

PEAS

- Botanical Name - *Pisum sativum* (L.)
Synonym - Matar, Pea
Origin - Mediterranean Region of Southern Europe & Western Asia



Introduction

The mature seeds are used as whole or split into dal and put to use in various ways for human consumption. Besides vegetable purposes, it is also grown as a forage crop for cattle and cover crop to prevent soil erosion but mainly for matured seed for human consumption.

Nutritive value

Protein	- 22.5%	Calcium	- 64 mg/100g
Fat	- 1.8%	Iron	- 4.8 mg/100g
Carbohydrate	- 62.1%	Moisture	- 11%

Crop Status

Pea is the third most important pulse crop at global level, after dry bean and chickpea and third most popular rabi pulse of India after chick pea and lentil. India occupy fourth position in area (10.53 %) and 5th position in production (6.96 %) (*FAO Stat., 2014*).

In India field pea is grown over an area of 11.50 lakh ha with a production of about 10.36 lakh tonnes during XIIth Plan period (2012-2015). Uttar Pradesh is the major field pea growing state. It alone produces about 49 % of pea produced in India. Besides, Uttar Pradesh, Madhya Pradesh, Bihar and Maharashtra are the major pea producing states (*DES, 2015-16*).

State-wise Recommended Varieties

State	Recommended varieties
Maharashtra	JP-885, Ambika, Indra (KPMR-400), Adarsh (IPF 99-25), IPFD 10-12
Gujarat	JP-885, IPFD 10-12, Indra, Prakash,
Punjab	Jay (KPMR-522), Pant pea-42, KFP-103 (Shikha), Uttra (HFP-8909), Aman(IPF5-19)
Haryana	Uttra (HFP-8909), DDR-27 (Pusa panna), Hariyal (HFP-9907 B), HFP-9426, Alankar, Jayanti (HFP-8712), Aman(IPF5-19)
Rajasthan	DMR-7 (Alankar), Pant Pea-42
M.P.	Prakash (IPFD 1-10), Vikas (IPFD -99-13)
U.P.	Swati (KFPD-24), Malviya Matar-15 (HUDP-15), Vikas, Sapna (KPMR-1441), IPF 4-9
Bihar	DDR-23 (Pusa Prabhat), V L Matar -42
C.G.	Shubhra (IM-9101), Vikas (IPFD -99-13), Paras
Uttarakhand	Pant Pea-14, Pant Pea-25, V L Matar -47
Jharkhand	PL Matar-42, V L Matar -42

Source: Seednet GOI, Min. of Agri. & FW, & ICAR-IIPR, Kanpur

Potential Yield (FLD Result)

It is observed that in general average potential yield gap between FLD and farmer's local check yield is about 24%. The potential yield level could be obtained by adoption of improved package of practices.

State	Varieties		Yield kg/ha		% Increased over Local
	Improved	Farmers Local Check	Improved	Farmers Local Check	
Bihar	HUDP 15	Local	1960	1602	22.35
	DDR 23	-	1523	1264	20.49
C.G.	Ambika	Local	1044	760	37.37
	Rachna	-	1002	733	36.70
	JM 6	-	883	714	23.67
U.P.	HUDP 15	Local	1376	1135	21.23
	IPF 99-25	-	1263	1135	11.28
	Malviya P-15		1889	1348	40.13
	DPL 62		1458	1146	27.23
	KPMR 522		2134	1783	19.69
	KPMR 400		1842	1657	11.16
J & K	Prakash	Local	550	500	10.00
	Rachna		826	685	20.57
Tripura	HUDP 15	Local	1192	1290	-7.56
	TRCP 8		1641	1445	13.53
Uttaranchal	VL 42	Local	430	300	43.33
	Matar 42		652	410	59.02
Manipur	Rachna	Makhyatmubi	826	719	14.88

Source: ICAR-IIPR, Kanpur, Average of 2007-08 to 2011-12

Climate requirement

Being a winter season crop it requires a cool growing season with moderate temperature throughout the life. High temperature is more injurious to pea crop than frost. Frost can damage the plants during flowering stage. High humidity associated with cloudy weather results into spread of fungal diseases like damping-off and powdery mildew. Optimum monthly temperature suitable for growth is 13-18⁰C.

Soil Type and Field Preparation

A well-drained loamy soils free from excessive soluble salts with neutral pH range of 6.5 to 7.5 is suitable for successful cultivation of the crop. Prepare a level field for even distribution of irrigation water, free from stubbles and crop residues of previous crops by one deep ploughing through disc or mouldboard plough followed by 2-3 harrowing and planking after each operation. To ensure good drainage and aeration in the field, powdery seedbeds must be avoided.

Sowing Time : 15th October to 15th November

Seed Rate & Spacing : Tall varieties - 70-80 kg./ha & 30-45 X10 cm.
Dwarf varieties - 100 kg./ha & 22.5X10 cm.

Depth : 4-5 cm.

Cropping System

In general, peas are sown after harvest of kharif crops. The most common rotations are maize – pea; paddy – pea – wheat – (being popular in Northern India); cotton – pea; jowar – pea; and bajra – pea.

Intercropping

It can be sown as intercrop with autumn sugarcane as two rows of pea at 30 cm row spacing in the centre of two sugarcane rows at 90 cm apart.

Water Management

Field-pea is mostly grown as rainfed/un-irrigated on residual soil moisture and can sustain drought conditions up to some extent. One or two irrigations at 45 DAS and if needed, at pod filling stage, may be the best recommended irrigation schedule.

Plant nutrient management

Apply 20-30kg/ha nitrogen in tall types and 40kg/ha nitrogen in dwarf types as a starter dose of basal dressing. The phosphorus and potassic fertilizer should be apply as basal dose based on soil test value. If soil is deficient in these nutrients, apply 40 kg/ha and 40-60 kg/ha P_2O_5 in tall and dwarf, respectively with 20-30 kg K_2O and 20 kg sulphur per hectare. Mixture of all the fertilizers should be given 4-5 centimeter away from the rows and deeper from seed. In zinc deficient soils apply Zinc sulphate 15 kg/ ha should be applied. In acid soils, rhizobium inoculated seed should be treated with 1.5 kg of finally powdered lime ($CaCO_3$, 300 mesh).

Weed Control

The field pea crop should be free from weeds for the period up to 40-50 days after sowing for that two hand weeding at three and six weeks after germination. For chemical weed control application of Pendimethalin (STOMP) 30 EC @ 0.75-1 kg a.i./ha as pre-emergence and for post emergence apply Metribuzin 70 % WP @ 0.25 kg a.i./ha at 15-20 day after sowing in 400-600 liter of water.

Plant Protection Measures:

Disease

Wilt

Symptoms

The symptoms may be seen in seedling stage. The symptoms are premature yellowing and withering of young leaves during seedling stage and advance stage. Disease caused maximum loss if crop is early sown.



Control Measures

- i) Seed Treatment with Thiram (2gm.) + Carbendazim (1gm.) /kg of seed; ii) Adopt crop rotation; iii) Avoid early sowing in badly infested areas.

Powdery Mildew

Symptoms

The symptoms first appears on the leaves then on other green parts of the plant. They are characterized by patchy growth on both the surfaces of the leaf and also on the tendrils, pods and stem. In case of severe infestation the plant dies prematurely.



Control Measures

- i) Adopt resistant var. like Pant Pea-5, Malviya-15, JP-885, HUP-2 etc.; ii) Spraying with Karathane @ 1 ml/litre or wettable sulphur @ 3 gm/litre or Dinocap @ 1 ml/litre of water and repeat after 10-15 days, if necessary; iii) Avoid late planting; iv) After harvest collect the plants left in the field and burn them.

Rust

Symptoms

It is caused by fungus. The stem of the plant becomes malformed and the affected plant dies out. All the green parts of plant are affected. Yellow spots having aecia in round or elongated clusters. Then the uredopustules develop which are powdery and light brown in appearance.

Control Measures

- i) After harvest, the affected plants trash should be burnt; ii) Spray the crop with Mancozeb 75 WP @ 2 g / liter of water.



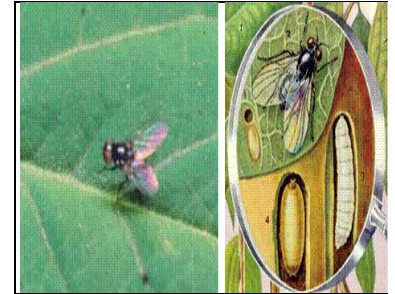
Insect-Pest

Pea Stem fly

The maggot of the insect damages the internal tissue, consequently the entire plant dies. The damage is more acute when crop is sown early.

Control Measures

- i) Mix 30 kg/ ha Carbofuran (Furadon) 3 % granules or 10 kg /ha Phorate (Thimet) 10 % granules in the soils before sowing the crop; ii) Avoid early planting.



Leaf Miner

Larvae of the insect makes tunnel in the leaf causing severe damage. The damage is more during the month of Dec.to Mar.

Control Measures

- i) 1 liter of Oxydemeton methyl (Metasystox) 25 EC in 1000 liter of water per hectare when the attack begins and repeat at 15 days intervals.



Pea Aphids

They suck the sap of the cells, owing to which the leaves turn pale and yellow. In case of severe infestation the plant growth is checked. Ultimately plant growth get stunted.

Control Measures

- i) Spray 1.25 liter of Dimethoate 30 EC or oxydemeton methy (Metasystox) 25 EC in 1000 liter of water per hectare. Reperat the spray after 10-12 days.



Spiny Pod Borer

It is a polyphagous insect. Caterpillar makes hole in pods feed upon developing seed. Late varieties are prone to more damage than earlier one.

Control Measures

- i) Picking of green pods should be done 15 days after spraying;
- ii) Spray of 1.25 liter of cypermethrin in 1000 liter of water per hectare is safe and effective.



Harvesting, threshing and storage

Field peas should be harvested when they are fully ripe and threshed after sufficient drying in the sun. The clean seed should be sun dried for 3-4 days to reduce their moisture content up to 9-10% to be safely stored in appropriate bins.

To avoid further development of bruchids and other storage pests, it is recommended to fumigate the storage material before onset of monsoon and again after the monsoon with ALP @ 1-2 tablets per tonne. The small quantity of the produce can also be protected by mixing inert material (soft stone, lime, ash, etc) or by smearing edible/non-edible vegetable oils or by mixing plant products like neem leaf powder at the rate of 1-2% w/w basis.

Yield

With improved package of practices, field peas can produce 20-25qtls of grain and straw per ha (irrigated) and 10-15 qtls grains per ha (rain fed) condition.

Recommendation to achieved higher production

- i) Deep summer ploughing once in 3 years.
 - ii) Seed treatment should be done before sowing.
 - iii) Application of fertilizer should be based on soil test value.
 - iv) Weed control should be done at right time.
 - v) Powdery mildew resistant varieties : VL matar -42, VL matar -47, IPF - 4-9, Pant P - 14, Paras, Prakash(IPFD-1-10), Aman, Gomati(TRCP-8), HFP- 529, HFP-715.
 - vi) Late planting should be avoided for preventing powdery mildew.
 - vii) Choose the best suitable variety for your area and condition.
 - viii) Adopt integrated approach for plant protection.
- For technical information of crop production please contact to district KVK/ nearest KVK.
- To avail benefit from Centrally and State Government running schemes for crop production (ploughing, fertilizers, micronutrient, pesticide, irrigation equipment), agricultural implements, storage infrastructure etc., please contact to your DDA/SADO office.

For more information also visit

- M- kisan portal - <http://mkisan.gov.in>
- Farmers portal - <http://farmer.gov.in>
- Kisan Call Centre (KCC)-Toll Free No.- 1800-180-1551
