PBR** or equivalent patent protection, b) limits investments by the private sector in plant breeding and varietal development research in Egypt, and c) increases the probability that good varieties produced by Egyptian research will be legitimately but unethically protected by other parties in other countries.

Since **PBR** was just emerging as a concept and issue at the time **Law No. 53** was enacted in 1966, there is no mention of it in the law. **PBR**, therefore, must first be legally sanctioned by parliamentary action. This would designate the responsible agency (**MALR**) and authorize it to establish the necessary administrative structures, protocols, procedures, fees and appeals for implementation. Although not necessary or required, Egypt's **PBR** law and decrees promulgated thereunder for implementation should conform sufficiently to provisions of the 1978 or 1991 **UPOV Conventions for the Protection of New Varieties of Plants** so that Egypt can accede to one of the conventions, preferably the 1978 convention if it is still open. Accession to the **UPOV** convention soon after enactment of **PRR** in Egypt would be very advantageous. In any event under terms of the **TRIPS** agreement under **GATT**, Egypt will have to have patent protection or a *suis generis* system (i.e., similar to **UPOV** convention) in place by year 2000 for protection of the intellectual property rights resident in new plant varieties.

Intellectual property rights has much currency in Egypt under stimulus of **GATT** and **WTO**. Several conferences on intellectual property rights in general were held during February under high level sponsorship. On 19 February the Egyptian Plant Breeders Association sponsored a seminar on **PBR** under chairmanship of Dr. Mohamed El Sayed Radwan, Professor of Plant Breeding, Cairo University. More than 100 persons from **ARC**, the universities, cooperatives and the private sector participated. Dr. Radwan asked **APRP** consultant Delouche to present his views and suggestions before the seminar. Delouche emphasized that a) the experiences with **PBR** in other developed and developing countries have been very positive, b) many countries are currently preparing **PBR** legislation because of the **GATT** agreement, c) **PBR** is of equal importance to plant breeding research programs in the public and private sectors, and d) a sort of unofficial **PBR** is already in place in Egypt in the form of exclusive allocations or releases of breeder and foundation seeds of certain varieties developed by **ARC** and some universities with assessment of substantial royalties on the seeds of these varieties produced by seed companies and others. The consensus of the seminar was strong support for **PBR**, although, as fully expected, there was limited but very vocal opposition to the very idea of property right claims on biological entities.

*The draft provisions in the seed law revision provide for a) granting of **PBR** under conditions generally similar to those stipulated in the laws of other countries, b) establishing a sub-committee for granting **PBR** constituted from the membership of the Committee on Registration of Plant Varieties and other persons known for their experience and specialization in plant breeding, c) authority of the **MALR** to establish protocols, criteria, procedures and fees for **PBR**, d) maintenance of a Registry of Protected*

*Varieties in the office responsible for implementation of PBR, e) appeals and annulment of rights under prescribed conditions, f) the ownership period, g) obligatory licensing of rights in the interests of the "common good", and h) penalties for violations of the rights of the owners of protected varieties.* The relevant provisions in the draft seed law revision are in Part II, Registration of Plant Varieties and Regulation of Breeder's Rights, Articles 16 - 19.

The provisions relating to **PBR** in the draft revision of the seed law are mostly of the enabling sort except for those specifying the responsible organization in the **MALR**, penalties and obligatory licensing. They appear to constitute an adequate legal authority and base for the promulgation of implementing procedures and particulars by Ministerial decree. The only weakness and potential problem in the law itself is designation of a "sub-committee" of the Committee on Registration of Plant Varieties established under Article 13 of the draft revision. In most countries with **PBR** a Plant Variety Protection Office was (is) established as a fully independent office under the Ministry of Agriculture or equivalent. This is the preferred arrangement but an attempt to incorporate it at this time in the draft revision of *Law No. 53* would probably delay action on the seed law revision for another year or even longer. The designation of the indicated sub-committee as the responsible agency is not in itself a serious weakness or problem. But it could become debilitating and cause serious problems for reasons discussed in **Section 2.4.1** if the Ministerial decree issued for implementation of **PBR** establishes the responsible unit under **ARC**, *i.e.*, **ARC** is engaged in development of plant varieties and seed production and could (probably would) influence decisions on eligibility of candidate varieties for protection developed by its own units and by competitor breeders in the private sector and universities.

*The agency or unit delegated responsibility for implementation of PBR in Egypt should not be engaged in plant breeding and variety development, genetic engineering, and/or seed production. It should be wholly independent of these activities. The present CASC organization includes a section for Plant Breeder's Rights (as it does for Plant Variety Registration). This would be a proper place for the Office of Plant Breeder's Rights as CASC is not involved in plant breeding and related activities or seed production.*

#### **2.4.3 Penalties for Violations of the Seed Law and Regulations**

The penalties for violations of the seed law and regulations decreed thereunder have 1966 values. The main penalties are fines as they should be. The fines that can be assessed range from LE 5 for most violations to LE 100 for rather serious and repeated violations. In present values, these fines represent negligible punishment and hardly constitute a deterrent to potential violators. They seriously impede enforcement of important provisions of the law and regulations related to licensing of producers, venders, importers and others engaged in seed trade, seed labeling and quality control.

*All penalties for violations of provisions and regulations related to seed production, certification, distribution and marketing (Part III of present law) are consolidated in a single chapter following the provisions set forth in the preceding chapters of Part III. The draft schedule of monetary penalties range from LE 100 to LE 10,000. Other penalties stipulated include cancellation of licenses, seizure and confiscation of seeds in violation*

*of regulations and standards, and imprisonment.* The relevant provisions are in Part III, Chapter 10, Penalties, Articles 63 -70, of the draft revision.

#### 2.4.4 Other Revisions

Part III of *Law No. 53* deals with seed production (i.e., certification), certified seed concentration areas (cotton), seed processing, seed testing and market control and penalties, as discussed in the previous section, and many provisions that deal exclusively with cotton seeds as discussed in a section that follows. Present provisions in the law provide adequate legal authority for the reforms of seed certification and market control through Ministerial decrees that are well underway, thus only relatively minor but important changes are in the draft revisions primarily to update the provisions and take care of omissions. Examples include designation of the categories and classes of certified seeds, recognition that the MALR is no longer the sole producer of seeds, stipulation of fees for the various sorts of licenses required, clarification of compulsory variety registration (Article 53) which is somewhat ambiguous in the present law, specifications for minimum quality standards and labeling requirements for seeds marketed, inspection procedures, and designation of the Planting Seeds Committee (established in Article 17 of the present law and continued without change except for renumbering as Article 21 in the draft revision) as the principal advisory body for regulation of seed importations and exportations.

#### 2.4.5 Cotton Seed Provisions

Many of the provisions in *Law No. 53* deal exclusively with cotton and cotton seeds. They are essentially unchanged in the draft revision of the seed related provisions of the law. The provisions were reviewed to determine if they constituted an intractable obstacle to introduction of upland cotton varieties (*G. hirsutum*), privatization of cotton seeds supply, and so on. The provisions are designed to prevent contamination of Egypt's premium quality cotton varieties and are very restrictive. They stipulate one variety areas and one variety gins. Transport, handling and storage of seed cotton, cotton seeds, rejects from cleaning and gin trash are tightly regulated as is trade and processing of cotton seeds for industrial purposes, i.e, oil extraction, import and transport of equipment used in ginning and oil extraction. Unginned cotton and cotton seeds cannot be taken out of the country without a *Presidential decree* authorizing same whether intended for planting or industrial use.

Although the provisions in the seed law related to cotton seeds are tough and restrictive many avenues for relief are stipulated with approval by the competent authority. Considering the great sensitivity attached to any action or operation that could "contaminate" Egyptian cotton, it is best to leave cotton seed related provisions in the law as they are and utilize stipulated avenues of relief as might be needed.

A brief on The Policy of Cotton Seed Production and Seed Certification in Egypt prepared by Dr. M. El. Moghazy, Former Director of the Cotton Research Institute, and Cotton Consultant to APRP is in ANNEX E.

#### 2.4.6 Recommended Action Plan

(1) First priority in the seeds legislation area should be give to draft revision of the seed law presently before the Agriculture and Irrigation Committee of the People's Assembly. The informal visits with the committee and review of the seed law revision were very important in highlighting the great interest in and importance of the legislation before the committee and the need for early action. Contact with the committee and key advisors to the Minister should be maintained to sustain the present momentum, assist as needed in preparing for hearings, garner support from other donors, e.g., Germany, World Bank, as might be needed, and detect early any move to untrack things. *The goal should be enactment of the law by the end of June, 1998.*

(2) The draft protocols, rules, procedures and implementing particulars for Plant Breeder's Rights (PBR) should be completed as soon as possible without waiting on enactment of the seed law revisions and submitted to UPOV for review to determine conformity to the 1978 or 1991 conventions as elected and available. Revisions needed after the UNOV review can be made with its assistance so that a ministerial decree can be issued soon after the revisions are enacted and come into effect. The agency or unit designated to organize and carry out the PBR process *should not be involved in plant breeding, variety development or seed production and distribution.*

### 3. SEED CERTIFICATION AND MARKET CONTROL

#### 3.1 Background

Seed certification, control and seed industry services are the main items in CASC's portfolio. These aspects have been comprehensively reviewed in many reports and documents for USAID and USAID projects, the World Bank, GTZ and others. Their background and history are summarized here.

Variety registration, seed certification, regulation of seed trade and related activities were provided for in *Law No. 53 of 1966*. In accord with appropriate Ministerial decrees a Central Administration for Seeds (CAS) was organized to plan seed production, produce, process, and certify seeds of all kinds in accord with targets in the plan, register seed traders, regulate trade in seeds, control seed imports, and carry-out or control all activities involved in seed production and supply in Egypt. With the exception of some of the vegetable and forage (berseem) seeds, CAS and its partners, PBDAC and EAO, had a monopoly on seeds production and marketing until the early 1980s. CAS produced, certified and processed the kinds of seeds set forth in the plan, EAO operated several processing plants under arrangements with CAS, and PBDAC distributed and marketed the seeds in its credit-in-kind input "packages." Seed usage under these arrangements was very high since farmers desiring credit for fertilizer and pesticides also had to take the seeds included in the "package" determined by the MALR to be of the quantity, quality and variety needed by the farmer recipient of the package, i.e., the farmer had no choice. Hybrid maize seed production was "opened" to the private sector in the early 1980s and several companies were organized and began operations. The companies were allocated marketing zones and shares of the hybrid maize seed market and the seeds produced were distributed by PBDAC at a price essentially set by the Minister and mutually agreed to by the companies. This was hardly privatization! The private sector did substantially increase its

involvement in vegetable seed supply (both local production and imports) during the 1980s but CAS continued its monopoly of seeds of the important self-pollinated crops, viz., wheat, rice, faba bean, lentils, peas, barley, and so on. Seed quality during this period was very poor. Although the seeds were claimed to be "certified", they were not in any internationally accepted sense of certification. Cleaning and storage were rudimentary at best. Since CAS and PBDAC had a monopoly and farmers needing the input package had to accept the seeds included therein, there was little accountability and reason to make the effort to effect improvements.

Major impediments to improvement of seed production and supply in Egypt through the 1970's and 80s were a) emphasis or over-emphasis on fulfillment of the seed targets in the plan (quantities of seed) usually at the expense of quality, b) division of responsibility and lack of accountability (CAS and PBDAC did not cooperate very well and each blamed the other for any problems), c) lack of training in technical skills needed and management, d) lack of incentives and competition, and e) the organization of production and certification/regulation of seeds in the same agency, i.e., CAS. The latter constituted an insurmountable obstacle to improvements, since internally CAS was placed in the position of certifying and regulating its own production. Since emphasis was invariably on production (quantities of seed), certification and regulatory personnel and functions were virtually ignored.

The deficiencies in the seeds system in Egypt and impediments to improvements began to be addressed under the USAID-NARP project and a GTZ project in the late 1980s. Reform of the seeds sector in terms of the legislative and regulatory framework, policy related to sectorial participation, reorganization of CAS, improvements in quality control, upgrading technical proficiency and management through training, and related aspects were begun in concert with liberalization of the larger agricultural sector in 1990-91. Much progress has been made since 1990-91. The progress was summarized rather dramatically in terms of 1991 and 1997 comparisons in a previous report<sup>6</sup> and is included in this report with some updating for the record as Annex A. The credit package was opened so that farmers could select the inputs they desired with the result that the seed demand or replacement rate dropped from 60+% to about 25 -30% *with no adverse effects on production*. Direct subsidies on seeds were gradually eliminated. Private sector production of seeds of self-pollinated crops began and has increased to about 20% of seeds marketed. Vegetable and potato seed supply moved almost wholly into the private sector. The technical and management skills of CAS personnel were improved through rather massive training programs financed under various USAID and GTZ projects. The quality of seeds available to farmers has increased substantially but not to levels it can and should be.

The crucial reform was issued in *Ministerial Decree No. 1477 of 1993*, dated 30 October 1993, rendering the decision to separate CAS into a Central Administration for Seed Production (CASP) and a Central Administration for Seed Testing and Certification (CASC). Although some preparations for the separation were made during 1994 and early 1995 the matter was essentially placed on hold pending action of the Central Administration for Organization and Administration

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<sup>6</sup>Delouche, J.C. 1997. Seeds Sector Policy, Legislation and Privatization in Egypt. Rept. on Seed Policy and Legislation Consultation. USAID-APRP/RDI. DAI & CTS. May, 1997.

(CAOA) on the organizational structures, number and rank of units, position ranks, number of personnel and so on for the new Central Administrations. CAOAs' decree was finally issued as *Decree No. 1789 of 1995*, dated 8 August 1995. Physical separation of CASP and CASC offices and personnel was effected during the period from issuance of the CAOAs' decree to late 1996 when the Undersecretaries for CASC and CASP were appointed. Fiscal separation in terms of separation of budgets became effective with the beginning of the following fiscal year in July, 1997. The final step in separation and reorganization was taken in *Ministerial Decree No. 1350 of 1997*, dated October 1997 which established the organization of the main sectors in the MALR and the Central Administrations under each sector. CASC and CASP were both placed under the Agricultural Services Sector, a workable but not the favored arrangement. Separation of the two new agencies in different sectors of the MALR would have been best. *Decree No. 1350* also established the organizational structure of CASP and CASC (General Directorates and Directorates) and defined the responsibilities of each unit. Organograms of the MALR and CASC as per *Decree No. 1350* are in ANNEX E.

### 3.2 Situation and Actions

CAS has disappeared as an organization, CASP and CASC are separate, independent and operational, but a CAS mentality lingers and still influences decisions and activities. This is not surprising considering the pervasiveness of CAS in all aspects of the seeds sector for a very long time. Initial impressions are that CASP is receiving most attention and support in the MALR due to its visibility in terms of seed production contracted with farmers, operation of the seed centers and stations, distribution of seeds, and, perhaps most importantly, because it generates very substantial revenues from seed sales. CASC, on the other hand, is viewed as a monitor and authoritative presence that sometimes interferes rather than assists in seed production, *i.e.*, the policeman syndrome. CASC also costs rather than makes money. It is a recipient and not a generator of revenues. Certification and inspection fees and licenses bring in only about 35% of the CASC budget. CASC needs to establish its roles as regulator and servicer of the seed industry to protect Egyptian farmers and legitimate seed companies against fraud and unscrupulous practices in seed distribution and marketing and assist the industry in providing farmers with adequate supplies of good quality seeds. And, it must find ways of accomplishing these goals that enhance its image as a protector and server rather than a policeman. Unfortunately, at this critical time Eng. Salah Wanis, Undersecretary of CAS until its dissolution in 1996 and then Undersecretary of CASC, retired 23 February 1998, during the period of the present consultation. Eng. Salah Wanis was the strongest advocate of seed sector reforms including separation of the production and regulatory functions resident in the CAS. He is the most knowledgeable person about the Egyptian seeds sector and has a full understanding of how the seed industry can and should develop to best serve Egyptian agriculture in both the near and long terms. Fortunately, Eng. Salah Wanis's successor, Eng. Fawzy Shahien, is an experienced and long time manager in CAS and CASC with an excellent record as Head of the Kafr El Sheikh Seed Center operations, then Director-General of Seed Processing in CAS and most recently as Director-General of Seed Testing in CASC.

CASC is also being assisted in the area of seed certification by the GTZ/CASC Seed Certification project. This project has and is providing guidance, training, some equipment, facilities and other

resources needed by CASC for full development and modernization of seed certification and related activities such as variety registration, licensing of seed producers, processors and merchants.

Important Ministerial decrees were issued in 1994, 1997 and in early 1998 and another decree is in preparation to authorize, reform and update/modernize the regulatory framework for the seed industry in Egypt. *Ministerial Decree No. 38*, was issued 13 January 1997 "Concerning Conditions and Regulations of Agricultural Seed Certification, Handling, Importing, Exporting, Processing, Storage and Trade". This decree sets forth and prescribes the regulations applied to essentially every aspect and operation in seed production and supply save field quality standards and inspections and testing, along with responsibilities and procedures for their implementation. The regulatory framework established for the seed industry in Egypt is much more restrictive than that in the U.S.A., but about the same as in other North African countries and in countries of the European Union. It was very much influenced by the latter. Seed field quality standards and inspection procedures were authorized and established in *Ministerial Decree No. 1550 of 1994*. The authority and procedures for seed sampling and testing are in an earlier Ministerial decree, *Decree No. 90 of 1967*. A replacement decree to update seed testing principles and procedures and bring them in general conformity with those of the International Seed Testing Association is under preparation. It is scheduled for issuance within the present fiscal year, *i.e.*, by the end of June, 1998.

*Ministerial Decree No. 82*, dated 17 January 1998, was introduced and discussed in the **Section 2.4.1 (Plant Variety Registration)**. This decree was long-awaited and sorely needed to authorize and establish protocols, procedures and criteria for the registration (compulsory) of crop varieties that are crucial for "bonafide" seed certification. The specifications in *Decree No. 82* are essentially in full conformity with those in European Union and other countries. The only departure from expectations is a critical one. ARC was continued as the responsible and supervising agency for plant variety registration, an arrangement that has been the source of serious problems and complaints from the private seed companies, an obstacle to reform and implementation of plant variety registration, and a constraint on improvements in seed certification. This matter already introduced as an issue in **Section 2.4.1** is further discussed below as a major policy issue in the certification arena.

Improvements and modernization of seed certification and related activities including market control were initially focused in several governorates but began to be extended to all the governorates in 1996. Presently, certification is supposed to be operative throughout the country but with varying degrees of readiness and effectiveness. Much has been accomplished, but much remains to be done to develop certification, regulatory and service functions as they should and must be developed to support technical advances, liberalization and reforms in Egypt's agriculture. Some aspects of seed policy need to be reformed or changed, important issues need to be seriously addressed, and problems must be resolved in some satisfactory way.

It should also be noted that a team from OECD, Agriculture and Code Office, will visit with CASC during March 2 - 8 to review the seed certification "infrastructure", protocols, and procedures in Egypt in response to MALR-CASC's interest to join the OECD seed certification schemes for Cereal Crops, Maize and Sorghum, and Vegetables. This is an important and very timely review. It should determine if CASC has the authority, protocols, rules and procedures in place and the

resources and technical competency to carry out seed certification of the crops indicated in a manner that conforms fully to **OECD** requirements and practices. Deficiencies and improvements needed in the Egyptian seed certification system as identified and determined by the **OECD** team will significantly contribute to the agenda for further reform and improvement.

### **3.3 CASC: Deficiencies, Issues, and Problems**

The core operational tasks of **CASC** are *seed certification, seed testing and regulation of seed marketing*. Other important functions are *advisory, e.g., participation in many committees, secretariat for the National Seeds Council and Plant Variety Registration Committee, administrative, e.g., collection and maintenance of seed statistics, issuance of licenses, projects and investments, liaison with national and international organizations, service, e.g., seed extension and training, problem solving studies, seed testing*. **CASC** is also a new organization with an endowment of new resources and new roles and responsibilities, not fully defined and somewhat uncertain, with which it is trying to come to terms. The more important matters that confront it as it moves into its planned and proper position as the **ARE** government's technical advisor, monitor, and regulator of seed production, trade and related matters are identified and discussed in the following sections.

#### **3.3.1 Deficiencies (organization, facilities, personnel, programs)**

**CASC** has been well endowed under several **USAID** and **GTZ** projects and through support from **MALR** with most of the technical equipment and facilities and human resources needed to accomplish its core tasks. It has a central headquarters in Giza with abundant staff, modern and well equipped central seed testing and seed health laboratories, and adequate transport, Seed Testing and Certification Directorates in the 22 governorates, and well positioned, well equipped seed testing stations in 10 of them. Key managers and technical specialists at the headquarters and in the more important seed producing governorates are adequately trained and experienced except in newer and hi-tech aspects of seed quality evaluation and control. There are, however, several deficiencies that need to be highlighted.

(1) Management Information System. **CASC** has an antiquated and inadequate management information system (**MIS**), *e.g., the Governorate Directorates and the General Directorates in headquarters are not net-worked for information transmission and processing. This deficiency extends even into specific sections and offices, e.g., the records on licensed seed vendors, seed producers, certification in terms of crop kinds, varieties, production sites and area, are not yet in computerized databases. Computers were provided in 1993-94 under the **NARP** project along with technical assistance and software to computerize records and databases and network governorate offices with headquarters but the software and technical assistance essentially failed to deliver and now the computers are somewhat outdated for the software currently available.*

(2) Training. Training in modern hi-tech biochemical procedures for identifying and verifying differences in crop varieties and in the seed health area is inadequate. A few selected, younger staff persons with suitable background need to be trained off-shore. On return they can train others.

(3) Poorly Developed Service Functions. CASC can and should incorporate a much larger effort in its certification and regulatory activities to *promote* the use of certified seeds of superior varieties by farmers regardless of which sector produces and distributes the seeds, *i.e.*, a use certified seed campaign. The goal should be to persuade farmers that more frequent replacement of seeds with certified seeds is necessary for high and consistent productivity, and the campaign should be in coordination with seed producers and distributors. There also needs to be a much larger measure of extension in CASC's activities to demonstrate the benefits of using certified seeds and how they should be used to best advantage. Finally, CASC needs to install and implement an array of services designed to assist present seed producers and distributors and persons/companies interested in taking up seed production such as training in the technical operations and management in seed production, processing, packaging, inspection and testing services for their internal quality control, advice on varieties, market potential for different seed kinds and varieties, sources of foundation and registered seeds, packaging materials, custom or for-hire processing facilities, and so on. The installation and implementation of promotion, extension and service programs aimed at farmers and the seed producers will contribute enormously to achievement of the roles and status envisaged for and desired by CASC.

### 3.3.2 Issues

There are four outstanding issues, the first and third of which are also longstanding.

(1) Plant Variety Registration. Poorly organized and implemented, incomplete and subjective (rather than objective), frequently ignored plant variety examination and registration procedures have been and are the source of many problems in certification and complaints from private seed companies, and they constitute a serious impediment to progress in certification. The establishment of a bonafide, competent, orderly, objective and unbiased plant variety examination and registration system and organization that is independent of plant breeding, genetics research, variety development and seed production and in general conformity with international norms has been a priority reform in the seeds sector since 1991. It was fully expected that the issue would be finally resolved in a ministerial decree containing the reforms prepared and discussed in the NSC and other forums for almost one year with general consensus. *Ministerial Decree No. 82*, dated 17 January 1998, contained all the reforms desired including incorporation of and specifications for DUS and VCU testing *but continued ARC as the responsible agency*. ARC, of course, is heavily engaged in plant breeding and variety development, related research, certified seed production<sup>7</sup>, and the collection of royalties on the varieties it develops. It is hardly the type of independent, unbiased agency envisaged to be responsible for plant variety registration. While there is the possibility that ARC's role will be downgraded to a purely advisory one in implementation of *Decree No. 82*, with responsibility and control assigned to CASC, as it was expected to be and should be, it is very likely that the problems and complaints of the past will be continued. The implementation of *Decree No. 82*, therefore, needs to be closely monitored and appropriate actions taken if the problems and complaints recur.

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<sup>7</sup>*Ministerial Decree 867* of 1997 restricts ARC seed production to the breeders' seed class. This decision when and if fully implemented will constitute one of the most significant reforms in the seeds sector.

(2) Equity of CASC and CASP. CASP and CASC are MALR Central Administrations organized from CAS according to function. CASP's tasks are seed production and distribution which bring in very substantial revenues. CASC's tasks are mainly regulatory and services which generate only about 35% of budget in form of inspection and certification fees and licenses. Both agencies are housed in the same premises. It is claimed that CASP personnel receive an incentives pay equivalent to 100% of salary, a much higher level than that allotted to CASC personnel. This is deemed inequitable and especially demoralizing since personnel in the two agencies were co-workers and office-mates just a year and one-half ago. CASC personnel feel that they are considered as less worthy than those in the "sister" agency and that their incentives pay should be about the same.

(3) Exceptions and Evasions from Seed Control Measures. Both public and private sector seed producers are frequently "excepted" from certification and market control procedures and regulations or evade them with impunity by appeal to and decision of higher authority usually without investigation, review, explanation or apparent justification. "Exceptions" and/or evasions of these sorts are not unknown in developing and even developed countries but their frequency is keep very low due to the criticism and publicity often attached to them. If seed producers in Egypt in both the private and public sectors come to feel that they can go over the heads of CASC to avoid the losses due to rejections of seed fields and seed lots for certification that are often the result of poor or inattentive management, they will do so and certification will be essentially meaningless. *Certification and market control must be fair, objective and sector neutral. Appeals to findings and decisions of seed certification and control officers must be in accord with established procedures including arbitration and conducted in a open and transparent manner.*

(4) Organization for Plant Breeder's Rights. Plant Breeder's Rights (PBR) legislation is not yet enacted but there is already a potential issue similar to that set forth above in connection with Plant Variety Registration. The draft legislation for PBR specifies that it will be organized by a sub-committee of the Plant Variety Committee specified for Plant Variety Registration which is essentially unchanged in the draft revision. As discussed above, *Ministerial Decree No. 82* of 1998 placed the Plant Variety Committee within or under ARC. If PBR is enacted and *Decree No. 82* is not changed, ARC would have the dominant voice in its organization and implementation which would be highly improper and the source of many problems and complaints for the reason already cited: it would have major influence in decisions on the award of protection for varieties submitted by both its units and its competitors. This situation would be untendable and would have to be resolved before PBR in Egypt would be taken seriously by plant breeding and genetic engineering companies in other countries.

### 3.3.3 Problems

CASC has many problems on the table. Several are common to new organizations, while others, some longstanding, are specific to CASC'S roles and tasks.

(1) CASC's Image and Credibility. During the CAS era seed production was the dominant function. Emphasis was on quantities of seeds produced and distributed for socio-political reasons. Seed certification and regulatory functions were subordinated to seed production and consisted mostly of paperwork. There were no field inspections independent of seed production supervision

until about 1994-95. The quantities of seeds needed to fill PBDAC's input packages were provided regardless of whether they met "paper" standards are not and regardless of quality. With separation of CAS into CASP for seed production and distribution and CASC for certification, testing, regulatory and service activities, production (*i.e.*, CASP) continues to receive much attention and command the strong support in the MALR, while the certification and regulatory activities (*i.e.*, CASC) receive little attention except when they get in the way, and minimal support. This situation is partly due to the greater political importance of seed production as compared to certification and regulatory activities which are relatively new and poorly understood. It should improve as the latter activities become more widely recognized and appreciated among the private and public sector seed producers and merchants and, especially, among farmers. Greater and more supportive empowerment of CASC by MALR, a substantial and sustained educational and extension effort, and consistently good performance of functions by CASC are critical. In large measure, CASC's image, credibility and status will be determined by its activities and performance.

(2) Uncertainty as Regards Authority. There appears to be some uncertainty regarding CASC's authority and empowerment to carry out and enforce the procedures and regulations for seed certification and market control. This is manifested in a reluctance or even refusal on the part of seed producers and distributors, especially those in the public sector, to accept and/or abide by the *discipline implicit in the processes of seed certification and market control*. Clarification of the intent, scope and applicability of this discipline and a strong information and public relations campaign by the MALR are needed. Perhaps, strong endorsement and support by MALR of the *Principles of Seed Certification and Market Control* set forth in the next section would be an important step to clarify and enhance the roles and authority of CASC.

(3) Inadequate Support and Certification Fees. CASC has excellent facilities and equipment for carrying out its tasks but inadequate budget for taking care of operational costs such as supplies, fuel, maintenance and repairs and for incentives pay to its workers in line with that provided in other agencies, *e.g.*, CASP. While seed certification, testing and market control are very properly government services which it is obliged to provide to protect farmers and seed producers from fraud and unscrupulous practices, their cost should be recovered to the degree feasible and appropriate for the country in fees and charges assessed to users and beneficiaries of the services. Presently, inspection, certification and testing fees and licenses amount to only about 35% of CASC's budget. A recent study made by the GTZ/CASC Seed Certification Project (Cost Analysis of the Main Activities of the CASC)<sup>8</sup> found that: a) labor is the main cost item in CASC, about 70%; b) there is little correlation between the number of workers and the amount of work done in the two governorates studied; c) the charges or fees for inspections, certification and testing services average about 1.8% of the market price for maize, rice, wheat and cotton seeds (ranging from 0.7% for maize to 2.4% for cotton) or about 1.2% if cotton is excluded since cotton seed prices are controlled at low level by the MALR; d) seed costs to the farmer represent only 5 - 10% of the total crop production costs, thus, the cost of quality assurance/control by CASC amounts to only 0.1 to 0.2% of the cost

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<sup>8</sup>El-Saadany, Rashad. Cost Analysis of the Main Activities of the Central Administration for Seed Testing and Certification. GTZ/CASC Seed Certification Project. Contract No. 95/97. December, 1997.

of crop production; e) the cost of comparable services and controls in other countries is about 2% of seed value which is passed on the purchaser. These findings suggest that *the structure of fees and charges for CASC's services and regulatory activities needs to be critically reviewed and revised*. They could be increased by 50 - 75% without exceeding the cost of comparable services in other countries and without any strong upward pressure on seed prices and complaints from the seed producers. The problem of labor redundancy must also continue to be highlighted so that CASC will not be left out of any early retirement and retraining or related initiatives.

(4) Inadequate and Incomplete Variety Descriptions. The units responsible for seed certification have been struggling for a long time with problems caused by incomplete and/or inadequate descriptions of the varieties whose seed production they are supposed to certify, especially varieties developed and released by ARC. It is difficult if not impossible to properly certify the genetic purity of a variety in the absence of a proper and detailed description of the variety, or if the variety is changed by continued selection after release. These problems are part of the larger problem or issue of poorly organized and implemented plant variety registration highlighted in several previous sections. Proper organization of variety registration in *an independent unit not involved in plant breeding and variety development research and seed production and proper implementation of the application, DUS and VCU test procedures in Ministerial Decree No. 82 of 1998* would resolve the problems and larger issues.

(5) Aging Workforce. It is ironic that CASC which is burdened with personnel redundancy views the aging of its workforce with misgivings if not alarm. About 40% of the work force assigned to CASC at the time of its separation is over 50 years of age. Many will be retiring in the next few years. This is good in terms of reducing the substantial personnel/labor redundancy, but the downside is that employment of new, younger personnel to assure a corps of well trained and experienced personnel for CASC's future is very difficult. Under present policy on manpower it is difficult to impossible to select and employ even a few young persons to infuse the agency with some vigor and gain experience so that they can assume key positions on retirement of the occupants. Younger staff are also more flexible, adaptable to reforms and changes and trainable. A plan needs to be developed, approved and implemented to select, employ and train suitable young persons for professional career positions in CASC.

(6) Indecision on Vegetatively Propagated Materials. The extension of certification and market control to vegetatively propagated materials such as citrus nursery stock, strawberry plantlets and similar materials has been strongly recommended. Presently, only potato "seed" tubers are covered and controlled. One problem holding up this matter is indecision on the responsible agency. Since CASC exists and is organized for certification of seeds and other propagules and the intent of and authority for their control is in the draft revision of the seed law and the ministerial decrees issued under the present *Law No. 52 of 1966*, it seems logical to assign responsibility for certification and regulatory control of vegetative propagules to it with stipulation of cooperation and coordination with the Horticulture Research Institute on technical matters.

### 3.4 Principles of Seed Certification and Market Control

Seed certification and market control have been implemented in most of the developed countries for more than 60 years and in some developing countries for up to 20 -30 years. Important guiding and/or essential principles have emerged from the experiences in seed certification and market control in both the developed and developing countries. Some of them are presented below. They should be carefully reviewed and those that fit the Egyptian context should be adopted by CASC as standard operating principles, endorsed by MALR, and made known to all personnel in CASC, other MALR agencies and public and private seed production units.

- I. Seed certification and market control are *legally sanctioned* by appropriate provisions in the seed law and *implemented by a government agency or agency chartered by the government*.
- II. Seed certification and market control are *organized and implemented in accord with internationally recognized protocols and principles* since they have well established meanings that transcend or should transcend national boundaries.
- III. Seed certification and market control are *sector neutral*. Rules, procedures, inspections and enforcement are applied equitably to seed producers and distributors in the public, private and cooperative sectors.
- IV. Certification and market control are organized and implemented *completely independent of plant breeding and other crop research, seed production and distribution activities*.
- V. High but *attainable* quality standards are established and maintained in the certification system and applied *only* to crop varieties with *demonstrated high performance* so that "*certified seeds*" are *synonymous with high quality and reliable performance*.
- VI. Certification, inspection and market control procedures and activities are carried out *competently, fairly, objectively and accurately* to establish and assure the system.
- VII. *Genetic standards are never compromised*. Germination and physical purity standards can be reduced in case of serious seed shortages with conspicuous notice on affected seed lots and packages that the seeds are *sub-standard for the reduced quality standard*.
- VIII. Certification and market control actions and decisions are *systematically reviewed* and include *post-control* measures in the case of certification.
- IX. Policy and procedures relating to *appeals* of decisions and *arbitration* are *complete and clear*. Decisions are not *reversed* and *exceptions* from rules and procedures are *not allowed* unless they are determined to be justified *through proper appeal*.
- X. Certification has a *service* rather than *policing orientation*.

**XI.** The organization and implementation of seed certification and market control are government responsibilities. The costs of these activities can (and should) be *recovered through fees and licenses* gradually increased up to about 75% of costs as the seed industry develops and matures.

### **3.5 Recommendations and Suggested Actions**

(1) **Organization of Plant Variety Registration.** The organization and initial implementation of *Ministerial Decree No. 82 of 1998* concerning plant variety registration should be closely monitored to determine if **ARC** assumes the dominant and determining role. If this is the case, maximum effort should be made to get the decree revised to: a) reduce **ARC**'s roles to purely advisory and technical; b) position the Plant Variety Registration Committee in the the Agriculture Services Sector chaired by the First Secretary or high level officer designated by him; c) designate a Secretariat in **CASC** to operate under the purview of the Plant Variety Registration Committee with responsibilities for processing of applications, supervision of **DUS** and **VCU** testing, analysis and summarization of results, and maintenance of the Registry of Plant Varieties; d) and reserve function of recommending varieties for registration to the Minister (**MALR**) to the Plant Variety Registration Committee. The Plant Variety Registration Committee should include representation from **ARC** research institutes, extension, **CASC**, **CASP**, the universities, private seed companies, seed traders, cooperatives, **PBDAC**, farmer associations, and other interest groups.

(2) **DUS and VCU Testing.** **DUS** and **VCU** testing should be installed as part of the variety registration process as per *Ministerial Decree No. 82 of 1998* with initial implementation this year (1998).

(3) **CASC Roles and Authority.** The authority and roles of **CASC**, especially in the certification and market control of seeds, needs to be clarified as might be necessary and reaffirmed at the high **MALR** level.

(4) **CASC and CASPEquity.** The matter of equity between **CASC** and **CASP** personnel in terms of remuneration and status should be reviewed by a small task force appointed by the First Secretary, Agricultural Services Sector, with recommendations for correcting any inequities detected. Additional funds for achieving equity in incentives could be generated by increasing certification, inspection and testing fees and licenses as per the next recommendation.

(5) **Certification and Testing Fees.** The certification and testing fees should be reviewed in the light of the recent study on the costs of certification in Egypt and the portion of costs recovered in fees and licenses. It appears that the fees could be substantially increased (50 to 75%) without significant upward pressure on seed prices. The goal should be to gradually increase the portion of costs recovered from the present 35% level to about 75%, say in the next 5 years.

(6) **Seed Testing and Sampling.** The revision of seed sampling and testing procedures to update them and bring them in conformity with the Rules for Testing Seeds of International Seed Testing Association should be completed, reviewed and issued as a ministerial decree by the end of 1998.

(7) Adherence to Appeals Process. A clear and unequivocal policy and procedures relating to appeals of findings, determinations and decisions in certification and market control should be installed and strictly followed so that they are not reversed or any exceptions from rules and procedures allowed without full justification established in a complete and open appeals hearing.

(8) Office of Plant Breeder's Rights. Decision on and authorization for organization of an office or secretariat for handling applications, conducting DUS tests and related examinations for the award of ownership of plant varieties under Plant Breeder's Rights should be made not later than September, 1998 to avoid delays in implementing the legislation and decrees issued thereunder. The Office or Secretariat of Plant Breeder's Rights should be located in CASC with supervision by the Plant Breeder's Rights (or Plant Variety Protection) Committee provided for in the relevant provisions in the seed law revision.

(9) Certification of Vegetative Propagating Materials. Important vegetative propagating materials in addition to potato such as those of citrus and strawberry should be taken into CASC's certification system. Certification should be in cooperation with the Horticulture Research Institute of ARC.

(10) OECD Review of Certification. The review of the certification system and process in Egypt by a team from OECD-Agriculture during the period 2 - 8 March should be assisted to the extent possible through cooperation with CASC and the GTZ-CASC Seed Certification Project. The team's review is in response to the MALR's declared interest to join the OECD seed certification schemes for cereals, maize and sorghum and vegetables. The findings of the team will provide important information on any deficiencies in organization, protocols, rules and procedures for certification and that can then be incorporated into an the "improvements" agenda. It should be recognized that the review will necessarily focus on the decreed procedures and measures for certification, *i.e.*, the paper trail, with only minimal observations on how and to what degree they are implemented.

(11) Principles of Seed Certification and Market Control. The *Principles of Seed Certification and Market Control* derived from experiences in many other countries and set forth in Section 3.4 of this report should be reviewed and revised to enhance their relevance to conditions in Egypt, endorsed by the MALR, adopted by and for CASC as its *standard operating principles*, and made known to personnel in CASC and sister agencies, the private seed companies, cooperatives, and seed association.

#### 4. SEED IMPORTS (Vegetable Crops)

##### 4.1 Situation

The regulations covering the introduction of varieties and import of seeds for vegetable crops were recently revised by Ministerial Decree to reduce the required testing period for registration (compulsory) of an imported variety from two years to two seasons (effectively one year since plantings in two seasons per year are possible) and the fee for registration from US\$5000 to US\$4000. These "reforms" if strictly enforced will still prevent many high quality varieties of minor vegetable crops from being introduced into Egypt. The simple grow-out trials of vegetable crop

varieties in Egypt (and the few other countries that still require field testing) are essentially meaningless because many qualities other than yield are important in vegetables, e.g., color, tenderness, nutritive value, cooking time, shelf life, and very difficult to evaluate except by very sophisticated instrumental, culinary and organoleptic procedures not applied or available in ARC. The reformed registration fee is still much greater than the potential sales of many varieties for 3 - 5 years! Vegetable growers and consumers in Egypt would greatly benefit from more progressive reforms in the introduction of vegetable varieties and importation of seeds.

The guiding principles in regulation of seed importations and the introduction of varieties should be a) the full, legitimate and legal exploitation of the genetic advances in crop kinds and varieties made in other countries for the benefit of farmers and consumers in Egypt, b) adequate protection of crop agriculture from foreign pests that can be carried in or on seeds, c) the protection of basic food crop agriculture from damage caused by the introduction and dissemination of unadapted and untested varieties. The basic controls on and regulations of seed importations and introduction of varieties are an import license or permit for the kind, variety and quantity of seed to be imported, minimum quality standards for varietal and physical purity and germination, and seed health and phytosanitary standards.

Since the risks attached to introduction of varieties for all but the 5 - 7 most important vegetable crops are very marginal compared to those associated with the main food grain crops such as wheat, rice, maize that are planted by many farmers and the potential benefits to vegetable growers and consumers are great, controls and requirements should be greatly reduced to facilitate their introduction. Specifically, the testing period for variety registration should be eliminated and the fee reduced to some realistic level established in discussions with seed traders.

#### **4.2 Recommended Action**

Eliminate the two season testing period for varieties of *vegetable crops* other than those declared as "Reserved" (the 4 - 5 most important vegetable crops) that are *registered or protected* (plant breeder's rights) in another country. This will be permissible under the seed law revisions when enacted since the testing period for registration is left to the discretion and judgement of the Plant Variety Registration Committee, and thus can be zero. A substantially reduced and differential schedule of registration fees should be established for the different kinds of vegetable crops based on their importance and the quantities of seeds imported ranging from the equivalent of US\$100 for minor crops to US\$2500 for major crops. Procedures for obtaining import licenses should be simplified and the license fees rationalized. Phytosanitary standards and requirements should be realistic and in line with those in the European Union and other North African countries.

### **5. EGYPT'S SEED SECTOR REFORMS COMPARED TO THOSE IN OTHER WANA COUNTRIES**

The progress and accomplishments of seed sector reforms and development of the seed industry in Egypt are briefly compared to the situation in other West Asia and North Africa (WANA) countries in ANNEX B.

## ANNEXES

## ANNEX A

### **SEED SECTOR REFORMS: PROGRESS & ACCOMPLISHMENTS, 1992 to 1998**

There were essentially no reforms in the Egyptian seeds sector from 1980/81 when CAS withdrew from maize seeds production through 1991, almost 5 years into the NARP project. The very substantial progress and accomplishments in seeds sector reforms since 1992 can best be grasped and appreciated through comparison of "snapshots" of the situations regarding selected elements of the policy and legal framework for the Egyptian seed industry at the beginning of reform and reorganization in 1992 and the end of 1998, 7 years later.

#### **1. National Seed Council**

**1992.** Although the organization of a National Seed Council (NSC) or Board to recommend policy, promote, and provide guidance for development of the seed industry had been recommended as early as 1985 during the preparation of NARP (Delouche, 1985), it was only organized in late 1991 and was just beginning to function in early 1992.

**1998.** The NSC has developed and performed far beyond even the most optimistic expectations. It has become the pivotal and most influential agent for reform and improvement of the seeds sector. It is representative of the various interests in the seed industry including the private sector and serves as a forum for discussion of all matters of interest to the seed industry from import licenses to custom duties on imported seed equipment and supplies, to complaints from farmers about seed quality.

#### **2. Seed Certification and Government Seed Production**

**1992.** Seed production, certification and regulatory control were administered and carried out within the same agency - the Central Administration for Seeds (CAS) - although this undesirable situation had long been recognized and acknowledged and separation of the functions vigorously advocated by many consultants - national as well as international. Certification and regulatory activities were limited to non-existent because CAS was placed in the untendable position of "certifying" and regulating its own production, and because crucial control mechanisms such as field inspections were not developed.

**1998.** Separation of the seed production and certification/regulatory and service functions resident in CAS was authorized in 1995 and finally effected in 1996/97. The Central Administration for Seed Certification (CASC) and the Central Administration for Seed Production (CASP) are now physically and administratively separate. With the support and assistance of two GTZ projects, bonafide seed certification programs were organized and implemented in several governorates and have now been extended into other governorates. Egypt

wishes to join in the OECD certification schemes for some important crops and a team from OECD is scheduled to review CASC's certification system in March, 1998.

### **3. Seed Testing**

**1992.** Seeds were tested in three poorly-equipped laboratories by poorly trained analysts.

**1998.** Eight new seed testing laboratories were organized (probably more than needed) and the three existing labs were renovated. Modern equipment and supplies for all of the labs have been provided under the NARP Seeds Component as a sort of last input. First class capabilities in seed health testing and varietal verification were established. Personnel have been trained in-country, in the region (e.g., ICARDA, Tunisia), in the U. S. and in Germany. Testing procedures are being brought into line with those of the International Seed Testing Association (ISTA).

### **4. Seed Legislation and Regulations**

**1992.** Seed production and marketing were guided and regulated under provisions of the Law 53 of 1966, the Law of Agriculture, originally designed to regulate cotton planting seeds, but profusely amended to provide for some regulatory controls for other kinds of seeds, seed testing procedures, and related matters. The law and amendments did not reflect or take into account the changes in varietal improvement and seed usage and distribution that occurred during the 1970s and 1980s and were more-or-less obsolete.

**1998.** New and modern seed legislation has been prepared, reviewed and made ready for parliamentary action. Hearings are scheduled by the Agriculture and Irrigation Committee of the People's Assembly with enactment in the first half of 1998. As interim measures until MALR can move the new seed legislation through parliament, the regulations and "implementing particulars" relating to certification and seed control, seed testing, variety testing and registration, seed importations and seed health have been promulgated in Ministerial decrees under the authority of the old Law 53 of 1966. While much has been accomplished through Ministerial decrees, enactment of the new legislation by parliament and concurrence of the President are necessary to provide the legal authority and force for implementation and enforcement of some essential provisions such as police powers for inspections and penalties.

### **5. Plant Breeder's Rights or Plant Variety Protection**

**1992.** There was little thought and poor understanding about the application of intellectual property rights to plant varieties, so-called plant breeder's rights. Most persons who had thought about it were opposed or skeptical about its appropriateness for Egypt.

**1998.** Plant breeder's rights are well understood and strongly supported by researchers in ARC, officials in CASC and CASP, the private seed companies and traders, and the Universities. There does not appear to be any significant informed opposition. Provisions for plant breeder's rights are included as a title or chapter in the new seed legislation awaiting parliamentary action.

## **6. Sectoral Involvement and Shares in Seed Production/Marketing**

**1992.** The public sector (CAS, EAO, ARC, PBDAC) had a virtual monopoly i.e., 100%, in production and distribution/marketing of seeds of important crops except maize, berseem and most vegetables. Its cooperation with the private sector was minimal and it provided essentially no services to private seed companies and traders. PBDAC distributed and marketed most seeds with exceptions noted but including even the hybrid maize seeds produced by the private companies. Five "private" seed companies were engaged in production of maize seeds, none in marketing (marketing was through the PBDAC system) and only one (multinational joint venture) in plant breeding and variety development (for maize).

**1998.** The private sector shares of seeds production for the self-pollinated cereal grain, food and grain legume crops in 1995/96 were: maize, 92; faba bean, 55%; rice, 35%; and wheat, 17%. The private sector shares are increasing with the stimulus of recently "liberalized" prices, while those of the public sector (CASP) are declining. About 10 major and 12 minor companies or cooperatives are producing and marketing seeds including three joint ventures with major multinational seed companies and five with breeding and varietal development programs. The major portion of seeds of mainline crops are now distributed by the cooperatives and private sector with PBDAC playing a very minor role. CASC provides testing services, certification and technical assistance, while CASP "hires out" its processing plants and/or does custom processing for private producers, and arranges with private traders for distribution and marketing of the seeds it produces. The private sector has also increased its dominance in vegetable seed importation and trade and most of the seed potatoes are handled and certified by cooperatives. Cotton seeds (for planting) are still tightly regulated and a government monopoly but this could change with introduction of new acid delinting technology.

## **7. Seed Pricing and Subsidies**

**1992.** Prices of seeds, other than vegetable and berseem seeds, were administered *even for maize seeds produced by private companies*, and most kinds of seeds with exceptions noted were subsidized directly and indirectly.

**1998.** Direct subsidies on seeds have been eliminated and indirect subsidies are being gradually phased out. The prices for CASP produced seeds are still "administered" but private companies and cooperatives are free to price seed in relation to demand and competitions. Seed prices were *substantially increased in 1996 and again in 1997 to more than two times (200%) the equivalent commodity or grain price which is in line with the price structure in other countries including some developed countries.*

## **8. Seed Demand or Rate of Seed Replacement**

**1992.** Seed demand was "administered." Decisions were taken to provide a certain percentage of the requirement of planting seeds for crops and to implement the decision through the PBDAC credit "package" program: e.g., 100% for cotton and maize, 60-75% for wheat, 75% for rice, 50% for faba bean. The farmers essentially had no choice as to buying or saving seeds, if they

needed the "package", which they usually did since it included essential fertilizer and pesticides. Decisions as to variety, seeding rate, rate of fertilization and so on were made by the government "experts" who organized the package of inputs. 100% seed replacement was the stated goal.

**1998.** Cotton is the only controlled crop. For other crops farmers make decisions regarding planting and the credit is "open" to choice. The results are shifts in the areas planted to different crops with changes in the market, changes in the varieties planted, and a very substantial decrease in seed demand for the self-pollinated crops such as wheat, rice, faba, lentils, soybean. Farmers presently obtain about 75% of the seeds they need for planting these crops from farm-saved stocks or neighbors. *This decrease in the rate of seed replacement was anticipated in the seeds sector reform plans but the detrimental effects of the decrease on productivity predicted by opponents of the reforms have not materialized.* Indeed, the present seed demand or rates of seed replacement are in line with those for the same crops in the USA, Australia, Brazil and Argentina. Replacement rates in Europe are much higher for reasons that appear to be peculiar to European agriculture and tradition.

## ANNEX B

### **COMPARATIVE SEED INDUSTRY DEVELOPMENT IN WANA REGION AND SELECTED COUNTRIES**

Egypt has a longer history of seed legislation and "concern" than the other countries in the region. Seed production and distribution are still largely in the public or government sector in Syria, Libya, and Yemen. Lebanon imports much of the seeds it needs for both field and vegetable crops.

**TUNISIA.** The seed sector is regulated by legislation enacted in 1976. Variety registration is compulsory. Several cooperatives and some private companies are involved in seeds production. Distribution of cereal seeds, however, is monopolized by the government, prices are established by the cereal board and the costs to the farmers are subsidized. "Varietal" certification is carried out for cereals and potatoes. The large seed cooperative (essentially a parastatal) COSEM is the major producer and processor of cereal seeds while the CCSPS cooperative is involved in the production of cereal and food legume seeds and vegetative propagules. Policy reforms under study include gradual withdrawal of the government from all seed production and marketing (i.e., privatization) and improvement of the regulatory and control procedures for seeds. Plant breeder's rights legislation has not yet been enacted in Tunisia.

**MOROCCO.** Morocco's seeds sector reforms are well advanced and a bit farther along in some aspects than those in Egypt. Variety registration is compulsory for seed production and distribution. The private sector is the leader in registration of varieties of maize, alfalfa, sunflower, sugar beet and most vegetables, while public sector research institutes are the leaders in durum wheat, bread wheat, barley, and rice. There is a National Seeds Committee with essentially the same functions as Egypt's National Seeds Council. The production of seeds and vegetative propagules is governed by a law enacted in 1969 and revised/amended in 1977. The law is implemented in accord with specifications issued in Ministerial decrees. Certification and market control are well developed. The private sector is the principal producer of seeds from the basic to certified seed classes, but seed marketing is tightly controlled. SONACOS, the national seed marketing company, has the sole right to market seeds of winter cereals (durum, bread wheat and barley) and to import seeds of beet. Prices of these kinds of seeds are set by SONACOS centers. Seeds of other crops are marketed by private companies and traders. Morocco has not yet enacted plant breeder's rights legislation.

**TURKEY.** Seed sector activities and seed quality control in Turkey are carried out within the framework of Law No. 308 and associated regulations that became effective in 1963. The Seed Unit of the Agricultural Input Department attached to the General Directorate of Agricultural Production and Development is responsible for implementing seed policies on behalf of the Ministry of Agriculture and Rural Affairs. Variety registration is compulsory. Variety development is carried out by both the public and private sectors and certified seed production is also carried out by both sectors. The public sector deals mainly with seed production of wheat, barley, cotton, rice and sunflower (mostly self-pollinated crops), while the private

sector is mainly engaged in the production, procurement and distribution of seeds of hybrid maize, hybrid sunflower, hybrid sorghum, soybean, potato and most kinds of vegetable and forage/fodder seeds. Important kinds of seeds are produced under the certification system. Seeds produced by the public sector are distributed by agricultural credit cooperatives, while the private sector has its own distribution and marketing channels. Seed prices were liberalized in 1983 but the Ministry of Agriculture and Rural Affairs subsidizes the seeds of rice, hybrid sunflower, soybean, fodder crops, vetch, and delinted cotton. The subsidy amounts to about 25% of the seed sale price. A seed replacement rate for wheat of every 5 years is strongly promoted. The stated goals of seed policy are gradual privatization of all seed production and marketing, an increase in the use of improved seeds, and more rigorous certification and market control. Turkey has joined several of the OECD seed certification schemes and has plant breeder's rights.

**INDONESIA.** Indonesia's seeds sector operates within the framework of a seed law enacted in 1971 and revised in the early 1990s. In the early 1970s a National Seeds Corporation (NSC) was organized to produce and distribute seeds of rice and some of the secondary crops such as maize, peanut, soybean. The NSC, a very inefficient seed producer, is still the major producer and supplier of rice seeds. Maize seeds are mostly produced and marketed by private companies, most of which are international seed companies. Seed prices are "liberalized." Vegetable seeds are handled almost entirely by the private sector. Seed certification and market control are well established for the mainline crops of rice, maize and soybean, but rather loosely applied to other kinds of seeds. Indonesia has not yet enacted plant breeder's rights legislation.

**THAILAND.** Thailand's seed sector is relatively liberalized. Seeds of rice, mung bean and other self-pollinated crops are produced by the Seed Department of the Division of Agriculture Extension. Maize, sorghum and the greater portion of vegetable seeds are produced and/or handled and marketed by private companies, most of which are international companies. Certification is voluntary and market control is rather loosely applied. Nevertheless, Thailand's mixed sector seed industry is one of the most efficient and effective in Asia. Thailand has not yet enacted plant breeder's rights.

Egypt's seed sector reforms and seed industry are ahead of those in Syria, Libya, Tunisia, Yemen, Ethiopia, and Indonesia, on balance about equal to that in Morocco, a bit behind Turkey and Thailand.

**Chapter 2****Crop Variety Registration and Plant Breeder's Rights**Article No.

- 12: The Minister of Agriculture shall issue a decree identifying the crops covered by this chapter . It is prohibited to cultivate unregistered varieties from crops have been prescribed under this chapter , starting from the next season registration of such crop was enforced . However , unregistered varieties may be cultivated this shall be for scientific or initiating new varieties purposes . according to a licence from the MOA and according to rules and regulations of MOA. The said licence should include the duration , area to be cultivated , procedures and measures to be applied. the production from such varieties should not be traded before registration.
- 13: There shall be a committee named “ Agricultural Crop Variety Registration Committee “ established in the MOA . the Minister of Agriculture shall issue a Decree concerning the formation and work scheme of such committee. The scientific , research , certification agencies from private and public seed sectors shall be represented in the said committee. The committee shall be assigned to study applications for registration of new crop varieties under their established commercial names, their specification , renewing or cancellation of registration, recommending methodologies , and to carry on procedures required for enforcing this chapter of the Act. The Committee shall issue the recommendation required for registration , renewing or cancelling the registration , such recommendations shall not be valid before the certification of the Minister.
- 14: An application of registration shall be submitted to the Head of the committee according to the conditions and procedures established by the MOA and after the payment of the established fee which should not exceed one thousand pounds per variety in addition to the actual costs of the experimentation trials identified by the committee and certified from the MOA .
- 15: The committee may assign the applicant to provide any required information and any seed quantities for variety testing , and to assign to the concerned technical agencies to conduct the required experimentation trails.  
The duration of variety testing for registration shall be identified by the decree of the MOA.  
The new variety shall not be registered unless the testing results prove that new variety could be distinguished from other varieties and should be uniform , stable and superior in its agricultural or economic merits

- 16: A Variety Register shall be established in the MOA ,and a Ministerial Decree concerning the control measures required for such register shall be issued .

A certificate for registered variety signed by the Head of Variety Registration Committee shall be issued after approving the committee decision and listing the variety in the register - the variety registration certificate shall be valid for the period specified by the MOA depending on the kind of crop and the method of multiplication.

The application for renewing the registration certificate shall be submitted at least one year before the duration of the certificate is terminated. Renewing the certificate shall be on the same conditions and procedures of the initial registration certificate .

The Head of Registration Committee shall inform the applicant about the cancellation of the registration because of losing any of registration requirements.

The concerned party has the right to appeal within thirty days of sending the cancellation decision through the registered mail. The appeal should be investigated by a specialized technical committee formed by MOA . Recommendations of the said committee shall be final after being certified from the MOA. If the appeal is rejected the applicant should pay the full the variety testing expenditures, the same as in the initial variety testing.

- 17: -The plant breeder's rights for any individual breeder or firm whether such breeder was public or private shall be recognized this shall for any new initiated and registered variety . This new variety should not be marketed in the local market for more than one year for field crops, six years for fruit , woody ornamental trees and vines, for more than four years in any foreign country .

- A breeder's rights sub-committee from the qualified experienced members of the Variety Registration Committee shall be established , the said sub- committee shall be responsible the applications for granting the plant variety breeder's rights according to regulations and procedures established by the MOA .

-A Register for varieties which have been granted breeder's rights shall be established in the MOA which should include the names of the owners of the protected varieties. Listing of protected varieties in such register should be according to the regulation and rules established by MOA .

- A certificate granting the breeder's rights and signed by the Head of Variety Registration Committee shall be issued after certifying the sub-committee recommendation concerning granting the said right from the MOA , and after the payment of established fee which should not exceed five thousand pound.

- Granting the breeder's rights shall be published in two daily wide-spreaded newspaper for two times, the publishing costs are payed by the owner of the granted rights. The applicants of the rejected applications shall be informed through the registered mail. In case of rejection ,the applicant may appeal within fifteen days from the date of rejection

The MOA shall establish the rules and regulations concerning appeal procedures which should be final .

- The breeder's rights certificate may be nullified if the variety lost any the registration or granting the breeder's rights requirements .The MOA shall issue about conditions and regulations concerning appeals.

18: - The owner of breeder's right certificate shall have the right to exploit the variety which he has been granted, other parties should get a written note from the owner or his heritors to exploit the protected variety , such note should identify the nature and duration of exploitation which should not exceed fifteen years for periodical crops and twenty five years for fruit , woody ornamental trees and vines starting from the date of issuing the certificate.

- In case of delegation the breeder's rights , the owner of the right should notify the MOA , and such delegation should be certified from the official legal authority .

- The MOA may put the variety under compulsory licensing if the breeder who has been granted the right stopped to produce the variety by himself or by others despite the need to the variety on the national level , or he refused to delegate the right to other parties under adequate conditions . such compulsory licensing should not exceed four years.

- The compulsory licenced party shall respect the terms of such licensing , should not delegate such rights to a third party , and should compensate the original breeder. The compulsory licencing should be nullified after the prescribed period or when the delegation however was infringed.

19: Any infringement to any article in this section should be penalized with a minimum of 3 month and maximum of one year imprisonment and should be fined with not less than ten thousand pound and not more than fifty thousand pound or both . Seed of such variety should be forfeited . This shall not disrupt the right for fair compensations to the concerned party.

**Chapter 3**  
**Agricultural Crop Seeds**  
**Section 1**  
**Seed Production**

- 20: - Seed mean any part in the plant which is used in agricultural crop multiplication.  
- The MOA shall prescribe the agricultural crops these provisions shall apply for, and specifying the terminology included .
- 21: The MOA shall establish a committee named " the Agriculture Crop Seed Committee " . the decree of the MOA shall identify the terms of reference of such committee . The said committee shall be responsible for recommending the policy issues concerning seeds.
- 22: It is prohibited without proper licence to produce seed from any of the following seed classes:  
a- Foundation Seed Class  
b- Registered Sees Classes  
c- Certified Seed Classes

The MOA and according to recommendation from the Agricultural Crop Variety Seeds committee, shall prescribe the specifications of each class seed production requirements , establish fee structuring , licencee for seed production shall apply the recommended procedures included in such decree.

- 23: The Seed licenced producer shall:  
a - growing the seed crop in the contracted field and should maintain the identity of the seed crop.  
b - in case of replanting the crop , he should use seed from the same source for replanting , and deliver the agreed amount of seeds appear in the contract .
- 24: It is prohibited for anyone who have any raw cotton produced from any of the seed classes to mix such cotton with any other cotton unless it is exempted by the MOA for scientific or research purposes .  
The MOA shall prescribe the procedures for transporting and identifying the seed cottons.
- 25: - The MOA shall prescribe annually the zone of production of early seed classes of cotton, and shall prohibit growing cottons close to such zones ,or may allow growing cotton from the same variety and seed class .  
- It is prohibited to establish bee hives in areas prescribed in the MOA decree.  
- Whoever owns bee 'hives' or prevented from growing cotton in these buffer areas shall have the right in agreed compensation according to the MOA conditions and measures.

**Section 2**  
**Seed Classes Multiplication Areas (zones)**

- 26: Multiplication areas (zones) in this Act mean the areas prescribed by the MOA annually for multiplication of seed classes.
- 27: It is prohibited to grow a variety or seed class different than what have been prescribed by the MOA - The MOA may approve using the seed of the prescribed varieties after testing the seed for planting according to the prescribed seed testing rules .
- 28: Within such specific areas (zones) seed growers shall maintain the varietal purity and not to mix it with other seeds or varieties.
- 29: within such specific areas (zones) seed growers shall deliver seed amounts prescribed by the MOA according to the seed pieces.
- 30: The MOA shall prescribe procedures of transporting and handling raw cottons produced in the seed multiplication areas and their identification system.  
It is prohibited to mix cottons with different identifying marks.

**Section 3**  
**Roguing Offtypes**

- 31: Off - type mean all the plants which are different than the cultivated prescribed variety in the vegetative or reproductive characteristics.
- 32: A seed producer should rogue the off - types which appear in his crop in all the growth stages under the supervision of the specialized administration. The MOA shall identify the varieties and locations to enforce this article.  
However , the MOA may decree about the cost of roguing.
- 33: The MOA may decree in case of refusing the grower to rogue the off-types to clean his field through the administrative authority . The MOA may identify the produced crop and prohibit mixing such crop with other crops.

**Section 4**  
**Seed Processing and Cleaning Stations**

- 34:** It is prohibited without the proper licence to establish a crop seed processing station.  
The MOA shall decree about procedures and conditions to be met to obtain such licence and fee structure which should not exceed one thousand pound. Such licence should be null and void if licencing conditions have been infringed.
- 35:** The MOA shall decree about the specifications of the seed introduced for processing , seed treatments, procedures to be followed in processing, cleaning, packaging , dealing with processed seed and rejects. Such decree shall identify books and records which should be maintained by the owner and directors of such facilities.
- 36:** The legal inspectors shall have the right to inspect processing stations and premises, and take free samples according to conditions established by the MOA.

**Section 5**  
**Control of Extracting and Treatment of Cotton Seed**  
**( for Planting or Commercial Purposes )**

- 37:** It is prohibited to establish a ginning facility without obtaining the proper licence from the MOA according to conditions and rules as established by the MOA decree .The decree shall prescribe the fee structure which should not exceed one thousand pound . The MOA shall issue a stop order for any ginning facility infrining the established rules and conditions until the court decision.
- 38:** It is prohibited to own , manufacture, or trade ginning equipment without the proper licence as established by the MOA and Ministry of Industry. The infringed equipment should be forfeited.  
The forfeited cottons, seeds and rejects should be seized in the nearest licenced ginning facility and in the official or agreed priced.
- 39:** The MOA shall decree in the following issue :
- a - Identifying the equipment should be available in the cotton ginning facility and specifications of such equipment whether used in seed extracting , cleaning ,seed thermal or chemical treatment.
  - b - Identifying procedures and conditions to be met for cleaning ginning facilities after ginning season and before starting the next season .

- c - Identifying conditions to be met in the storage facilities of raw cottons, seeds for planting or for commercial purposes and licencing of such internal or external storage facilities .
  - d - Identifying procedures of receiving raw cottons , storage , processing and ginning .
  - e - Specifying books and records should be maintained by each ginning facility .
- 40: It is prohibited for any ginning facility to gin more than one variety per gin during ginning season . The MOA shall issue annually a decree specifying the cotton variety and source of cotton for each ginning facility .  
In case of small quantities of a variety , the MOA may allocate more than one variety for a gin after taking the required control measures to clean the equipment entirely befor starting ginning another variety . The MOA may allocate specific gining facilities partly or entirely for multiplication cotton from a specified variety .
- 41: The MOA shall issue on annual basis a decree specifying cotton quality categories and the source of raw cotton for each variety . also the arbitration procedures .
- 42: Ginning of raw cottons shall be stopped by March 15th in Upper Egypt and by March 31th in Lower Egypt . Multiplication cotton shall be ginned before the 31st of december every year.
- 43: Gins should use thermal treatment to treat all cotton seeds ,rejects and cleanings using the agreed equipment required to eradicate cotton boll worms. It is prohibited to move any raw cottons ,seeds,rejects out of any ginning facility without obtaining the proper permit from the MOA and according the established regulations by the MOA .
- 44: It is prohibited to establish any raw cotton processing or cleaning equipment without obtaining the proper licence from the MOA according to the conditions and rules established by the MOA and after the payment of the established fees which should not exceed one thousand pounds .Such licence shall be null and void in case of any infringement however the infringed equipment should be seized until the court decision .
- 45: The MOA shall issue about the formation of supervising committees which shall supervise ginning and seed treatment . The decree shall specify the duties, responsibilities , and procedures to be adopted by such committees.  
It is prohibited to operate any ginning facility in absence of such committee , which is authorised to take samples from gin-run , ginned cottons,or seed for testing according the established procedures established by the MOA.

- 46: The MOA shall authorize the supervising official employees to take the correction actions which may include :
- a - stop the operation of ginning , seed extracting ,processing or seed treatment equipment which have been established without obtaining the proper licence .
  - b - re - treat the cotton seed when there is an evidence of un - proper treatment according seed testing report.
  - c - treat and eliminate all rejects and cleanings when the gin administration refuses to take action concerning this .

### Section 6 Control of Cotton Seed Prepared for Commercial Purposes

- 47: Cotton seed should be considered commercial in the following cases :
- a - Seed produced from commercial cotton lots
  - b - Seed produced from multiplied cotton and rejected in seed testing .
  - c - Seed obtained from rejected and cotton cleanings .
  - d - Seed rejects produced during processing .
- 48: It is prohibited to operate cotton seed oil extracting mill without obtaining the proper licence from the MOA according to the conditions and rules decreed by the MOA . The decree shall establish licence fees which should not exceed five hundred pound , the decree shall identify the required books and records the mill administration should maintain.
- 49: When cotton seed oil mill receive seed lots to be processed , the administration should count the seed packages and weight them ,the number of packages and their weight should be listed in the mill records.It is prohibited to move any seeds from such mills without obtaining the proper licence from the MOA and according to conditions and rules established by the MOA.
- 50: It is prohibited to move commercial cotton seed from cotton gins without obtaining the proper licence from the MOA . The MOA may ban moving any commercial cotton seed from any variety from cotton gins to the oil mills for a certain period .
- 51: The MOA shall issue a decree about procedures to be adopted concerning handling and transporting from cotton gins to the oil mills and specify the permitted shortage rates for the handled seed.
- 52: It is prohibited to store cotton commercial seed except in the internal yards of cotton gins and oil mills which have been licenced from MOA . The seeds should be packed in specified containers .  
However ,it is allowed after obtaining the proper permit from the MOA to store the commercial cotton seed in bulk in the internal yards of oil mills if such seed was treated properly to loose viability or if the seed was stored in well closed stores provided with equipment for weighing, such equipment should be registered in the MOA

**Section 7**  
**Testing Seed Prepared for Planting**

- 53:** It is prohibited to sell ,offer for sale, trade , or import seed for trading unless it was registered and from varieties included in the registration system, or of recommended varieties for the others . and after testing and certification of such seed from the MOA .Such seed should be labelled and labels shall include the information established by the decree of the MOA .  
The Agricultural Crop Seed Committee may exempt the entry of new varieties from the specified amount rquired for registration or approving such new varieties and according to conditions and rules established by the Decree of the MOA .
- 54:** The MOA shall decree prescribing for each seed kind the following :
- a - Quality standards.
  - b - Seed sampling procedures and seed testing station .
  - c - Seed testing methods and rules.
  - d - Dates of beginning and terminating of testing periods .
  - e - Reporting period of testing results and reporting means .
  - f - Seed packaging and specification of seed packages ,weights , closing, numbering , marking , and certification procedures .
  - g - Specifications of certification labels and information provided on the labels.
  - h - The seed validity period .
  - I - Preparation of the carry - over seed for sampling and testing procedures and dates .
- 55:** The concerned party may request for arbitration within fifteen days of receiving seed testing report .  
Arbitration committee shall be of one whom be assigned by the MOA and two other experts , one representing the applicant and the second should be selected from the official list registered in MOA .  
The arbitration committee should meet in fifteen days and should decide within the period prescribed by the MOA . the decision of the committee shall be final.
- 56:** The MOA shall decree concerning the arbitrators fees which should paid by the applicant in case of rejecting the seed sample .
- 57:** If the seed testing indicatedes that the seeds are not valid for planting or validity period was terminated , it is prohibited to sell , offer for sale , or to trade such seed in seed marketing channels.

## Section 8 Seed Import and Export

- 58: It is prohibited to import , or export agricultural crop seed without obtaining the proper licence according to the agreement of the Agricultural Crop Seed Committee and according to rules and conditions established by the MOA which prescribe the exemptions and licencing fees which should not exceed one thousandth of the value of each shipment and as minimum as one hundred pound . It is prohibited to clear imported seed shipments before sampling , testing and approving such seed and respecting the rules of the official Quarantine Service .
- 59: It is prohibited to move gin - run cotton , or cotton seeds out of the country without the proper Presidential Decree .

## Section 9 Seed Trade

- 60: Seed trade should be in a shop or a store which should comply to conditions and specification required to maintain seed quality .and after obtaining the proper licence from the MOA .  
The MOA shall prescribe the rules for licencing, validity period , renewing the said licence , cancelling conditions ,and licencing fee structure which should not exceed five hundred pound per licence .  
It is prohibited to trade any other materials other than licenced seed .  
This article does not apply to the land holders if such holders provide their tenants with seeds .
- 61: Advertisements concerning seeds should comply with the specifications established by the MOA .
- 62: The legal inspectors shall take free samples according to the MOA decree which allow to enter the seed trade places and shops which contain seeds , but not to the residence places .  
In case of suspicion , such inspectors may seize any seed . shipment after taking samples for testing and the MOA shall decide about conditions and procedures required for seizure and clearance of such seed shipments .

**Section 10**  
**Penalties**

- 63: Any violation of any of the provisions of the articles numbers 22,23,29, or 32 or regulations promulgated thereunder should be liable to be fined with minimum of one hundred pounds and as maximum as five hundred pounds .  
Any violation of the provisions of the articles numbers 24,25,27,28 or 30 or regulations promulgated thereunder should be fined with minimum of two hundred pounds and as maximum as one thousand pound per feddan or part of in case of unlawful action .  
In all conditions , it is prohibited to stop the court decision .The concerned Agricultural Department shall take appropriate action before the court action and infringed seed should be seized and forfeited .
- 64: Any infringement to the provisions of the article numbers 34 or 35 or regulations promulgated thereunder should be fined with minimum of five hundred pounds and as maximum as two thousand pounds . The court decision should not be stopped .The infringed seed should be forfeited and the infringed station should be closed .
- 65: Any violation of any of the provisions of the articles numbers 37,38,39 or 44 or the regulations promulgated thereunder should be liable to be penalised with a term of imprisonment not less than one year and a fine of minimum of two thousand pounds and a maximum of ten thousand pounds or one of them . It is prohibited to stop executing this penalty any how.The cotton gin may be closed for the infringement of any of provisions of articles numbers 37 and 39a for year .  
If the infringement has been repeated the cotton gin should closed for at least three years .  
In all conditions the equipment , their parts , and transportation means should be seized and forfeited to the MOA even if the court decision was negative .
- 66: Any violation of any of the provisions of the articles numbers 48 , 49 , or 50 or the regulations promulgated thereunder should be liable to be penalised with a fine not less than five hundred pounds and not exceeding two thousand pounds . It is prohibited to stop the penalty .  
Any violation to the provisions of article number 48 , the extracting mill or units may be closed for one year , if the violation is repeated then these units should be stopped for not less than three years . The cotton seed should be seized and forfeited in case of violation of any of articles 49 or 50 .  
In case of violation of any of the provision of articles 51 or 52 or regulations promulgated thereunder shall be liable to be penalised with a fine not less than three hundred pounds per ardeb or fraction of .

- 67: Any violation of any of the provisions of the articles 53 , 54 , or 57 or the regulations promulgated thereunder should be liable to be penalized with a fine not less than three hundred pounds and not exceeding five hundred pound for each ardeb or fraction of .
- 68: Any violation of any of the provisions of the article 58 or the regulations promulgated thereunder should be liable to be penalised with a fine not less than five hundred pounds and not exceeding two thousand pounds for each violated seed package . It is prohibited stop excuting the court decision and violated seed should be seized and forfeited to the MOA .
- 69: Any violation of any of the provisions of the article 59 or any try to violate it should be liable to be penalised with a term of imprisonment not less than one year and a fine not less than five hundred pounds and not exceeding ten thousand pounds . The court decision should not be stopped . the violated cottons and seeds should be seized and forfeited . The penalty should be doubled if a public employee was participating in this unlawful action he (she) should be fired .
- 70: Any violation of any of the provisions of the articles 60 or 61 or the regulations promulgated thereunder should be liable to a fine not less than five thousand pound and not exceeding ten thousand pounds . It is prohibited to stop excuting the court decision . The seed shop or store should be closed for one year , in case of repeating such violation the seed shop should be closed permanently and seed seized should be forfeited to the MOA .

*1-List of the Registered Field Crops  
Varieties in Egypt - 1 / 2 / 1998*

| <i>Crop</i>               |           | <i>Variety Name</i>              | <i>Applicant</i> | <i>No. and Date of Reg.</i> |
|---------------------------|-----------|----------------------------------|------------------|-----------------------------|
| <i>1- Alfalfa</i>         |           | Nubaria 1                        | ARC              | 1192 - 1995                 |
|                           |           | Sewa 1                           | " " "            | 1192 - 1995                 |
|                           |           | Giza 1                           | " " "            | 1192 - 1995                 |
|                           |           | Ismailia 1                       | " " "            | 1192 - 1995                 |
|                           |           | Baladi 1                         | " " "            | 964 - 1996                  |
| <i>2 - Barely</i>         | 6 - rows  | Giza 125                         | ARC              | 390 - 1995                  |
|                           |           | Giza 126                         | " " "            | 390 - 1995                  |
|                           | 2 - rows  | Giza 127                         | " " "            | 390 - 1995                  |
|                           |           | Giza 128                         | " " "            | 390 - 1995                  |
| <i>3 - Berseem Clover</i> |           | Giza 6                           | ARC              | 936 - 1988                  |
|                           |           | Giza 10                          | " " "            | 936 - 1988                  |
|                           |           | Gemmeiza 1                       | " " "            | 1192 - 1995                 |
|                           |           | Serwe                            | " " "            | 1192 - 1995                 |
|                           |           | Sakha 4                          | " " "            | 1192 - 1995                 |
|                           |           | Hilali                           | " " "            | 1192 - 1995                 |
|                           |           | Baladi 1                         | " " "            | 964 - 1996                  |
| <i>4 - Chickpea</i>       |           | Giza 195                         | ARC              | 8 - 1995                    |
|                           |           | Giza 531                         | " " "            | 8 - 1995                    |
| <i>5 - Cotton</i>         |           | Giza 45 (Extra Long - Extra Fine | ARC              | 37 - 1996                   |
|                           |           | Giza 70 (Isis) Extra Long        | " " "            | 37 - 1996                   |
|                           |           | Giza 76 " "                      | " " "            | 37 - 1996                   |
|                           |           | Giza 77 " "                      | " " "            | 37 - 1996                   |
|                           |           | Giza 84 " "                      | " " "            | 37 - 1996                   |
|                           |           | Giz 75(Lotus) Long Staple        | " " "            | 37 - 1996                   |
|                           |           | Giza 81 "                        | " " "            | 37 - 1996                   |
|                           |           | Mobarak 93 (Giza 85) "           | " " "            | 37 - 1996                   |
|                           |           | Giza 86 "                        | " " "            | 37 - 1996                   |
|                           |           | Dandara "                        | " " "            | 37 - 1996                   |
|                           |           | Giza 80 "                        | " " "            | 37 - 1996                   |
|                           | Giza 83 " | " " "                            | 37 - 1996        |                             |
| <i>6 - Faba Bean</i>      |           | Giza 674                         | ARC              | 1192 - 1995                 |
|                           |           | Giza 429                         | " " "            | 1192 - 1995                 |
|                           |           | Giza 643                         | " " "            | 1192 - 1995                 |
|                           |           | Giza 714                         | " " "            | 1192 - 1995                 |
|                           |           | Giza 716                         | " " "            | 1192 - 1995                 |
|                           |           | Giza 717                         | " " "            | 1192 - 1995                 |
|                           |           | Giza 461                         | " " "            | 1192 - 1995                 |
|                           |           | Yousef El Seddik                 | HSU              | 964 - 1996                  |
|                           |           | Giza 2 improved                  | ARC              | 544 - 1997                  |
|                           |           | Giza 3 improved                  | " " "            | 544 - 1997                  |
| <i>7 - Flax - Linseed</i> |           | Giza 7                           | ARC              | 1700 - 1990                 |
|                           |           | Giza 8                           | " " "            | 1700 - 1990                 |

| <i>Crop</i>                  | <i>Variety Name</i> | <i>Applicant</i>   | <i>No. and Date of Reg.</i> |
|------------------------------|---------------------|--------------------|-----------------------------|
| <b>8 - Lentils</b>           | Giza 370            | ARC                | 1192 - 1995                 |
| <b>9 - Maize (Corn)</b>      | Sids 7              | ARC                | 1700 - 1990                 |
| <b>White Lines</b>           | Sids 34             | " "                | 1700 - 1990                 |
|                              | Sids 35             | " "                | 1700 - 1990                 |
|                              | Sids 58             | " "                | 1700 - 1990                 |
|                              | Sids 62             | " "                | 1700 - 1990                 |
|                              | Sids 63             | " "                | 1700 - 1990                 |
|                              | Giza 602            | " "                | 1533 - 1993                 |
|                              | Giza 603            | " "                | 1533 - 1993                 |
|                              | Giza 628            | " "                | 1533 - 1993                 |
|                              | Giza 628 Sterile    | " "                | 1533 - 1993                 |
| <b>Yellow Lines</b>          | Giza 614            | ARC                | 1533 - 1993                 |
|                              | Giza 630            | " "                | 1533 - 1993                 |
|                              | Giza 630 Sterile    | " "                | 1533 - 1993                 |
|                              | Giza 638            | " "                | 1533 - 1993                 |
|                              | Giza 638 Sterile    | " "                | 1533 - 1993                 |
|                              | Giza 642            | " "                | 1533 - 1993                 |
|                              | Giza 642 Sterile    | " "                | 1533 - 1993                 |
|                              | Giza 647            | " "                | 1533 - 1993                 |
| <b>White Single Crosses</b>  | Single Cross 10     | ARC                | 457 - 1991                  |
|                              | Single Cross 9      | " "                | 649 - 1992                  |
|                              | Single Cross 103    | " "                | 649 - 1992                  |
|                              | Giza 122            | " "                | 1533 - 1993                 |
|                              | Giza 123            | " "                | 1533 - 1993                 |
|                              | Watania 4           | National Seed Co.  | 749 - 1994                  |
|                              | Giza 124            | ARC                | 390 - 1995                  |
|                              | Giza 129            | " "                | 390 - 1995                  |
|                              | Giza 156            | " "                | 390 - 1995                  |
|                              | Giza 161            | " "                | 390 - 1995                  |
|                              | Egaseed 13 Bashair  | Egyptian Seed Co.  | 878 - 1995                  |
| <b>Yellow Single Crosses</b> | Giza 151            | ARC                | 1533 - 1993                 |
|                              | Giza 152            | " "                | 1533 - 1993                 |
|                              | Giza 153            | " "                | 1533 - 1993                 |
|                              | Giza 154            | " "                | 1533 - 1993                 |
|                              | Giza 155            | " "                | 1533 - 1993                 |
|                              | Pioneer 3062        | Misr Pioneer S. Co | 829 - 1996                  |
| <b>Double Crosses</b>        | Hyb. 73120 - Fattah | Misr Pioneer S. Co | 936 - 1988                  |
|                              | Double Hybrid 204   | ARC                | 1189 - 1989                 |
|                              | " " " " 215         | " "                | 1189 - 1989                 |
|                              | " " " " 217         | " "                | 1127 - 1992                 |
|                              | " " DK 2771-Gawaher | Dekalb             | 1127 - 1992                 |
|                              | Taba                | Pioneer Overseas   | 457 - 1991                  |
| <b>Yellow Double Crosses</b> | Hediah DK 2770      | Deckalb EINEil     | 1620 - 1993                 |
|                              | Amoun - Hyb 73115   | Misr Pioneer S. Co | 936 - 1988                  |

| <i>Crop</i>                       | <i>Variety Name</i>          | <i>Applicant</i>   | <i>No. and Date of Reg.</i> |
|-----------------------------------|------------------------------|--------------------|-----------------------------|
| <i>White Three-way Crosses</i>    | Hyb. 310                     | ARC                | 1189 - 1989                 |
|                                   | Neima - DK 2147              | Dekalb             | 1127 - 1992                 |
|                                   | Hyb. 320                     | ARC                | 1127 - 1992                 |
|                                   | Hyb. 321                     | " "                | 1533 - 1993                 |
|                                   | Hyb. 322                     | " "                | 1533 - 1993                 |
|                                   | Watania 1                    | Misr Pioneer S. Co | 749 - 1994                  |
|                                   | Pioneer 3057                 | Pioneer            | 390 - 1995                  |
|                                   | Nefertiti 3                  | Egyptian Agr. Co.  | 802 - 1996                  |
|                                   | Pioneer 3052                 | Misr Pioneer S. Co | 829 - 1996                  |
|                                   | Giza 323                     | ARC                | 376 - 1997                  |
|                                   | Giza 324                     | " "                | 376 - 1997                  |
|                                   | Baraka                       | Egyptian Agr. Co.  | 1466 - 1997                 |
| <i>Yellow Three-way Crosses</i>   | Giza 351                     | ARC                | 1533 - 1993                 |
|                                   | Giza 352                     | " "                | 1533 - 1993                 |
|                                   | Sultan                       | Agroseed           | 37 - 1994                   |
| <i>10 - Millet</i>                | Shandawil 1<br>Fodder Millet | ARC                | 1522 - 1994                 |
| <i>11 - Rice</i>                  | Giza 181 - Long Grain        | ARC                | 936 - 1988                  |
|                                   | Giza 175                     | " "                | 457 - 1991                  |
|                                   | Giza 176                     | " "                | 457 - 1991                  |
|                                   | Giza 177                     | " "                | 8 - 1995                    |
|                                   | Giza 178                     | " "                | 8 - 1995                    |
|                                   | Sakha 101                    | " "                | 376 - 1997                  |
|                                   | Sakha 102                    | " "                | 376 - 1997                  |
|                                   | Yasmin Masry                 | " "                | 376 - 1997                  |
| <i>12 - Sorghum</i>               | Hyb. - 407                   | ARC                | 936 - 1988                  |
|                                   | SX 17 Fodder Hyb. Sorghum    | Dekalb             | 1523 - 1994                 |
|                                   | Pioneer 8319                 | Pioneer Overseas   | 1127 - 1992                 |
|                                   | Hyb. - 858F                  | Misr Pioneer S. Co | 323 - 1995                  |
|                                   | PGS - 320 (Meina)            | Misr Hytech        | 1360 - 1995                 |
|                                   | Horus 17                     | Misr Hytech        | 964 - 1996                  |
|                                   | Hybrid 1                     | ARC                | 964 - 1996                  |
|                                   | Hybrid 2                     | " "                | 964 - 1996                  |
|                                   | Hybrid 15                    | " "                | 964 - 1996                  |
|                                   | Dorado                       | " "                | 964 - 1996                  |
|                                   | Giza 113                     | " "                | 964 - 1996                  |
|                                   | Speed Feed                   | Danton Misr        | 125 - 1998                  |
| <i>13 - Sorghum X Sudan Grass</i> | Hyb. 107                     | ARC                | 936 - 1988                  |
|                                   | Hyb. 402                     | " "                | 936 - 1988                  |
|                                   | Hyb. 102                     | " "                | 936 - 1988                  |
|                                   | Mabrouk 79                   | Misr Hytech        | 964 - 1996                  |
|                                   | Baladi 1                     | ARC                | 964 - 1996                  |
|                                   | Hyb. SX 121 - Extra - Feed   | Dekalb             | 1471 - 1996                 |
| <i>14 - Soybean</i>               | Giza 21                      | ARC                | 1192 - 1995                 |
|                                   | Giza 82                      | " "                | 1192 - 1995                 |
|                                   | Giza 35                      | " "                | 544 - 1997                  |

| <i>Crop</i>                             | <i>Variety Name</i>   | <i>Applicant</i>   | <i>No. and Date of Reg.</i> |
|---|-----------------------|--------------------|-----------------------------|
| <i>15 - Sunflower</i>                   | Hyb. G101             | Deckalb El Neil    | 1620 - 1993                 |
|   | Hyb. 6480             | Misr Pioneer S. Co | 749 - 1994                  |
|   | Vidok - 3 way hyb.    | Mesadore           | 37 - 1996                   |
|   | Euroflor - 3 way hyb. | Rastica            | 37 - 1994                   |
|   | Pioneer Hyb. 6661     | Misr Pioneer S. Co | 1466 - 1997                 |
| <i>16 - Wheat</i><br><i>Bread Wheat</i> | Giza 162              | ARC                | 936 - 1988                  |
|   | Giza 163              | " "                | 936 - 1988                  |
|   | Giza 164              | " "                | 936 - 1988                  |
|   | Sakha 92              | " "                | 936 - 1988                  |
|   | Gemmeiza 2            | " "                | 457 - 1991                  |
|   | Giza 165              | " "                | 457 - 1991                  |
|   | Sahil 1               | ARC                | 1522 - 1994                 |
|   | Sids 1                | " "                | 1522 - 1994                 |
|   | Sids 2                | " "                | 1522 - 1994                 |
|   | Sids 3                | " "                | 1522 - 1994                 |
|   | Sids 4                | " "                | 1192 - 1995                 |
|   | Sids 5                | " "                | 1192 - 1995                 |
|   | Sids 6                | " "                | 1192 - 1995                 |
|   | Sids 7                | " "                | 1192 - 1995                 |
|   | Sids 8                | " "                | 1192 - 1995                 |
|   | Sids 9                | " "                | 1192 - 1995                 |
| <i>Durum Wheat</i>                      | Beni - Suif 1         | ARC                | 936 - 1988                  |
|   | Sohag 2               | " "                | 936 - 1988                  |
|   | Sohag 3               | " "                | 457 - 1991                  |
| <i>17 - Sugar Cane</i>                  | Giza 37               | ARC                | 964 - 1996                  |
|   | Giza 47               | ARC                | 964 - 1996                  |
|   | Giza 96               | ARC                | 964 - 1996                  |
|   | Giza 368              | ARC                | 964 - 1996                  |
|   | C 9                   | ARC                | 964 - 1996                  |
|   | Giza 68               | ARC                | 125 - 1998                  |
|   | Giza 393              | ARC                | 125 - 1998                  |
| <i>18 - Mung bean</i>                   | Kawmi 1               | NRC                | 376 - 1997                  |

## 2-List of the Registered Vegetable and Herb.Varieties in Egypt - 1 / 2 / 1998

| <i>Crop</i>                          | Variety Name        | Applicant                     | No. and Date<br>of Reg. |            |
|--------------------------------------|---------------------|-------------------------------|-------------------------|------------|
| <i>1 - Bean</i>                      | Giza 6              | ARC                           | 1991                    |            |
|                                      | Morgan ( Imported ) | Clause Semences               | 1991                    |            |
|                                      | Savan               | Egyptian Agen. Shop           | 377 - 1997              |            |
|                                      | Tasman              | " "                           | 377 - 1997              |            |
|                                      | Newton              | " "                           | 377 - 1997              |            |
|                                      | Morgan              | Agr.Material Technical Office | 377 - 1997              |            |
|                                      | Narena              | Khaled kazaz - Royal Sluis    | 377 - 1997              |            |
|                                      | Paulista            | SuizCanal Comm. Dev. Co.      | 1482 - 1997             |            |
|                                      | Xera                | " " " " " "                   | 1482 - 1997             |            |
|                                      | Tema                | Agr. Materials Co.            | 1482 - 1997             |            |
|                                      | Sirbo               |                               | 1482 - 1997             |            |
|                                      | Novax               |                               | 1482 - 1997             |            |
|                                      | Hilda               |                               | 1482 - 1997             |            |
|                                      | <i>2 - Cucumber</i> | Hyb. 723                      | ARC                     | 388 - 1995 |
| Hyb. 734                             |                     | " "                           | 388 - 1995              |            |
| Hyb. 765                             |                     | " "                           | 388 - 1995              |            |
| Hyb. 768                             |                     | " "                           | 388 - 1995              |            |
| Hyb. 757                             |                     | " "                           | 388 - 1995              |            |
| Hyb. 796                             |                     | " "                           | 388 - 1995              |            |
| Hyb.Thamin                           |                     | Sam Trade Co.                 | 377 - 1997              |            |
| Hyb. Babelion                        |                     | " "                           | 377 - 1997              |            |
| Hyb. Raya                            |                     | Agr. Material Co              | 377 - 1997              |            |
| Hyb. Rector                          |                     | Centic Co.                    | 377 - 1997              |            |
| Hyb. Super Dalilah                   |                     | Technogreen Co.               | 377 - 1997              |            |
| Nouvo Hyb. F1 RS 205                 |                     | Egyptian Centre               | 809 - 1997              |            |
| Hyb. Brimo                           |                     | Sam - Trade                   | 809 - 1997              |            |
| Hyb. Basendra                        |                     | El Sham Agr. Centre           | 809 - 1997              |            |
| Hyb. Beto - Star                     |                     | Samtrade                      | 809 - 1997              |            |
| Hyb. Tremb                           |                     | Agr. Mat. Co.                 | 809 - 1997              |            |
| Hyb. Razina                          |                     | " " "                         | 809 - 1997              |            |
| Alba Sendra Hyb.                     |                     | El Sham Agr. Center           | 1482 - 1997             |            |
| Betostar Hyb.                        |                     | Samtrade Co.                  | 1482 - 1997             |            |
| Magdi Hyb. F1 346                    |                     | Tadrus Makkar Co.             | 1482 - 1997             |            |
| Concueror Hyb. F1                    |                     | All Agencies Applied          | 1482 - 1997             |            |
| Madina Hyb. F1                       |                     | " " "                         | 1482 - 1997             |            |
| Beta Alpha Hyb.                      |                     | " " "                         | 1482 - 1997             |            |
| Celebrity Hyb. F1                    |                     | " " "                         | 1482 - 1997             |            |
| Beta Alpha Hyb.<br>( Female Flower ) |                     | " " "                         | 1482 - 1997             |            |
| Aseel Hyb.                           |                     | " " "                         | 1482 - 1997             |            |
| Hyb. 9                               |                     | ARC                           | 1482 - 1997             |            |
| Hyb. 6                               |                     | " "                           | 1482 - 1997             |            |
| Sweet Crunch Hyb. F1                 |                     | All Agencies Applied          | 1482 - 1997             |            |
| Amira II Hyb. F1                     |                     | " " "                         | 1482 - 1997             |            |
| Catia ( Tunnels )                    |                     |                               | 1482 - 1997             |            |
| <i>3 - Garlic</i>                    |                     | Sids 40                       | ARC                     | 37 - 1996  |

| <i>Crop</i>             | <i>Variety Name</i> | <i>Applicant</i>            | <i>No. and Date of Reg.</i> |
|-------------------------|---------------------|-----------------------------|-----------------------------|
| <i>5 - Sweet Potato</i> | Kafr El Ziat 925    | ARC                         | 1703 - 1993                 |
|                         | Mabrouka            | ** **                       | 1482 - 1997                 |
|                         | Anise               | ** **                       | 1482 - 1997                 |
|                         | A 139               | ** **                       | 1482 - 1997                 |
| <i>6 - Artichoke</i>    | Herios              |                             | 809 - 1997                  |
|                         | Imperial Star       |                             | 809 - 1997                  |
| <i>7 - Asparagus</i>    | Mary Washington     |                             | 1482 - 1997                 |
|                         | Bosy 157            |                             | 1482 - 1997                 |
| <i>8 - Strawberry</i>   | Doglas              | All Agencies Applied        | 1482 - 1997                 |
|                         | Bakharo             | ** ** *                     | 1482 - 1997                 |
|                         | Shendire            | ** ** *                     | 1482 - 1997                 |
|                         | Selvea              | ** ** *                     | 1482 - 1997                 |
|                         | Sieko               | ** ** *                     | 1482 - 1997                 |
| <i>9 - Potato</i>       | Turbo               | El Dommiaty Imp. & Exp. Co. | 1482 - 1997                 |
|                         | Saturna             | ** ** ** ** **              | 1482 - 1997                 |
|                         | Olivea              | ** ** ** **                 | 1482 - 1997                 |
|                         | Cultra              | ** ** ** **                 | 1482 - 1997                 |
|                         | Lady Rosetta        | ** ** ** **                 | 1482 - 1997                 |
|                         | Accent              | ** ** ** **                 | 1482 - 1997                 |
|                         | Meracle             | ** ** ** **                 | 1482 - 1997                 |
|                         | Karesma             | ** ** ** **                 | 1482 - 1997                 |
|                         | Arenda              | Maba Co.                    | 1482 - 1997                 |
|                         | Santa               | ** ** **                    | 1482 - 1997                 |
|                         | Marfona             | ** ** **                    | 1482 - 1997                 |
|                         | Hertha              | ** ** **                    | 1482 - 1997                 |
|                         | Yasmina             | ** ** **                    | 1482 - 1997                 |
|                         | Atlas               | ** ** **                    | 1482 - 1997                 |
|                         | Hermes              | ** ** **                    | 1482 - 1997                 |
|                         | Seranda             | ** ** **                    | 1482 - 1997                 |
|                         | Bolesta             | ** ** **                    | 1482 - 1997                 |
|                         | Ditta               | ** ** **                    | 1482 - 1997                 |
|                         | Charlotte           | ** ** **                    | 1482 - 1997                 |
|                         | Aziza               | ** ** **                    | 1482 - 1997                 |
|                         | Ambo                | Shiety Co.                  | 1482 - 1997                 |
|                         | Avondale            | ** ** **                    | 1482 - 1997                 |
|                         | Slaney              | ** ** **                    | 1482 - 1997                 |
|                         | Monalisa            | ** ** **                    | 1482 - 1997                 |
|                         | Van Gogh            | ** ** **                    | 1482 - 1997                 |
|                         | Lira                | ** ** **                    | 1482 - 1997                 |
|                         | Berber              | ** ** **                    | 1482 - 1997                 |
|                         | Santana             | Farm Frites Co.             | 1482 - 1997                 |
|                         | Velecena            | ** ** **                    | 1482 - 1997                 |
|                         | Remarka             | ** ** **                    | 1482 - 1997                 |
|                         | Liseta              | Besharko Co.                | 1482 - 1997                 |
|                         | Vital               | ** ** **                    | 1482 - 1997                 |
|                         | Nietta              | Eissa Comm. Co.             | 1482 - 1997                 |
| Maradona                | Sentek Co.          | 1482 - 1997                 |                             |

| <i>Crop</i>         | <i>Variety Name</i>       | <i>Applicant</i>       | <i>No. and Date of Reg.</i> |
|---------------------|---------------------------|------------------------|-----------------------------|
| <i>10 - Tomato</i>  | Tomato 61                 | ARC - Nubaseed Co.     | 1700 - 1991                 |
|                     | Tomato 63                 | " " " " " "            | 1700 - 1991                 |
|                     | Hyb. F1 Madere            | Sam Trade Co.          | 637 - 1991                  |
|                     | Nematode 1400             | " " " " " "            | 1703 - 1993                 |
|                     | Giza 80                   | ARC                    | 49 - 1995                   |
|                     | Dokki 1                   | Protected Agr. Proj.   | 49 - 1995                   |
|                     | Dokki 2                   | " " " " " "            | 49 - 1995                   |
|                     | Ain Shams 1               | " " " " " "            | 49 - 1995                   |
|                     | Ain Shams 2               | " " " " " "            | 49 - 1995                   |
|                     | Castle Rock (Imported)    | Sun Seed Co.           | 1991                        |
|                     | Hyb. Dora                 | Mahmoud El Sheity Co.  | 377 - 1997                  |
|                     | Hyb. TY 70/70             | Star Seed Co.          | 377 - 1997                  |
|                     | Hyb. TY 70/84             | " " "                  | 377 - 1997                  |
|                     | Hyb. Oriet                | " " "                  | 377 - 1997                  |
|                     | Hyb. Vacolta 38 (Yasmin ) | Technogreen Agr. Co.   | 377 - 1997                  |
|                     | Hyb. Betopride 2          | Sam Trade Co.          | 377 - 1997                  |
|                     | Strain B                  | Walid Agr. Co.         | 377 - 1997                  |
|                     | Hyb. El Wadi              | Samtrade               | 809 - 1997                  |
|                     | Hyb. Oreet - Green Houses | Technogreen            | 809 - 1997                  |
|                     | Hyb. Guardian             | Agr. Mat. Co.          | 809 - 1997                  |
|                     | Alwasifi 119084           | Sam Trade Co.          | 1482 - 1997                 |
|                     | Saria Hyb F1              | Sam Trade Co.          | 1482 - 1997                 |
|                     | R 190                     | Technogreen Agr. Co.   | 1482 - 1997                 |
|                     | Castle Rock               | Agr. Material Co.      | 1482 - 1997                 |
|                     | Super Strain B            | Agr. Material Co.      | 1482 - 1997                 |
|                     | Peto 86                   | All Agencies Applied   | 1482 - 1997                 |
|                     | UC 97 - 3                 | " " " " " "            | 1482 - 1997                 |
|                     | Alex 63 F1                | " " " " " "            | 1482 - 1997                 |
|                     | Alex 13 F1                | " " " " " "            | 1482 - 1997                 |
|                     | Jacal F1                  | " " " " " "            | 1482 - 1997                 |
|                     | Fiona F1                  | " " " " " "            | 1482 - 1997                 |
|                     | Typhpne F1                | " " " " " "            | 1482 - 1997                 |
|                     | Flora Dade                | " " " " " "            | 1482 - 1997                 |
|                     | Super Marmand             | " " " " " "            | 1482 - 1997                 |
| Brigade F1          | " " " " " "               | 1482 - 1997            |                             |
| Muril (Tunnels )    | " " " " " "               | 1482 - 1997            |                             |
| Carmello (Tunnels ) | " " " " " "               | 1482 - 1997            |                             |
| Comet ( Tunnels )   | " " " " " "               | 1482 - 1997            |                             |
| <i>11 - Squash</i>  | Hyb. Abodas               | Agr. Material Co.      | 377 - 1997                  |
|                     | Arika Hyb. F1             | Tadros Makkar Co.      | 1482 - 1997                 |
|                     | Top Kapi                  | Sam Trade Co.          | 1482 - 1997                 |
|                     | Eskandarani               | ARC                    | 1482 - 1997                 |
| <i>12 - Pea</i>     | Master B                  | ARC                    | 377 - 1997                  |
|                     | Giant Sugar               | Egyptian Agencies Shop | 1482 - 1997                 |
| <i>13- Cowpea</i>   | Dokki 331                 | ARC                    | 377 - 1997                  |

| <i>Crop</i>                              | <i>Variety Name</i>  | <i>Applicant</i>             | <i>No. and Date of Reg.</i> |
|--|----------------------|------------------------------|-----------------------------|
| <i>14 - Water melon</i>                  | Hyb. Aswan           | Sackata Co.                  | 809 - 1997                  |
|  | Hyb. delzora         | Centeck Co.                  | 809 - 1997                  |
|  | P . S. Nagra         | Sam Trade Co.                | 1482 - 1997                 |
|  | Giza 1               | ARC                          | 1482 - 1997                 |
|  | Dixiele              | All Agencies Applied         | 1482 - 1997                 |
|  | Charleston Gray 133  | " " " " " "                  | 1482 - 1997                 |
|  | Peacock. WM 60       | " " " " " "                  | 1482 - 1997                 |
|  | Giza 21              | " " " " " "                  | 1482 - 1997                 |
|  | Crimson Seet         | ARC                          | 1482 - 1997                 |
| <i>15 - Sweet melon<br/>(Cantaloupe)</i> | Shahd El Dokki       | ARC                          | 809 - 1997                  |
|  | Ananas El Dokki      | " "                          | 809 - 1997                  |
|  | Galia Hyb. F1        | " "                          | 1482 - 1997                 |
|  | Galicum Hyb.         | Technogreen Agr. Project Co. | 1482 - 1997                 |
|  | Chilton Hyb.         | All Agencies Applied         | 1482 - 1997                 |
|  | Gold Coast           | " " " " " "                  | 1482 - 1997                 |
|  | Honeydew Orange Hyb. | " " " " " "                  | 1482 - 1997                 |
|  | Galia Hyb.           | Star Seeds Co.               | 1466 - 1997                 |
| <i>16 - Radish<br/>(White - Red)</i>     | Kermer               | ARC                          | 809 - 1997                  |
|  | Train                | " "                          | 809 - 1997                  |
|  | Surtus               | " "                          | 1482 - 1997                 |
| <i>17 - Cabbage</i>                      | Baladi Improved      | ARC                          | 1482 - 1997                 |
|  | Brunswick            | All Agencies Applied         | 1482 - 1997                 |
| <i>18 - Cawiflower</i>                   | SnowBall             | ARC                          | 1482 - 1997                 |
| <i>19 - Carrot</i>                       | Chantenay Redrcord   | All Agencies Applied         | 1482 - 1997                 |
|  | Nantes Fancy         | " " " " " "                  | 1482 - 1997                 |
| <i>20 - Turnip</i>                       | ERAQI                | ARC                          | 1482 - 1997                 |
| <i>21 - Table Beat</i>                   | Crosphy Egyptian     | All Agencies Applied         | 1482 - 1997                 |
|  | Deitroit Superene    | " " " " " "                  | 1482 - 1997                 |
| <i>22 - Spinach</i>                      | El - Dokki           | ARC                          | 1482 - 1997                 |
| <i>23 - Eggplant</i>                     | Black beauty         | Walid Agr. Suplies Co.       | 809 - 1997                  |
|  | Melida               |                              | 1482 - 1997                 |
|  | Rima                 |                              | 1482 - 1997                 |
|  | Onita F1             | All Agencies Applied         | 1482 - 1997                 |
|  | Fabina F1            | " " " " " "                  | 1482 - 1997                 |
|  | Ovana F1             | " " " " " "                  | 1482 - 1997                 |
|  | Soma F1              | " " " " " "                  | 1482 - 1997                 |
|  | Long Purple          | " " " " " "                  | 1482 - 1997                 |
|  | Early Long Purple    | " " " " " "                  | 1482 - 1997                 |

| <i>Crop</i>                          | <i>Variety Name</i>       | <i>Applicant</i>       | <i>No. and Date of Reg.</i> |
|--------------------------------------|---------------------------|------------------------|-----------------------------|
| <i>24 - Pepper<br/>(Sweet - Hot)</i> | California Wonder         | Walid Agr. Suplies Co. | 809 - 1997                  |
|                                      | Chayene Long Slim         | " " " " " "            | 809 - 1997                  |
|                                      | Canny                     | " " " " " "            | 1482 - 1997                 |
|                                      | Long Slim 300 TMR         | " " " " " "            | 1482 - 1997                 |
|                                      | California Wander 300 TMR | All Agencies Applied   | 1482 - 1997                 |
|                                      | Maor                      | " " " " " "            | 1482 - 1997                 |
|                                      | Spain Resistent Giant     | " " " " " "            | 1482 - 1997                 |
|                                      | Mariconi                  | " " " " " "            | 1482 - 1997                 |
|                                      | Gedeon F1                 | " " " " " "            | 1482 - 1997                 |
|                                      | Lumayo F1                 | " " " " " "            | 1482 - 1997                 |
|                                      | Brayo F1                  | " " " " " "            | 1482 - 1997                 |
|                                      | Anahiem (m)               | " " " " " "            | 1482 - 1997                 |
|                                      | EL Paso                   | " " " " " "            | 1482 - 1997                 |
|                                      | Jalpeno                   | " " " " " "            | 1482 - 1997                 |
| Orli Improved                        | " " " " " "               | 1482 - 1997            |                             |
| <i>25 - Okra</i>                     | Golden Cost               | ARC                    | 1482 - 1997                 |
| <i>26 - Lettuce</i>                  | Dark Green                | All Agencies Applied   | 1482 - 1997                 |
|                                      | Paris Island              | " " " " " "            | 1482 - 1997                 |
|                                      | Great Lakes               | " " " " " "            | 1482 - 1997                 |
|                                      | Annie xp 5089             | " " " " " "            | 1482 - 1997                 |
|                                      | Indors                    | " " " " " "            | 1482 - 1997                 |
|                                      | HMX 9561                  | " " " " " "            | 1482 - 1997                 |

**THE POLICY  
OF COTTON SEED PRODUCTION &  
SEED CERTIFICATION IN EGYPT**

The total task of supplying cotton planting seed to farmers may be partitioned into separate functions. These functions are: plant breeding, maintenance, seed multiplication, and sales and distribution.

First, the variety must be bred and developed from basic germ plasm sources by some methods until the breeder had succeeded to release a new variety. The second function is that of increase or multiplication of the initial release, and is concerned with building up the volume of seed in accordance with seed certification standards. A third function involves selling and distributing the seed to the growers.

Another most important task of the breeder is to make available periodically breeder seed in sufficient quantity to keep the increase and distribution program of the organization functioning. The period of years between the time a variety is released and the time it disappears from the market can be thought of as the life span of the variety. Varieties are released, serve for a time, and are eventually replaced by new ones for one reason or another. If varieties are replaced because superior ones are developed, that is progress. However, if varieties are replaced because a variety is not as good toward the end of its life span as it was in its prime, that is a source of deterioration.

We should focus attention on the problem of varietal maintenance throughout the life span of cotton varieties. The problem to be considered is the breeder's responsibility to keep a continuing supply of breeder seed available throughout the life span of the variety.

Cotton breeders in Egypt are successfully maintaining varieties. The breeding effort in this category is confined to making secondary selections in the established varietal breeding material to perpetuate and improve it without type change. This will be accomplished by type selection which is constantly needed to avoid degeneration and deterioration. The variety should be maintained to keep its original release.

Deep attentions should be given to the causes of varietal deterioration or running out. Mechanical mixtures with inferior stocks can occur through volunteer plants, cotton harvesting operations, at the gin, and in seed storage and seed handling arrangements. Natural crossing can occur if the seed fields are not well isolated. Deleterious mutations may arise and mutations of minor affect may accumulate, and by the process of recombination produce inferior segregates. Genetic variation exists in the original stock, and gene frequency may shift in an undesirable way unless selection pressure is applied to keep the variety true to type.

A disease may become more virulent and widespread. Insects may become more severe in their attack. Cultural practices and harvest methods may change or be incorrectly used. At any rate, varieties can be eliminated not by any genetic change in the variety but by change in the situation where it is grown

In Egypt, the Ministry of Agriculture (MOA) was formed in 1913, but the First World War interrupted the early years of its work. It was then in the early 1920's and coinciding with the establishment of the Cotton Research Board (CRB) when the real work of the MOA began in its present shape and scope. The central direction given to work on cotton has been remarkably successful. During this long period of time since the initiation of botanical and cotton breeding by the MOA, the system of maintaining cotton varieties has been built up by various changes and is still changed from time to time when this appears profitable. The present system is felt to give entirely satisfactory results with the resources available.

The earliest methods of cotton maintenance in Egypt were described by Dudgeon (1918) who gave details of the selection methods used in the State Domains to maintain the quality of Sakel Variety. Dudgeon stated that the State Domains in 1912 planted the best available lots of Sakel seed, but great variation was noticed in the growth of plants. Off-type plants were rogued and at picking time, only plants representing Sakel were harvested. Selection accompanied with rouging continued from 1912 onwards which ultimately resulted in the purification of Sakel.

The use of a target diagram plotting the measurements of single plants for any two pairs of characters as a test for purity of cotton variety was first suggested by Balls (1912). The circular nature and close grouping of the target diagram indicated the purity of the strain. For

maintenance of varietal purity, types within the general mean of the bulk, but with greater purity were selected. New selections, which may ultimately replace the original type, can be chosen from the stocks in which means for any character significantly deviated from the general mean of the type, in a desirable direction.

This pure seed build up the nucleus from which all the commercial crop of that variety is ultimately derived. Every 3-4 years, a fresh renewal nucleus is expanded from another pedigree plant. Next generation, this nucleus is propagated to build up the breeders seed then the foundation, registered and certified in other three successive generations.

Breeders seed is the most pure stock of all types of seed, then come foundation and registered, while the certified seed is the lowest in purity. However, roguing in the cotton fields during the growth period and selection of the best fields before picking are practiced to eliminate off-types and realize the purity of seed.

These four types of seed propagation: breeders, foundation, registered and certified are grown in circles where the breeders seed in the center and the others are grown outwards to secure the purest seed from contamination. However, a variety should be isolated from other varieties not less than one kilometer apart. If not, all the propagation located within this distance is discarded to avoid contamination.

Finally, the Cotton Research Institute (CRI) starts to grow breeders seed in a larger area to cover the total area with pure seed. The propagation of seed of one strain should not remain in cultivation more than four years to avoid segregation, contamination and to maintain purity.

However, CRI succeeded to maintain cotton varieties to stay in cultivation long periods. Giza 45 was introduced in 1957 and still the famous Egyptian cotton variety in the world market, Giza 70 about 25 years, Giza 75 about 23 years, Giza 76 & G.77 about 18 years. During the coming year, CRI is looking forward to establish a new program for multiplication of seed under privatization and liberalization.

DR. M. EL. MOGHAZY  
F. Director, CRI&ARC  
(Cotton Consultant)

23/2/1998

LEVELS OF PERFORMANCE

MAINTENANCE&IMPROVEMENT

MAINTENANCE ONLY

DETERIORATION

5

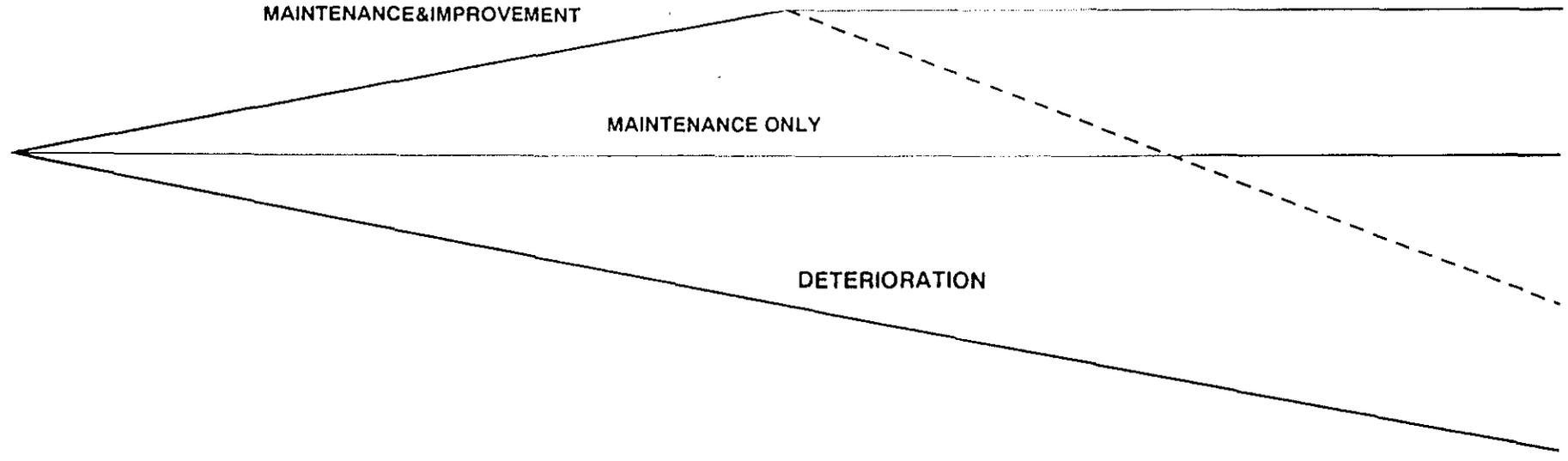
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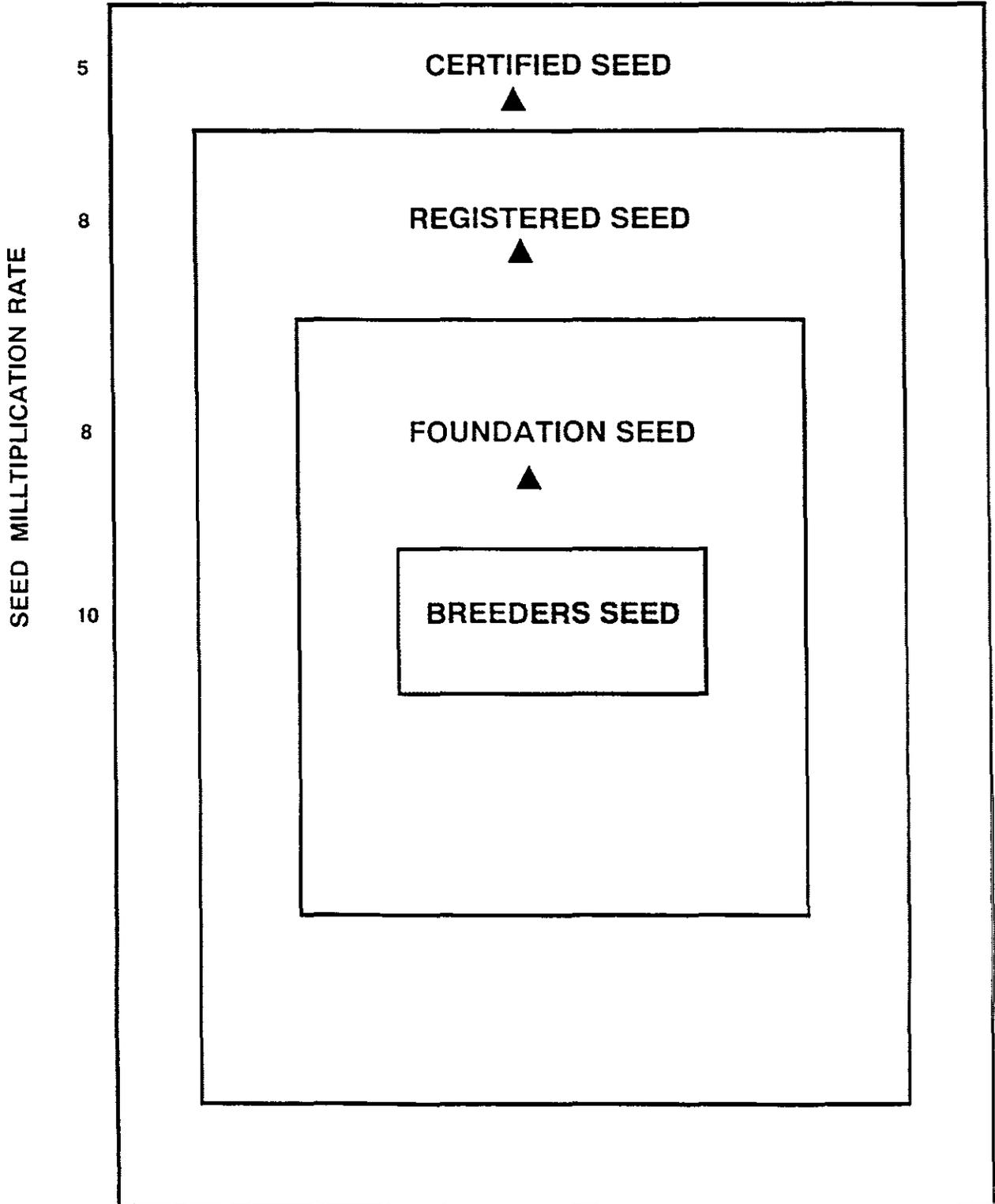
YEARS

BIOLOGICAL GENERATIONS



SS

## SEED MULTIPLICATION



**N. B.** THE AREAS MENTIONED ABOVE ON THE BASIS THAT THE TOTAL COTTON AREA IN ONE MILLION FEDDANS.

LEVELS OF PERFORMANCE

MAINTENANCE&IMPROVEMENT

MAINTENANCE ONLY

DETERIORATION

5

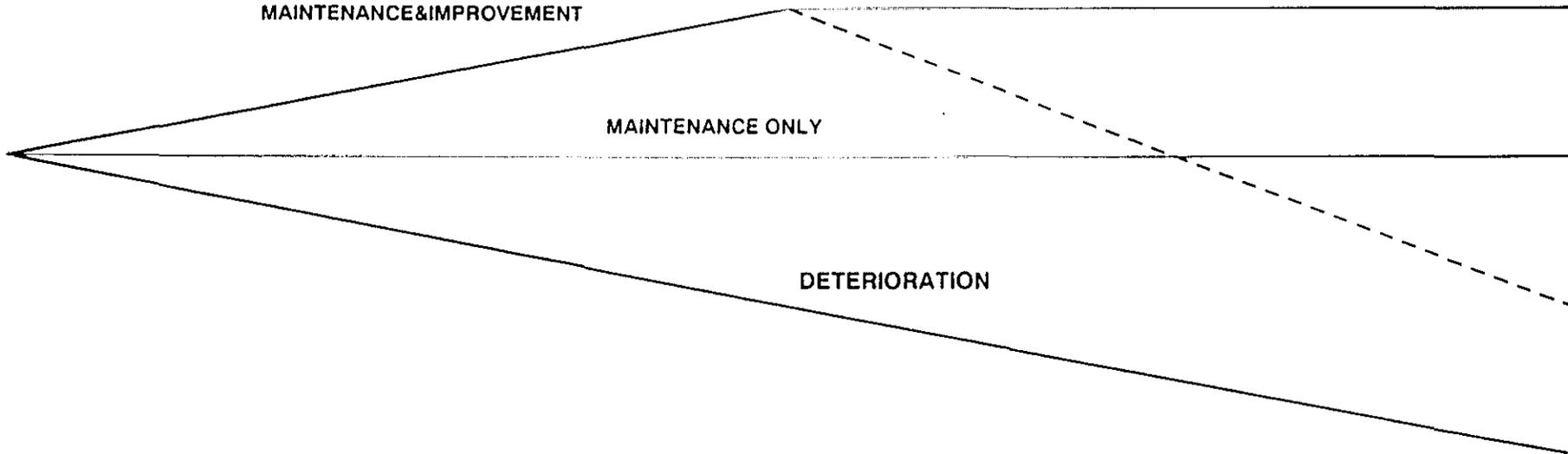
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15

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YEARS

BIOLOGICAL GENERATIONS



6/2

*Organization Chart  
of  
The Ministry of Agriculture and Land Reclamation*

Minister

Main Sectors

|   |                                  |                         |                              |                               |                         |   |
|---|----------------------------------|-------------------------|------------------------------|-------------------------------|-------------------------|---|
| <i>Financial Affairs and Administration Development</i> | <i>Animal Wealth Development</i> | <i>Land Reclamation</i> | <i>Agricultural Services</i> | <i>Agricultural Extension</i> | <i>Economic Affairs</i> | <i>Organization and Minister's Office Affairs</i> |
|---|----------------------------------|-------------------------|------------------------------|-------------------------------|-------------------------|---|

Central Administration

|  |  |   |  |   |   |  |
|--|--|---|--|---|---|--|
| 1-Financial Affairs<br><br>2- Administration Development | 1-Animal Production<br><br>2-Agricultural Industrialization and Inputs | 1- Horizontal Expansion<br><br>2- Settling<br><br>3- New Land Development | 1- Agricultural Cooperation<br><br>2- Engineering Affairs<br><br>3- Land Protection<br><br>4- Seed Production<br><br>5- Seed Testing and Certification<br><br>6- Agricultural Quarantine | 1- Extension and Environment<br><br>2- Horticulture and Agricultural Crops<br><br>3- Soil and Water<br><br>4- Afforestation and Nurseries<br><br>5- Pest Control and Plant Protection | 1- Agricultural Economic<br><br>2- Agricultural Planning<br><br>3- International Agricultural Cooperation<br><br>4- Data Processing | 1- Minister's Office Affairs<br><br>2- Information, Documentation, and Decision Support<br><br>3- Training<br><br>4- Agricultural Directorates Affairs |
|--|--|---|--|---|---|--|

*Organization Chart  
of  
The Central Administration for Seed Testing and Certification (CASC)*

Head of CASC

-Arbitration Directorate

-Financial and Administration Directorate

-Head of CASC Technical Office Directorate

General Directorates

| <i>Projects and Development</i>                | <i>Seed Testing and Certification<br/>in Governorates</i>                                   | <i>Seed control and Certificatio</i>                         | <i>Gins and Mills</i>             | <i>Field Inspection</i>                                     |
|--|---|--|-----------------------------------|---|
| Directorates                                   |   |  |                                   |   |
| 1-Projects and Investments                     | 1-Central Seed Testing Lab.   | 1- Market Control  | 1- Gin Supervision                | 1- Field Crop Inspection                                    |
| 2-Statistics                                   | 2-Checking and Rechecking   | 2- Field and Vegetable Crop<br>Seed Certification            | 2- Mill Supervision               | 2- Vegetable Field Inspection                               |
| 3-Extension and Training                       | 3-Seed Health Testing   | 3-Seed Import and Export<br>Control                          | 3- Treatment Equipment<br>Testing | 3- Nurseries and Vegetatively<br>propagated Crop Inspection |
| 4-Studies                                      | 4- Seed Testing Station<br>Follow -up   | 4-Seedling and Vegetatively<br>propagated Crop Certification | 4- Data Processing                | 4-Control Plot Testing                                      |
| 5-Licencing                                    | 5- Seed Testing and Certification<br>Directorate in the Governorates<br>(22 Governorates) : |  |                                   |   |
| 6-Breeder's Rights and<br>variety Registration | -Field Inspection Section<br>-Seed Certification Section<br>-Extension and Training Section |  |                                   |   |
| 7-variety Testing                              | -Seed Testing Station<br>( 10 Governorates )  |  |                                   |   |