LECTURE 25

ISABGOL

***Plantago ovata* Forsk**.

Common names

Ishagola, Isabghul, Spogel seed, Ispaghal, Psyllium seed, Flea seed, Plantain seed, Isabgol and Ishabgul Spogel seed.

Origin and distribution

Plantago ovata Forsk. belonging to the family Plantaginaceae has good export potential and can be exploited commercially. It is indigenous to the Mediterranean region and West Asia, It has been introduced in India & Cultivated specially in Gujarat and some parts of Rajasthan. It is also found in Punjab plains and low hills from Sutlej westwards, Sindh and Baluchistan. The area under cultivation is estimated about 50,000 ha with a production of 48,000 tonnes of seeds. Psyllium is the common name used for several members of the plant genus *Plantago* whose seeds are used commercially for the production of mucilage. The genus *Plantago* contains over 200 species. *P. ovata* and *P. psyllium* are produced commercially in several European countries, the former Soviet Union, Pakistan, and India. *Plantago* seed known commercially as black, French or Spanish psyllium is obtained from *P. psyllium* and *P. arenaria*.

Parts used

Husk from spikes and seeds

Active principle

Protein, polysaccharides, cellulose, pectin, oil and muscilage

Uses

Husk is used as single drug for cure of constipation and dysentery. The drug is used in inflammatory conditions of the mucous membrane of gastro intestinal and genitourinary tracts and against irritation. It is also used as demulcent, cooling, diuretic.

Species and Varieties

Species

1. Spanish or French Psyllium seed: *Plantago psyrium* Linn, or of *Plantago indica* Linn. (*P. arenaric* Wald.)

2. Blonde Psyllium or Indian Plantago: *Plantago ovata* Fork

Varieties

RI-87, RI-89, AMB-2, GI-1, GI-2, MI-4, MIB-121, HI-34, HI-2, HI-1, HI-5, JI-4, NIHARIKA. Gujarat Isabgol-1, variety yields 800-900 kg of seeds per hectare. The new variety 'Gujarat Isabgol-2' has a potential to yield 1,000 kg of seeds per hectare.

Soil

It is an irrigated crop, which grows well on light soils, soil with poor drainage is not conducive for good growth of this crop. A silty-loam soil having a soil pH from 4.7 to 7.7 with high nitrogen and low moisture content is ideal for growth of plants and high yield of seeds.

Climate

Isabgol thrives well in warm- temperate regions. It requires cool and dry weather & is sown during winter months. Sowing during first week of November gives best yields. Early sowing makes the crop vulnerable to downy mildew disease, whereas late sowing provides lesser period of growth in winter along with possibility of shattering of seed due to summer rains in April-May. At maturity, if the weather is humid, its seeds shatter resulting reduction in yield. Heavy dew or even a light shower will proportionately decrease the yield, at times leading to even total loss of the crop. The temperature requirement for maximum seed germination is reported to be 20 to 300C.

Propagation

Through Seeds

Land preparation and planting

Field must be free of weeds and clods. The number of ploughings, harrowing and hoeing depend upon the soil conditions, previous crop and degree of weed infestation. About 10-15 tonnes of FYM per hectare is mixed into the soil at the time of last ploughing. The field should be divided into suitable plots of convenient size, depending upon the texture of the soil, the slope of the field and quantum of irrigation. For light soil with even contour, plot size of 8.0 m x 3.0 m will be convenient.

To obtain high percentage of germination, seed should be taken from the crop harvested at the end of the preceding crop season. Old seeds tend to lose viability under ordinary storage conditions. Seed at the rate of 4-8 kg per hectare is sown after treating it with any mercurial seed-dresser at the rate of 3 g/kg of seed, to protect the seedlings from the possible attack of damping off. The seeds are small and light. Hence before sowing, the seed is mixed with sufficient quantity of fine sand or sieved farmyard manure. The seeds are broadcasted because sowing in lines at different spacing does not increase the seed yield. After broadcasting, seeds are swept lightly with a broom to cover them with some soil. Broom however, should be swept in one direction only, to avoid deep burial of the seed for uniform germination. The sowing should

immediately be followed by irrigation. Germination begins in four days after sowing. If delayed, it should be stimulated by another watering.

Manuring

The medicinal plants have to be grown without chemical fertilizers and use of pesticides. Organic manures like, Farm Yard Manure (FYM), Vermi-Compost, Green Manure etc. may be used as per requirement of the species.

Irrigation

Immediately after sowing, light irrigation is essential. First irrigation should be given with light flow or shower of water otherwise, with fast current of water most of the seeds will be swept to one side of the plot and the germination and distribution will not be uniform. The seeds germinate in 6-7 days. If the germination is poor, second irrigation should be given. Later on irrigations are given as and when required. Last irrigation should be given at the time when maximum number of spikes shoots up. The crop requires totally 6-7 irrigations for its good productivity in medium sandy soils.

Weeding

Periodical weeding and hoeing is required.

Plant protection

To prevent diseases, bio-pesticides could be prepared (either single or mixture) from Neem (kernel, seeds & leaves), Chitrakmool, Dhatura, Cow's urine etc.

Harvest

Blooming begins two months after sowing and the crop become ready for harvest in February-March (110-130 days after sowing). When mature, the crop turn yellowish and the spikes turn brownish. The seeds are shed when the spikes are pressed even slightly. At the time of harvest, the atmosphere must be dry and there should be no moisture on the plant, harvesting will lead to considerable seed shattering. Hence, the crop should be harvested after 10 am.

Yield

Seed: 900-1500 kg/ha, Husk: 225-375 kg/ha

Post harvest technology

Harvested plants spread over and after 2 days they are threshed with tractor/bullocks. Pinkish type husk are removed from the seed coat by processing through a series of grinding in mills to separate husk.

Multiple choice questions

1. Isabgol belongs to the family_____

   a. Plantaginaceae b.Poaceae c. Chenopodiaceae

2. Moisture content ideal for Isabgol plant growth _____

   a. **Low** b. Medium c. High

3. Mode of propagation of Isabgol is through _____

   a. Runners b. Stolons **c. Seeds**