LECTURE TWO

Specific Benefits of seed programme / industry.

1. Increase in total yield as a result of introduction and distribution of superior variety and hybrid.

2. Increase in yield as a result of quality seed with better germination and more productive plots.

3. Increase in recoverable yield: result from greater varieties purity, more uniform maturation etc.

4. More efficient utilization of fertilizer, irrigation & pesticides because of greater uniformity of emergence and growth, more vigorous plots better stands etc.

5. Reduction in seed rate from 1ton 2ton.

6. Higher quality- less contamination with other varieties, more uniform maturation and less in mature or withered seed.

7. Less infestation of the land with weed seeds.

8. Less disease in soil and insect problem due to minimization of plots infected with seed borne disease in seed production.

9. More rapid efficient periodic replacement of variety with newer and better ones.

10. Facilitate introduction of new crops in Agriculture of a nation.

11. Contribution to Agric development of a nation.

12. Contributing to nation economy- GDP.

13. Employment opportunity etc.

14. Quality control in the country (standardization) e.g. quarantine.

The above are by no mean exhaustive of the benefits of seed programme or industry.

REQUIREMENTS FOR SEED PRODUCTION

The factors that determine seed production location are:

- Climatic
- Agronomic or soil
- Biological
- Social economic factors

A. **Two important phases are recognized in plot development**

-The vegetative: stems, branches, leave etc.

- The Reproductive: inflorescence, flower and seed.

The two are somehow antagonistic.

The purpose of producing seed is equally important. Some crops are grown for fruit or seed, cereals or pulses while others for their vegetative parts, grasses for leaves, jute for stems, cassava etc

To decide on the location of seed production enterprise, a number of factors have to be considered. These are climatic factor, Agronomy, biological, social and economics factor.

Climatic factors: light, temp, rain (water supply), wind.

Light: three aspects of light:- duration, intensity and colour.

Day length: flowering is influenced by day length, if flowers are kept in wrong day length, they remain vegetative, no fruit formation. The amount of cloud cover throughout the year is very important.

Note:- Sunshine provides suitable conditions for pollination, drying of seed and ripening of fruit seeds.

Temperature: some crops species have a critical temp. to switch from vegetative to reproductive phase. The chilling in winter makes some crops to produce flowers in summer.

Temperature influences i) sowing time especially in the soil.

ii) flowering, pollination, seed setting.

Warm weather favours all these activities at appropriate time.

Rainfall : Water is necessary by a seed crop during the period of vegetative phase followed by a relatively dry period for reproductive phase. In a dry area, irrigation is the supplements for rain. The advice is that we can guide against excessive and inadequate supply. Note that flowering, pollination and seed setting are helped by moderate humidity but drier atmospheric conditionings are for subsequent ripening.

Wind: strong winds especially. during reproductive phase can cause severe crop losses through lodging, sheltering and shedding of fruit or seeds. Is aggravated during heavy rain which soaks ripening ears in maize and increase the tendency to fall over.

B. Agronomic factors or soil factor

Soil should be fertile, neither acid nor alkaline deep and well drained to avoid water logging but retentive enough not to dry out easily. It should also be free from soil borne pests and diseases. Eelworms and for leguminous crop, it should have correct strains of rhizobium for nodulation.

C. Biological factors

Consideration must be given to the population of insect for pollination e.g bees. Avoid areas where plant diseases, insect pest and depredation of wild animals and birds are prevalent.

D. Social and Economic factors

Regions, Districts with large farms are preferred. The farms must be free of tenure (ownership dispute) and should have equipment necessary for all operations e.g from sowing to harvest.

Note:- borrowed equipment are liable to be contaminated with seed of other cultivars or spp.

Farms should be accessible to extension officer, certification officer, transportation of seeds, please note, above all, the seed agronomists or farmers must be intelligent, energetic, meticulous etc.

POLLINATION

Pollination is an important agronomic practice in seed production or multiplication. Pollination is the transfer of pollen grains from anther to stigma. In most species, there are several hundred times as many pollen grains as there are female ovules to be fertilized. An ovary may contain one or many ovules. Maize and rice contain ovules per ovary, Soyabean, cowpea, tomato, water melon have more than one ovules in each ovary.

Modes of pollination varies among crop species. Some are self pollinated and others are cross pollinated. Wind and insects e,g bees, butterflies etc are the chief pollinating agents of cross pollinating types. When pollen grains pollinate the same flower or another flower on the same plant, the result is self pollination but when they pollinate flower on another plant, the result is self pollination but when they pollinate flower on another plant, the result is cross-pollination.

The pollination methods are determined by the floral biology and flower capability.

In pollination of F1 hybrid seeds:- In many cases, controlled pollination is necessary especially in cross- pollinated spp. Detasselling and male sterility are used in maize hybrid seed production. Hand pollination is also used to produce smaller breeder seeds. In some crop species e.g onion, cotton, etc honey bee-hives are built in close proximity to seed crop to enhance insect pollination.

The practical implication of cross pollinations is that the seed multiplication field must be adequately isolated from contaminants if pure seed is to be production. In self pollinated crops, the extent of natural crossing is so low that no protective measure or long isolation distance is required, except of minimal distance to avoid physical mixing of seeds.

Table1: Categorization of common crop plants as result of pollination methods

Self pollinated	Cross pollinated	Often crops pollinated	Vegetatively propagated
Rice, wheat, barley, Pea, cowpea, groundnut tomato, soybeans	Maize, millet, okra, alfalfa, cabbage, cauliflower, amaranths, onion, carrot, radish celosia, watermelon	Sorghum, cotton, jute, redgram,, egg plant, plant, pepper	Potato, sweet potato, yam, cassava, sugar cane, cocoyam.