Review and assess reports and organize seed production of agricultural crops.

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Contents

Introduction

Seed is the most important input for accelerating agricultural growth. Therefore, seed production of high-yielding varieties is important to make available quality seed for increasing agricultural production. The main objective of seed production is rapid multiplication of the newly released or commercially available varieties by maintaining the varietal identity and genetic purity that represent the plant population created through breeding and characterized by certain heritable morphological, biological and agronomic traits. During seed multiplication the varietal purity gradually deteriorate as a result of mechanical contamination, cross-pollination, segregation, mutation, etc. It is necessary to periodically renew from a breeder seed, which is a basis for certified seed production. As well as developing new varieties, plant breeders maintain the genetic purity of existing lines and pre-commercial seed supplies year by year. This is essential to maintain the quality and performance of each variety. For cereals, variety maintenance begins after a few years of selection trials, when all that exists of what may become a widely grown variety is a single row containing around 100 plants. The breeder bulks up supplies of the purified lines of breeder's seed into pre-basic and basic seed. Breeders continually maintain breeder's seed for the process of multiplication to ensure the variety's performance and quality year after year.

Uzbekistan has different soil and climatic conditions for agricultural production hence the country needs not only high-yielding varieties, but also those that are resistance to severe environmental factors such as soil salinity, drought, high summer and low winter temperatures, lack of irrigation water, etc. Before releasing a variety, it is necessary to study the associated technology for its cultivation and seed multiplication.

Preserving the identity of individual varieties has become more important; both to conserve quality characteristics and to meet consumer demands for assurances about the integrity and traceability of their food. Ministry of Agriculture and Water Resources is taking a leading role and responsibility in organizing certified seed production at national level. Public sector is responsible for cleaning certified seed of wheat and cotton and the private sector the other agricultural crops and hybrid seed including such as corn, sorghum, sunflower, soybean, mungbean and etc. Many private seed companies established good linkages with foreign seed enterprises to import good quality seeds of corn, sunflower, soybean, beans, sugar beet etc.

The Government of Uzbekistan established new seed center for controlling seed production of cereals under the Ministry of Agriculture and Water Resources in 2013. The newly established cereals seed production center is controlling whole seed production all cereal crops in public sector. Seed producer farms producing certified seeds under the patronage of the cereals seed production center of the Ministry of Agriculture and Water Recourses.

Seed being the basis for agricultural growth and development guaranteeing farmers continuous access to quality seed can only be achieved through the establishment of viable seed production system that ensures multiplication and distribution of seeds of high yielding varieties. At present, the country does not have well organized seed production system for cereals (except wheat) and legume crops. Under CRP 1.1. in Aral Sea Action site, it was planned to organize seed production of different cereals and legumes and to establish seed association in Qorao'zak district of Karakalpakistan.

Seed sector status

Cotton and Wheat seed distribution organized under State monopoly via Uzdonmakhsulot and UzPakhtasanoat Companies. The Companies acts as a trade intermediary of the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan, but for all other agricultural crops legume, oil, and vegetable crops, there are different private seed companies, which are responsible for processing and marketing of seeds in the country.

The Ministry of Finance determines the seed price of cotton and wheat. For private companies price is determined based on supply and demand particularly for vegetable seeds where there is better competition.

There are additional costs in producing good quality seed which increases cost of production and increase the price. To obtain some profit, producers certainly have to set prices higher than the grain price, considering the price of seed from the informal sector. However, in self-pollinated crops, farmers may choose to source their own seed for the next planting season making it difficult to estimate the actual seed demand each year both by public and private sector enterprises. Seed prices also seem to be a problem for private sector to produce seed of self-pollinated crops such as barley, rice, soybean and mung bean. However, seed growers and public elite seed farms are more profitable compared to other farmers because there is a premium price of 300 % and 250%, respectively for breeder and foundation seed.

Both public and private bank provides credit with low interest rates to farmers. Credit is available for contract growers to encourage contract seed production and for establishing seed drying and cleaning facilities. However, credit is not available for purchase of certified seed because the Government is already subsidizing the production of seed.

A number of actions were undertaken with the help of international organizations (WB, ADB, FAO, ICARDA and CIMMYT) which showed keen interest and aware of the need of establishing a national seed production and seed marketing agency. A World Bank project on improved seed production system is introduced a new approach in the sector. After the project, Uzbekistan has improved its standards in variety development and seed production. The Asian Development Bank project on “Grain Productivity Improvement” is assisted the wheat sector to improve farm productivity and incomes, mitigate the adverse impacts of food shortage and loss of employment in the rural areas, and facilitate a phased transition of the agricultural sector towards the market system.

Organization seed production of cereals and leguminous in Karakalpakstan

Introduction

A Breeding program of agricultural crops directly connected with the organization of seed production. Developed countries have rich experiences on seed production. Seed production is

an independent largest sector in agriculture which is based on commercial and is concentrated in the most favorable agro-climatic zones. Seed production structure has a clear scheme between many several divisions on agriculture. This provides rapid multiplication of the best varieties, high quality seeds. Taking into account above mentioned the objective of this study was identified. The objective of this study is to organize seed production of salt and drought resistant crops in Karakalpakstan.

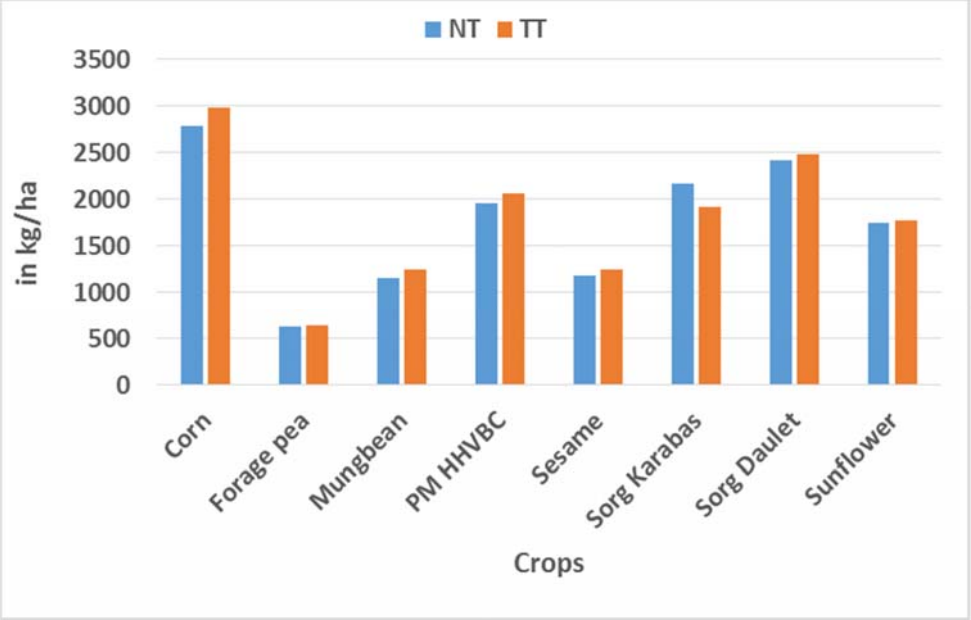

Figure 1: Grain yield different agricultural crops

Treatments

The demonstration site for seed production was organized in the project site in Shakhap farm, Qorao'zak district. There were seven salt and drought resistant crops including two sorghum varieties Karabas and Daulet. These crops as follows:

- Sorghum (Karabas)
- Corn
- Sunflower
- Pearl millet
- Sorghum (Daulet)
- Sesame
- Mungbean
- Forage pea

Seed production

In Qorao'zak site, Sorghum (Karabas), Corn, Sunflower, Pearl millet, Sorghum (Daulet), Sesame, Mungbean, Forage pea seed is produced during May-October period as main crop. The chief seed

production area is in Shakhap farm in Qorao'zak district of Karakalpakistan. Congenial climate, pest-free environment, assured irrigation and the desire to maximize economic returns have all contributed to successful seed production in Shakhap farm.

Grain yields of different drought and salt resistant crops ranging from 0.5 to 3.0 t ha-1 under supplementary irrigation (Figure 1). Forage pea, Sesame and Mungbean seed production is small, compared to Corn, Sorghum, Pearl millet, Sunflower. Farmers undertake Sorghum (Karabas), Corn, Sunflower, Pearl millet, Sorghum (Daulet), Sesame, Mungbean, Forage pea seed production with the express understanding that it is good quality seed.

The activity produced two tons seed of improved varieties of above mentioned crops. The produced seeds will be distributed to small farmers for seed multiplication for out-scaling in 2016.

Seed Growers Network

It is important to help establishing Seed Growers Network to reproduce seeds of different agricultural crops and provide seeds for resource poor farmers to increase crop production. The SGN is a self-managing group of farmers working together to produce and maintain their seed production network, to ensure fair and equitable water distribution, and to increase crop yields. Establishment of SGN encourages greater participation of farmers in management decisions; ensures greater access to quality seed among members of SGN and lead to increase gross agricultural production.

Under the sub activity "Organization seed production of cereals and leguminous in Karakalpakstan" CRP 1.1. DS in Aral Site a new SGN named as "Qorako'l"was established to increase seed production. The project implementing team believed that newly created SGN is the basis for increasing agricultural production and effectively managing seed distribution of forage crops on irrigated lands. The project team applied a comprehensive approach to increasing efficiencies along the entire crop production and processing chain towards improving the productivity and profit margins of project demonstration pilot site farmers as members of SGN.

The success of seed grower's network lies in the ability of the seed growers to market their seed. We also will use field days as a way of advertising the availability of good quality seed to member farmers of the established network. For crops such as corn, sunflower, pearl millet, millet, sesame and field pea, which are not under State quota farmers can produce seed according to local demand and the price is dependent on market forces. Farmers would like to produce seeds of crops not included in quota system or look for seed from reliable sources, especially the public sector producers.

The research was able to address farmers' access to quality seed of new varieties through seed network partnership. This seed network will facilitate the development of new plant varieties and the delivery of high quality seed of those varieties to farmers to increase crop productivity, food security and economic development.

Annex

Sorghum

Pearl millet

Sunflower

Mungbean

Sesame

Corn