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Qualtiy Seed Production of Pea (*Pisum sativum* L.)

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Abstract

Pea (*Pisum sativum*) is a rabi season crop and generally grown as cool season grain legume , from diverse genus *Pisum* . It is cultivated in 100 countries or more for seed and fodder .To benefit from symbiotic nitrogen fixation and lower crop water usage, field pea is typically cultivated in rotation with cereals. Field pea is becoming more popular as an intercrop plant. Field pea yields, which are often constrained by water stress and high temperatures, can reach 7 t-ha^{-1}. Additional significant yield loss factors include pests and diseases. Despite the richness of field pea genotypes and the rising protein demand, the rate of yield improvement is trailing due to a number of factors, including the cultivation of field pea on marginal cropland and a lack of research effort.

Keyword: - Intercrop, Marginal, Symbiotic Nitrogen Fixation

Introduction

Field Pea is a crop belonging from family Fabaceae. Its center of origin is from Mediterranean region and its chromosome number is 2n = 24 .Field Pea is one of the oldest cultivated crop having description from Neolithic period . Although the nutritional value of the seed varies depending on the climate and genetic variables, field pea seed is a good source of protein, carbohydrates, and several minerals. Field peas are loaded with antioxidants like Vitamin C , Vitamin E , Zinc , Catechin , Epicatechin .Peas are annual plants with a 12-month life span. They are a cool-season crop that is farmed all over the world; depending on the region, planting can occur from winter to early summer. The weight of a pea ranges from 0.1 to 0.36 grammes. [3] Field pea types are produced to produce dry peas that resemble split peas shelled from mature pods. The immature peas (and in snow peas, the fragile pod as well) are utilised as a vegetable, fresh, frozen, or canned. These form

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the basis of the traditional mediaeval dishes pease porridge and pea soup; in Europe, eating fresh, immature green peas was a development of early modern cuisine.

Figure – 1 Field Pea

Variety :

Variety of Field Pea with seed rate , required spacing , and features are mentioned below :

Developing Institution	**Variety**	**Features**
IIHR, Bangalore.	ArkaAjit	Resistant to powdery mildew and rust. Yield 10t/ha in 90 days.
IARI, New Delhi.	Arkel*	Early season variety introduced from England Dwarf plants bearing double pods at lower nodes and single at upper nodes. Pods 8.8 cm long and sickle shaped. Suitable for

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		fresh market and dehydration. Susceptible to collar rot at high temperature. Yield 7.5 t/ha in 50-55 days.
	Bonneville*	Mid season variety introduced from USA. Medium tall plants bearing double pods. Pods more than 9 cm long. Yield 8.5 t/ha. Seeds green and wrinkled.
	Sylvia	Introduced edible podded variety suitable for kitchen garden. Pods curved, yellowish green without parchment.
IIVAR, Varanasi.	VRP 2*	Plants 50 cm tall. Pods straight and medium sized. First harvest 55-58 DAS. Yield 10 t/ha.
	Kashi Nandini* (VRP 3)	Early maturing variety developed through pedigree selection. Plants erect and dwarf. Pods long. Tolerant to leaf miner and pod borer. Yield 6.5 t/ha with 80 % shelling percentage.
	Kashi Shakthi* (VRP 7)	Mid season variety. Plants 80 cm tall with attractive pods. Yield 7.5 t/ha.
NDAU&T, Faizabad, UP.	NDVP 8*	Mid season variety with 10 t/ha.
	NDVP 10*	Mid season variety with 10 t/ha.
CSAUA&T, Kanpur.	Azad P.2* (PRS4)	Resistant to powdery. Plants tall (130-150 cm). Straight and smooth pods. Yield 12 t/ha in 90-95 days.
	Azad P-3* (PRS 4)	Early maturing variety. Pods straight, medium size. Yield 8 t/ha.

Crop Husbandry

Selection of Variety

Range is now advocated primarily for regions or zones of cultivation , and with high ability yields , recuperations must be choosen for multiplications.

Time of sowing

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15 thOctober to 15 thNovember .

Climatic Requirement

Being a rabi season crop it requires cool season climate with moderate temperature throughout its growing period. High temperature is more dangerous for crop than frost . During flowering period frost is more commonly is know to cause damage. Optimal temperature is 13 – 18^{0}C

Isolation Distance

It is a self pollinated crop so isolation distance for foundation seed is 100m and for certified seed is 50m .

Seed Source

The seed should be purchased from the authentic seed seller certified by the concerned agency . Seed should come with proper tag and label .

Land Requirement

- P^{H} 6.5 to 7.5
- Soil should be loamy well drained and free from excessive soluble salts
- To ensure good drainage and aeration in the field , powdery seed bed must be avoided.

Seed Treatment

Treat the seeds with *Trichoderma* 4 g/kg or Thiram or Captan at 2 g/kg of seed to avoid seed borne diseases. Treat the seeds with *Rhizobium* culture at the rate of 2 kg and apply 2 kg *Phosphobacterium* as soil application just before sowing.

Nutrient Requirement

Apply FYM at 20 t/ha and 60 kg N, 80 kg P and 70 kg K/ha as basal and 60 kg N/ha on 30 days after sowing. Additionally 15 kg/ha Zinc Sulphate should be applied , in Acidic soil 1.5 kg of finally powdered lime is to be added.

Weed Control

In the first stages of the crop, care should be taken to eradicate weeds. For weed control, pre-emergence spraying with Lasso (alachlor) at 0.75 kg a.i., Tribunal at 1.5 kg a.i./ha, or pendemethalin at 0.5 kg a.i. /ha, together with one-handed weeding at 25–45 days following sowing, is particularly successful.

Interculture

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Tall types should be stacked with wooden sticks or twigs for trailing when the plants are 15 cm high. Both rows of plants in each raised bed will be supported by a single row of posts installed in the middle of the bed. Additionally crucial pea procedures include earthing up and hoeing, which promote plant growth and root development. This is often carried out following fertiliser application and weeding.

Plant Protection

- **Powdery Mildew** -Leaves and pods develop white powdery spots. The disease spreads more readily in dry climates. Heat should be applied to seeds. Dusting must be donesprayed with sulphate or Sulfex (2.5 kg/ha), or Karathane or Dinocap (0.2%)three times, one every ten days. It is possible to develop resistant types like Sugar Giant, Pant P-8, PMR-3, etcto develop. In late November and December, planting should be avoided.
- **Downey Mildew** - Grey brown mould growths can be seen on the underside of the leaves. Only extremely damp weather conditions result in a high incidence of the disease. The afflicted plants need to be pulled out. Before planting, seeds should be soaked in hot water. Spraying should be done with 0.2% concentrations of dithane Z-78 or M-45.
- **Pea Aphid :**They ingest sap from the plants' early growth. At the time of planting, 30 kg/ha of furadon should be applied along with the seeds. Malathion 0.1% or Rogor 0.03% should be sprayed. Plant aphid-tolerant or resistant types like Feltham and Meteor.

Harvesting and yield

Well-filled pods that have turned light green are harvested for the fresh market. Picking occurs every 7 to 10 days.The average yield of early crop is 25-40 q/ha, mid season crop 65-85 q/ha and late season cultivars 85-115 q/ha.

References

Devi, M.T. and Singh, V.K., 2018. Productivity and economics of field pea (Pisum sativum) and baby corn (Zea mays) intercropping systems as affected by planting pattern and weed management. *AGRONOMY*, *63*(2), p.157__162.

Singh, D. and Tripathi, H.S., Evaluation of Fieldpea Germ plasm for Resistance to Uromyces Rust.

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Sharma, H.C., Srivastava, C.P., Durairaj, C. and Gowda, C.L.L., 2010. Pest management in grain legumes and climate change. In *Climate change and management of cool season grain legume crops* (pp. 115-139). Springer, Dordrecht.