

Pulse Crops

Pulses play an important role in the food and farming economy of our country. Considering their limited input requirements, soil-enriching properties and suitability for growing in areas where moisture is limited, pulses occupy a unique place in our agriculture system. In Himachal Pradesh, *Rabi* pulses (except gram) are grown in an area of 6.2 thousand hectares with a total production of 3.1 thousand tonnes 1997-98. The average yield is very low i.e. 5.8 q/ha. The important reasons of such low yields are : (i) non-availability of high yielding disease resistant varieties, (ii) growing of pulses under deficit moisture and poor management practices in marginal soils, (iii) lack of use of any fertilizer or rhizobium culture and (iv) lack of adoption of plant protection measures.

GRAM

It is the major *Rabi* pulse crop of the State. During the year 1997-98 gram occupied an area of 2.1 thousand hectares with a production of 1.7 thousand tonnes with average production of 8.1 q/ha.

Varieties

Himachal Chana – 1 : This is a new variety recommended for all the growing areas of Zone –I. It is resistant to gram blast disease. It matures within 190-200 days. Average yield is 11 q/ha.

C-235 : Its plants are medium in height. It has medium sized grains with brownish yellow colour. It matures in about 171-175 days. Its average yield is about 8-10 q/ha.

HPG-17 : It is a new gram variety suitable for all the gram growing areas of H.P. It is a bold seeded variety almost double in seed size (22 g/100 seeds) than C-235. It also possesses better resistance against gram blight and root diseases. The average yield is 13-15 q/ha in comparison to 8-10 q/ha of C-235. It has semi-spreading plant type with thick foliage.

Soil

Well drained loamy and sandy loam soils are suitable for gram cultivation.

Preparatory tillage

Gram does not require as good preparation of soils as wheat. One two ploughings are sufficient. The land should be a bit cloddy as it will help the aeration of the soil in root zone.

Time of sowing

The optimum time of sowing of gram is the middle of October. It helps to control the wilt disease. Early sown crop suffers from wilt due to high temperature at the sowing time. Such sowing is also associated with excessive vegetative growth which results in poor yield. When gram is mixed with wheat or barley, the time of sowing will depend upon the main crop.

Method of sowing

Gram should be sown by kera in lines 30 cm apart. Seed should be placed at a depth of 10 to 12.5 cm because the shallow sown crop is more liable to be damaged by wilt.

Seed rate

40 to 45 kg seed per hectare is required for pure crop of C-235 but in case of HPG-17, the seed rate of 80 kg/ha is recommended.

Manuring

Nutrients (kg/ha)			Fertilizers (kg/ha)			Muriate of Potash
N	P ₂ O ₅	K ₂ O	Urea or	CAN	Single Super phosphate	
30	60	30	65	120	375	50
			Fertilizer (kg/bigha)			
			Urea or 5	CAN 10	Super Phosphate 30	Muriate of Potash 4

Method of application

Apply whole of the phosphorus, potash and nitrogen at the time of sowing by pora method. In case of mixed crop with wheat, additional fertilizers should not be added.

Water management

Pulse crops do not need any irrigation if there is plenty of soil moisture at sowing time and followed by one or two winter showers. Legumes need no be irrigated in their early vegetative stages as it may do more harm than good by interfering with the nodulation and oxygen requirement of roots. However, if irrigation is available, then two irrigations-one at flowering and the second at pod development stage should be given.

Plant Protection

Sign of Attack/ Symptom	Control
<p>(i) Insect-pests :</p> <p>Pod borer : Initially caterpillars feed on the top foliage and later bore into the pods and feed on the developing grains.</p>	<p>Spray at 50% flowering 0.875 L Monocrotophos (Monocil 36 EC/SL) or Carbaryl 50 WP (Sevin) or 1.250 L Endosulfan 35 EC (Thiodan/Hindon/Endocel) in 625 L water per ha. Spray can be repeated at 15 days interval, if the pest still persists. Caution : Don't pluck green pods upto 15 days after spray for consumption.</p>
<p>Cutworm : The dirty grey caterpillars remain hidden in soil and cause heavy damage to seedlings immediately after germination by cutting the stem of young plant at ground level. They damage more plants than they actually consume.</p>	<p>Mix 2 litres chlorpyriphos 20 EC in 25 kg sand & apply in field before sowing.</p>
<p>(ii) Diseases</p> <p>Blight : The disease appears in the form of dark brown spots studded with minute, black, dot-like bodies on the stem, branches, leaves and pods. On pod and leaf lesions, the pycnidia are concentrically arranged. Whole of the plant may be blighted or killed in case of severe infection.</p>	<ol style="list-style-type: none"> 1. Plant resistant variety like HPG-17 & Himachal Chana I. 2. Use disease free seed. 3. Treat seed with Dithane M-45 or Vitavax @ 2.5 g/kg seed. 4. collect crop debris after harvest and burn. 5. Spray crop with Indofil M-45/Dithane M-45 (0.25%) with first symptom of disease & repeat the spray at 15 days interval.
<p>Wilt : The affected plants first turn yellow, wither and finally dry up. The roots become dark coloured resulting in complete rotting.</p>	<ol style="list-style-type: none"> 1. Plough the soil deep 2. Crop should be sown late .

LENTIL

Lentil or *masur*, is the next important *Rabi* pulse of the State and is grown in an area of 500 hectares with total production of 1500 quintals. The average yield per hectare is 300 kg which is quite low. It is mostly grown to a limited extent by a few cultivators for their use .

Varieties

Vipasha (HPL-5) : This variety has been released for general cultivation in Himachal Pradesh to replace variety L 9-12. Its foliage is light green and wax-free. Seeds are bold and possess attractive light brown colour with light orange cotyledons.

The variety is free from hard seed. It has a field resistance to lentil blight. It takes about 175-180 days to mature. Average yield is 14-15 q/ha giving 40-50 per cent more yield than other varieties.

Soil

Lentil can be grown on all types of soils except the water logged soils.

Preparatory tillage

Two to three ploughings are needed for making soil pulverized.

Time of sowing

End of October to first fortnight of November is the best time for sowing of lentil. However, it can be sown upto first week of December, in the event of drought or lack of rainfall.

Method of sowing

Sow the crop in lines 25-30 cm apart by kera method.

Seed rate

25 to 30 kg seed per hectare is optimum but under late sown conditions, the seed rate should be increased.

Manuring

Nutrients (kg/ha)			Fertilizers (kg/ha)			kg/bigha		
N	P ₂ O ₅	K ₂ O	Urea or	CAN	Super Phosphate	Urea or	CAN	Super Phosphate
10	40	-	22	40	250	2	3	20

Method of application

Fertilizers should be drilled at the time of sowing.

Water management

Like gram, lentil is also taken without irrigation. However, one irrigation at the time of pod formation increase the yield.

Interculture

To keep the weeds under control, one or two weedings and hoeing are helpful.