Requirements for Entrepreneurship in Seed Production

1. Planning the Enterprise

Planning is the first step of any entrepreneurship which should have be done to avoid any kind of further risks in the business. The effective planning makes the entrepreneurship healthier. In seed production of vegetables, we have to take care of seed demand, selection of crops adequate to the climate prevailing in that area, selection of the land and seed processing.

a) Seed demand

An entrepreneur should keep pace with seed demand both in present and future in terms of quantity and quality, price, place and time.

Total land available for the vegetable cultivation, quality of seed, replacement period and seed potential of the main crops cultivated in that area should be considered.

The packaging size, price, previous year's crop yield, natural disasters took in the place, season of the crop, crop rotation methods and marketing also should be considered in the planning of seed demand.

b) Selection of the crop

The crop should be selected according to the seed demand, climate, soil, irrigation facilities and availability of other inputs in that area including labour. The market of the crop should also ensure.

c) Selection of the variety/hybrid

Each locality may have growing peculiar variety which is their preference to grow. That point should be also taken into consideration while selecting the type of variety of vegetable which we are growing. For example, in north Kerala regions they are mainly cultivating bitter gourd variety Preethi due to its texture,

size and colour. On the same time mid and southern areas of Kerala prefer variety Maya which differ in these qualities.

The variety selected should be well adapted to that locality to easy growing of the crop. Seed production of hybrids are more profitable as it can fetch higher price rather than improved local varieties.

Source of Seed: Seed production and marketing is one among the largest industries in the agricultural input production segment. Broadly, it involves various institutions and organizations. The list includes Government institutions, Public sector organizations, Research and academic laboratories and Institutions and Private Sector. Apart from the Government sector, nearly, 150 large private seed companies nationwide are involved in seed production. Some of the active and major Govt. agencies are:

a) Ministry of Agriculture and the Department of Seed Certification
b) Indian Council of Agricultural Research (ICAR)
c) State Agricultural Universities (SAU)
d) National Seeds Corporation (NSC)
e) State Farm Corporation of India (SFCI)
f) 15 State Seed Corporations (SSC)
g) 22 State Seed Certification centres
h) 104 notified Seed Testing Laboratories

The seed enterprise through research recommends the variety and the class of seed to be multiplied. Seed must be obtained from an authentic source. The contracting seed enterprise will supply the registered seed grower with higher class seed than the class the farmer has been contracted to grow.

2. Production Technologies of Crops

The entrepreneur must have thorough knowledge on the production technologies and aspects of the selected crop. He needs to manage the cultivation practices according to the input availability. Entrepreneur must be well aware about the agroclimatic requirements of the crop. He should also have to learn and practice recommended isolation distances, planting ratios, flowering and pollination, pollination control measures in the crop, maturity index and harvesting methods.

a) Climate and Location

The site selected should have optimum temperature, day length availability, sunlight, water, relative humidity and other resources to ensure proper plant growth. Also, apart from the agroclimatic requirements location should also good as it should ensure availability of labour, markets and easy transporting and storage facilities. We have to select appropriate land for the seed production purpose. Type of the land depends on the crops which we are selecting to rise. For example, rice may need wetlands and in case of pulses or vegetables the land type may vary. Generally, farmers go for land with medium to deep and well drained light soils. Sandy soils and waterlogged soils are mostly avoided due to the chance of crop loss more compared to well drained medium textured soils. Actually, this type of the soil affects crop growth and thereby reduce the seed yields. Ensure, that the land is comparatively free from soil-borne diseases, insect pests, and noxious weed seeds. Finally, check the irrigation facility and isolation requirement. For Khariff crops such as brinjal it should be planted in premonsoon times. Winter sowing is more suitable for seed production. The land should be prepared with a required tilth, to reduce weed growth, hold required amount of water content which needs to the plant to grow, easy germination of the seed and also for easy root penetration of the crop. Weeds are effectively could be controlled by the first land preparation operation itself.

b) Isolation Distance

Space isolation is a basic criterion that must not be compromised in case of seed production especially in the case of vegetable crops. Basically, space isolation is the minimum distance you must keep between the seed plot and neighbouring plot of the same crop thereby prevents natural cross-pollination and physical contamination. When you grow the seed in isolation, it ensures that no cross-pollination takes place. Broadly, you can isolate the seed plot in two ways. One is time isolation and another is space isolation. Temporal isolation is planting crops in different times or seasons. In case of space isolation, we need to maintain the distance which contaminate seed quality due to pollination. The isolation distance of the crops may vary with the type of pollination occurring in the crop. In cross pollinating crops isolation distance is comparatively higher in case of hybrid seed production as the chances of entomophily is higher. For different seed crops, there are specific isolation distances. And you need to maintain prescribed isolation distance on all sides of the seed crop. The field should be well isolated in accordance with rice seed isolation and previous cropping requirements. Generally, as a self-pollinating crop isolation is normally not very serious except for inadvertent admixtures. A minimum of about 10meters from another rice field is acceptable. Rice seed should follow a rice crop, only after a minimum of 2 years duration.

Isolation distances of few crops have listed below:

No.	Crop	Pollination	Type of seed and isolation distance	
			Foundation seed (m)	Certified seed (m)
1	Tomato	Self-pollination	50	25
2	Brinjal	Self-pollination	200	100

3	Chilli	Self-pollination	400	200
4	Okra	Often cross pollinated	400	200
5	Ash gourd	Cross pollinated	1000	500
6	Bitter gourd	Cross pollinated	1000	500
7	Cucumber	Cross pollinated	1000	500
8	Pumpkin	Cross pollinated	1000	500
9	Snake gourd	Cross pollinated	1000	500
10	Watermelon	Cross pollinated	1000	500
11	Amaranthus	Self-pollinating	400	200
12	Cabbage	Cross pollinated	1600	1000
13	Cauliflower	Cross pollinated	1600	1000
14	Onion	Cross pollinated	1000	500
15	Garlic	Cross pollinated	5	5
16	Carrot	Cross pollinated	1000	800
17	Cowpea	Self-pollinated	10	5
18	Dolichos bean	Self-pollinated	10	5
19	Radish	Cross pollinated	1600	1000
20	Bottle gourd	Cross pollinated	1000	500

The isolation distance is usually low in self-pollinated crops (3, 5 or 10 m) and high in crosspollinated crops (more than 100 m). It is more in hybrid seed production than in varietals seed production. In case of breeder, foundation seed production, the isolation distance maintained is higher, whereas in certified seed production, it is lesser.

Physical Barrier

To prevent entry of pollen from nearby fields the field boundary should have tall plants which are densely planted to prevent the entry of foreign pollen. Maize is usually used for this purpose.

Field inspection

As per provisions of seed certification, seed certification agencies and field inspectors inspect the seed plots offered for certifications to find factors which may contaminate or deteriorate the seed quality. The seed producing farmer should maintain all the regulations insisted by the field inspector. Actually, you need to maintain prescribed genetic and physical purity of seed plot. Otherwise, carelessness on part of the seed producer may result in rejection of seed plot from certification. Inspection should be carried out in various stages of crop growth. In case of vegetables one must visit the plot in sowing, vegetative growth stage, flowering and harvesting stage. The numbers of visits may vary according to the seed which may be hybrid or varieties. Also, according to the crop's method of pollination, the visiting times may vary. Generally, field inspections are carried out by State Seed Certification Agencies (SSCA).

Seed plot registration

The seeds are certified according to the quality of the seed. Seeds may be a breeder seed in case it is monitored by a breeder who developing a new variety from a nucleus seed with 100% genetic purity. Farmers are usually cultivating foundation seeds or certified seeds which can be available in white and blue tags from certification agency. Truthfully labelled seeds can also be cultivated by the farmers, but its certification is more liberal compared to certified seeds. The good quality seeds must have to get certified by the authorities for ensuring the quality and for When you offer the seed plot for certification, you will need to register the said plot for certification with District Seed Certification Officer and for this, you have to submit an application along with agreement bond on stamp paper of Rs.100/ duly notarised or registered with Taluk magistrate.

Nursery bed preparation and sowing

Due to the high cost of breeder/foundation seed, it is essential to raise the nursery bed in a well-managed field, if healthy and robust seedlings are to be obtained. Optimum seed rate should be applied and every seed must be utilized by adopting good nursery management practices. A sparse well-managed nursery gives healthy seedlings for the main field. For vegetables we can use protrays to rise seedlings. The mixture can be used as potting mixture which contains equal amount of sand, coir pith and dried cowdung. Soilless media is more preferred as it can prevent losses from damping off of seedlings which is usually soil borne disease. Nursery raised seedlings show good vigour and they can ensure more germination than direct sowing seedlings.

Seedlings can also sell as part of the enterprise. In case of tomato, brinjal, chilli etc. we can go for grafted seedlings. The grafted seedlings show high vigour and resistance to almost every kind of stresses and gives good yield. Graft clips are used in the procedure of grafting of vegetable seedlings. The seedlings may cost higher if it is grafted.

Seed rates of different vegetables vary greatly

Eg:

1. Tomato: 350g/ha

2. Brinjal: 400g/ha

3. Chilli: 1kg/ha

4. Okra: 7kg/ha

5. cucumber: 2.5 kg/ha

Transplanting

During transplanting, proper maintenance of field inspection regulations and isolation distance should be maintained. In case of vegetable seedlings, they can be transplanted to the main field after 15-30 days after sowing. If transplanting is to be done on old irrigated fields, the fields must be properly pulverized to effectively destroy weeds and any volunteer plants. Before transplanting, the seed plot should be properly pulverized and evenly levelled so as to allow even water distribution and to keep fertilizers applied within the seed plot.