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# **Kitchen Gardening Vegetables for Kharif Season**

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**Kitchen Gardening Vegetables for Kharif Season**

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## 1. Kitchen Gardening

Kitchen gardening plays an important role for rural and urban families to recover diversified vegetables in their daily diet

### OBJECTIVES

- Growing nutritious fresh vegetables to feed the family all year.
- Appropriate use of land near the house
- Best use of family members' time in a pleasant manner exercising an efficient and effective training to the children
- Making use of kitchen waste and water
- Reducing food costs
- Beneficial for making the most of free time

### PRINCIPLES OF KITCHEN GARDENING

Proper planning is required for the development of a kitchen garden. Fundamental principles to keep in mind while planning a kitchen garden.

**Location:** Location is the most important principle, and it should be close to the house. It is best to plan a kitchen garden ahead of time when building a new home. An open and sunny location, as sunlight is critical for plant growth. The ideal kitchen garden should be established in a fairly level area, preferably on the southern side of the house, and should be protected from stray animals with a live fence.

**Layout:** Appropriate and convenient layout is necessary. The site should be free of shade trees, etc. The size and shape will be determined by the size of the family. It is preferable to have a small, well-kept garden than a large, poorly kept one.



**Adequate Water Supply:** It should be close to a well, a natural water tap, and any other source of irrigation, including kitchen water that can be profitably used.

**Crop rotation:** Crop rotation is necessary for nutrient management. Leguminous vegetables like french bean; pea etc should be included in rotation to maintain soil fertility.

### **PLANNING CRITERIA FOR KITCHEN GARDENING**

A plot of 200 square metres will provide enough vegetables for an average family of 5-6 members.

- Before planting, make a clear sketch plan of a planned kitchen garden in a notebook. The vegetables grown in the kitchen garden will be chosen based on the season, region, available area, nutritional value/importance, individual taste, and family member preferences.
- Vegetable planting and sowing should be done in a systematic manner.
- Vegetables that are needed in small quantities, such as lettuce, mint, and coriander, should be planted on ridges, along paths, and in water channels.
- Vegetables that are grown in large quantities, such as potatoes, onions, garden peas, and dwarf beans, should be given more space.
- Temperate vegetables such as radish, carrot, turnip, and others needed for salad should be accommodated on ridges and sown continuously at intervals to ensure daily availability.
- Pole type vegetables such as cucurbits french beans in the summer/rainy season, and garden peas in the winter should be planted along the fence on three sides along the boundary wall to allow for maximum spread.
- Considering the direction of sunlight, tall vegetable varieties should always be followed by medium and then dwarf



varieties to ensure that every plot receives maximum sunlight.

- Leguminous vegetables such as french beans and peas should be rotated to maintain soil fertility.





## 2. Tomato (*Solanum lycopersicum* L)

Tomato (*Solanum lycopersicum*), flowering plant of the nightshade family (Solanaceae), cultivated extensively for its edible fruits. Tomato is a warm season crop. It does not withstand severe frosts and both high and low temperatures adversely affect fruit setting. A temperature range of high and low temperature 20-27°C is conducive for its successful growth.

### Varieties, sowing and transplanting:

Varieties	Sowing	Transplanting
<i>Shalimar 1</i>	March to April	May to June
<i>Shalimar 2</i>		
<i>Roma</i>		
<i>Shalimar Tomato Hybrid- 1</i>		
<i>Shalimar Tomato Hybrid- 2</i>		

### Seed Sowing, seed rate and spacing:

- Raised nursery beds with 1m width and 30 cm above ground are preferred. Land for transplanting seedlings is ploughed 3-4 times to obtain a fine tilth followed by planking.



- Seed rate for tomato as per recommended package of practice of SKUAST-K is 500- 600 g/ha.
- When seedlings are 10-15cm tall 4-5 weeks old, these are uprooted and transplanted.
- Spacing:- : 40 × 30 cm and for hybrids 75 × 50cm

### **Nutrient Management:**

- FYM: 1.5 to 2.0 (t/Kanal)
- Vermi Compost: 125- 175 (kg/Kanal)
- Urea : 9.0 (kg/Kanal), DAP: 10.0 (kg/Kanal) and MOP: 5.0 (kg/Kanal)

### **Scientific tips:**

- Entire FYM or vermicompost, DAP, MOP and ½ urea applied as basal and the remaining ½ urea as top at the time of sowing and other ½ urea 30-40 days after transplanting.
- Shallow hoeing and regular weeding is desirable, to obtain better yield of quality fruits. Plants are staked to avoid fruit rotting.
- Tomato withstands drought to a fair extent and irrigation at intervals of 7-10days are desirable. If irrigated interval is increased, radial or concentric cracks may develop.





### 3. Brinjal (*Solanum melongena* L)

Brinjal (*Solanum melongena*), also known as eggplant is an easily cultivated plant belonging to the family *Solanaceae*. Its fruit is high in nutrition and commonly consumed as a vegetable. The fruit and other parts of the plant are used in traditional medicine.

#### Varieties, sowing and transplanting:

Varieties	Sowing	Transplanting
<i>Dilruba</i>	Mid April – End of May	May -June
<i>Pusa Purple Long</i>		
<i>Black Beauty</i>		
<i>Shalimar Improved</i>		
<i>DBL-02</i>		
<i>Shalimar Brinjal Hybrid -1</i>		
<i>Shalimar Brinjal Hybrid -1</i>		
<i>Pusa Hybrid-5</i>		

#### Seed Sowing, seed rate and spacing:

- Raised nursery beds are more suited than the flat ones.
- Seeds are sown on raised seed beds in 5-10mm deep furrows, 5-10 cm apart.
- Seed rate for varieties is 500 – 750 g/ha and for hybrid is 300 – 400 g/ha.
- Seedlings are transplanted when 4-5 weeks old in May-June. The crop may be raised on ridges for efficient use of water.



- Spacing for Pusa Purple Long: 60 × 60 cm, for black beauty and other recommended varieties is 60 × 45 cm and for hybrids is 60 × 45 cm.

### **Nutrient Management:**

FYM: 1.0 to 1.25 (t/Kanal)

Vermi Compost: 75- 100 (kg/Kanal)

Urea : 9.0 (kg/Kanal), DAP: 10.0 (kg/Kanal) and MOP: 5.0 (kg/Kanal)

### **Scientific tips:**

- Entire FYM or vermicompost, DAP, MOP and  $\frac{1}{2}$  urea applied as basal and the remaining  $\frac{1}{2}$  urea as top dressing.
- Shallow hoeing at intervals of 15-20 days accompanied with light and frequent irrigations at weekly intervals throughout the growing season provide quite favourable conditions for profitable cultivation.
- The fruits must be harvested as soon as they attain desired size and before they lose their glossy appearance, harden or show streaks of unusual color.



## 4. Chillies (*Capsicum annum L*)

Chillies grows successfully both in warm and cold climatic conditions but dies or perishes at freezing temperatures. Continuous rains during flowering and fruiting result in poor fruit set and flower drop, high temperature and dry winds also result in similar damage.

### Varieties, sowing and transplanting:

Varieties	Sowing	Transplanting
<i>Shalimar long</i>	April to May	May to June
<i>Kashmir Long- 1</i>		
<i>PC-56</i>		

### Seed Sowing, seed rate and spacing:

- Raised nursery beds are desired. Land for transplanting seedlings is thoroughly prepared by ploughing the field 3-4 times followed by planking for clod breaking and leveling.
- Seedlings are transplanted when 4-5 weeks old (10-15 cm long) and spaced 25-30 cm apart. Planting on ridges is advisable
- Seed rate: 1.5 -2.0 kg/ha and Spacing : 45×30 cm

### Nutrient Management:

- FYM: 1.25 to 2.0 (t/Kanal)
- Vermi Compost: 75- 100 (kg/Kanal)



- Urea : 9.0 (kg/Kanal), DAP: 10.0 (kg/Kanal) and MOP: 5.0 (kg/Kanal)

### Scientific tips:

- Entire FYM or vermicompost, DAP, MOP and  $\frac{1}{2}$  urea applied as basal and the remaining  $\frac{1}{2}$  urea as top dressing 30-40 days after transplanting.
- Raised nursery beds are desired. Land for transplanting seedlings is thoroughly prepared by ploughing the field 3-4 times followed by planking for clod breaking and leveling.
- For higher yields and improve quality, use of potassic fertilizer in the form of potassium schoenite @ 90kg.ha along with recommended nitrogen and phosphorus can be used.
- Two to three hoeings accompanied by weedings are required. Generally irrigation is applied at intervals of 7-10 days. Irrigation during flowering and fruit setting is essential.



## 5. Capsicum/ Shimla Mirch (*Capsicum annuum*)

Well drained light loam soils rich in organic matter are most suited. Capsicum grows successfully both in mild and cold climatic conditions but dies or perishes at freezing temperatures. Continuous rains during flowering and fruiting result in poor fruit set and flower drop, high temperature and dry winds also result in similar damage.

### Varieties, sowing and transplanting:

Varieties	Sowing	Transplanting
<i>California Wonder</i>	April to May	May to June
<i>Chinese Giant</i>		
<i>Nishat-1</i>		
<i>Shalimar Capsicum</i>		
<i>Hybrid -1 and 2</i>		

### Seed Sowing, seed rate and spacing:

- Seeds are sown in shallow furrows 5-6mm deep and 10-15cm apart.
- Seed rate for varieties is 1-1.5kg/ha and for hybrid is 300-400 g/ha
- Seedlings are transplanted when 4-5 weeks old in May-June. The crop may be raised on ridges for efficient use of water.
- Spacing : 60×45 cm for varieties and 60×60cm for hybrids



## **Nutrient Management:**

- FYM: 1.0 to 2.0 (t/Kanal)
- Vermi Compost: 125- 175 (kg/Kanal)
- Urea : 9.0 (kg/Kanal), DAP: 10.0 (kg/Kanal) and MOP: 3.0 (kg/Kanal)

## **Scientific tips:**

- Entire FYM or vermicompost, DAP, MOP and  $\frac{1}{2}$  urea applied as basal and the remaining  $\frac{1}{2}$  urea as top dressing 30-40 days after transplanting.
- Raised nursery beds are desired. Land for transplanting seedlings is thoroughly prepared by ploughing the field 3-4 times followed by planking for clod breaking and leveling.
- For higher yields, give 3 sprays of water soluble fertilizers having combination of N:P:K as 17:10:27 with a concentration of 0.5% (5g/lit) starting from 30DAT at 10 days interval.
- Frequent shallow hoeing and weeding is recommended.
- Irrigation at regular intervals of 6-8 days is recommended if weather is very hot.



## 6. Potato (*Solanum tuberosum* L)

Potatoes are a globally important crop plant producing high yields of nutritionally valuable food in the form of tubers. Potato grows well from sea level to snow level. Though potato can be grown on a wide range of soils, yet the best yield is obtained from sandy loam or silt loam, organic matter rich, well- drained, loose and friable soils.

### Varieties, sowing and transplanting:

Varieties	Sowing	Transplanting
<i>KufriGiriraj</i>	March to May	Direct Sowing
<i>KufriJyoti</i>		
<i>Gulmarg Special</i>		
<i>KufriJyoti</i>		
<i>Shalimar Potato -1</i>		

### Seed Sowing, seed rate and spacing:

Well sprouted tubers are carefully placed in furrows 20 cm apart. The planted tubers are covered with the soil by making a small ridge, 10-15cm high above the ground level.

### Nutrient Management:

- FYM: 1.0 to 1.25 (t/Kanal)
- Vermi Compost: 75- 100 (kg/Kanal)
- Urea : 12.0 (kg/Kanal), DAP: 11.0 (kg/Kanal) and MOP: 8.25 (kg/Kanal)

### Scientific tips:

- Entire FYM or vermicompost, DAP, MOP and ½ urea applied as basal and the remaining ½ urea at the first earthing up.



- Earthing up and weeding is regularly carried out to ensure better crop. First earthing up is done when plants are 10-15cm long and final earthing up is done when the crop is 6-8 weeks old.
- Care is taken that tubers are not disturbed and do not get exposed to sunlight.
- Crop is not generally irrigated in hills but in plains first irrigation is given when sprouts emerge out of the soil.
- Crop is ready for harvest when foliage shows maturation.
- Irrigation is withdrawn 15-20 days before harvesting.







## 7. Bottle Gourd (*Lagenaria siceraria*)

Bottle guard can be grown on a wide range of light to heavy soils. Average daily temperature of 24-28°C are most favorable for raising bottlegourd.

### Varieties, sowing and transplanting:

Varieties	Sowing	Transplanting
<i>Shalimar Improved</i>	Mid April to May	Direct Sowing

### Seed Sowing, seed rate and spacing:

- Sowing of seeds is preferred either in deep dug pits/trenches or on raised beds.
- Seeds are sown in the field directly with 2-3 seeds per hill.
- Seeds are soaked in luke warm water and treated with thiram @3 g per kg of seed, before sowing.
- Seed rate for bottle guard as per recommended package of practice of SKUAST-K is 6-8 kg/ha.
- Spacing: 200-250cm×100cm

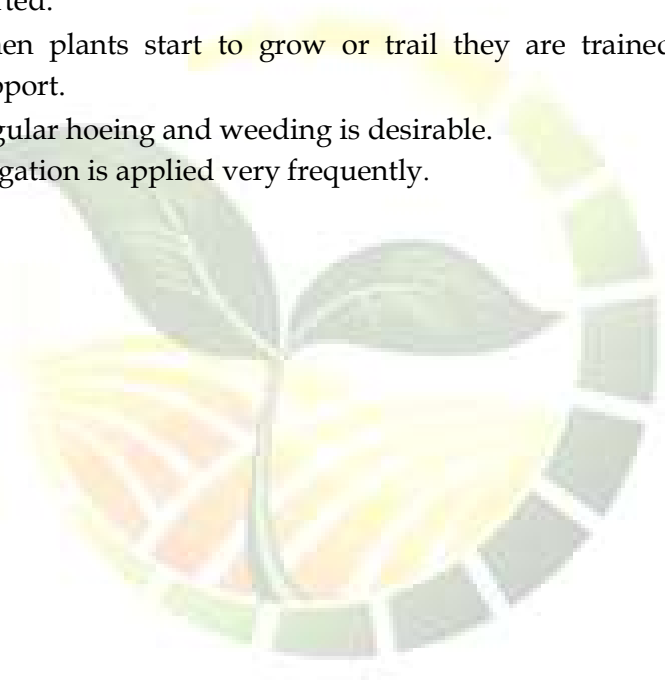
### Nutrient Management:

- FYM: 1.0 to 1.25 (t/Kanal)
- Vermi Compost: 75- 100 (kg/Kanal)
- Urea : 6.5 (kg/Kanal), DAP: 3.25 (kg/Kanal) and MOP: 2.5 (kg/Kanal)



## Scientific tips:

- Entire FYM or vermicompost, DAP, MOP and  $\frac{1}{2}$  urea applied as basal and the remaining  $\frac{1}{2}$  urea in two equal split doses first when plant start grown and 2<sup>nd</sup> when fruiting has started.
- When plants start to grow or trail they are trained on a support.
- Regular hoeing and weeding is desirable.
- Irrigation is applied very frequently.





## 8. Cucumber (*Cucumis sativus*)

The cucumber is a widely-cultivated creeping vine plant in the family Cucurbitaceae that bears cylindrical to spherical fruits, which are used as culinary vegetables. Considered an annual plant, there are three main types of cucumber—slicing, pickling, and seedless—within which several cultivars have been created.

### Varieties, sowing and transplanting:

Varieties	Sowing	Transplanting
<i>Japanese Long Green</i>	Mid April to May	Direct Sowing
<i>PusaSanyog</i>		
<i>Shalimar Cucumber Hybrid-1</i>		
<i>Shalimar Cucumber Hybrid-2</i>		

### Seed Sowing, seed rate and spacing:

- Seeds are sown directly in the field @2-3 seeds per hill
- Seed rate for cucumber as per recommended package of practice of SKUAST-K is 2-3 kg/ha for both varieties and hybrid.
- Spacing: 200-250cm×100cm

### Nutrient Management:

- FYM: 1.75 to 2.25 (t/Kanal)
- Vermi Compost: 150- 200 (kg/Kanal)
- Urea : 6.5 (kg/Kanal), DAP: 3.25 (kg/Kanal) and MOP: 2.5 (kg/Kanal)

### Scientific tips:

- Entire FYM or vermicompost, DAP, MOP and ½ urea applied as basal and the remaining ½ ureais applied in two



equal split doses first when plant start to run and fruiting has started.

- Plants are trained on supports. Regular hoeing and weeding is carried out to raise a clean crop.
- Irrigation is given at weekly intervals





## 9. Bitter Gourd (*Momordica charantia*)

*Momordica charantia* (commonly called bitter melon; Goya; bitter apple; bitter gourd; bitter squash; balsam-pear; with many more names listed below) is a tropical and subtropical vine of the family Cucurbitaceae, widely grown in Asia, Africa, and the Caribbean for its edible fruit. Its many varieties differ substantially in the shape and bitterness of the fruit.

### Varieties, sowing and transplanting:

Varieties	Sowing	Transplanting
<i>ArkaHarit</i>	Mid April to May	Direct Sowing

### Seed Sowing, seed rate and spacing:

- Seeds are directly sown in the field after being soaked in luke warm water for about 24 hours and the held in wet cloth kept at some warm place, till the seed coat ruptures, 2-3 seeds planted per hill
- Seed rate for cucumber as per recommended package of practice of SKUAST-K is 5-6 kg/ha
- Spacing: 150 -200 cm × 60cm

### Nutrient Management:

- FYM: 1.25 to 1.50 (t/Kanal)
- Vermi Compost: 100-125 (kg/Kanal)
- Urea : 5.5 (kg/Kanal), DAP: 2.75 (kg/Kanal) and MOP: 2.0 (kg/Kanal)

### Scientific tips:

- Entire FYM or vermicompost, DAP, MOP and ½ urea applied as basal dose and the remaining ½ urea is applied in



two equal split doses first dose of urea when plant start to run and 2<sup>nd</sup> dose of urea at the time of fruiting.

- Plants are trained on supports when these start to run, shallow hoeing and regular weeding is done; irrigation is applied very frequently.
- Harvesting is done when fruits are immature and have reached a desirable size.





## 10. Pumpkin (*Cucurbita pepo*)

A pumpkin is a vernacular term for mature winter squash of species and varieties in the genus *Cucurbita* that has culinary and cultural significance but no agreed upon botanical or scientific meaning

### Varieties, sowing and transplanting:

Varieties	Sowing	Transplanting
<i>Badami</i>	Mid April to May	Direct Sowing
<i>AkraChandan</i>		

### Seed Sowing, seed rate and spacing:

- Seeds are sown directly and 2-3 seeds seeds per hill
- Seed rate for cucumber as per recommended package of practice of SKUAST-K is 6 kg/ha
- Spacing: 300 cm×75-100cm

### Nutrient Management:

- FYM: 1.25 to 1.75 (t/Kanal)
- Vermi Compost: 100-150 (kg/Kanal)
- Urea : 5.5 (kg/Kanal), DAP: 5.5 (kg/Kanal) and MOP: 4.0 (kg/Kanal)

### Scientific tips:

- Entire FYM or vermicompost, DAP, MOP and ½ urea is applied as basal dose and the remaining ½ urea is applied as top dress in two equal split doses first when plants start to run and 2<sup>nd</sup> dose at the time of fruiting.
- Fields are regularly hoed and weeded. Irrigation is given at weekly intervals.
- Harvesting of pumpkin is done when they attain a desirable size and the colour completely from green and orange red.



## 11. French Beans (*Phaseolus vulgaris*)

Green beans are known by many common names, including French beans string beans and snap beans.

### Varieties, sowing and transplanting:

Varieties	Sowing	Transplanting
<i>Bountiful (Bush Type)</i>	April to June	Direct Sowing
<i>Master (Bush Type)</i>		
<i>ArkaKomal (Bush Type)</i>		
<i>Contender (Bush Type)</i>		
<i>Kentucky (Pole Type)</i>		
<i>Painted Lady (Pole Type)</i>		
<i>Asparagus Beans (Pole Type)</i>		

### Seed Sowing, seed rate and spacing:

- Seeds are directly sown in the field and 2-3 seeds are sown per hill. Seeds are not sown too deep, as the cotyledons have to emerge out of the soil.
- Seed rate for French beans as per recommended package of practice of SKUAST-K is 80-100 kg/ha for bush type and 25-30kg/ha for Pole type
- Spacing: 150 -200 cm × 60cm

### Nutrient Management:

- FYM: 1.00 to 1.25 (t/Kanal)
- Vermi Compost: 75- 100 (kg/Kanal)

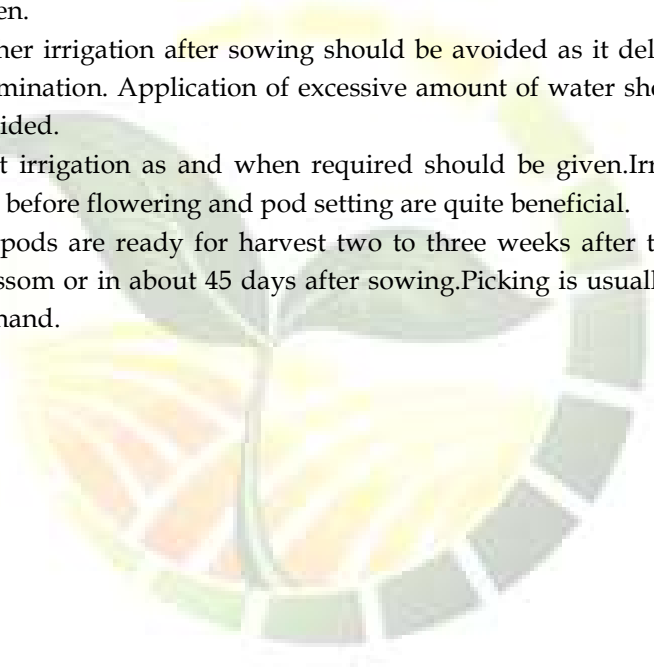




- Urea : 1.0 (kg/Kanal), DAP: 6.5 (kg/Kanal) and MOP: 5.0 (kg/Kanal)

### **Scientific tips:**

- Entire FYM or vermicompost, DAP, MOP and  $\frac{1}{2}$  urea is applied as basal dose and the remaining  $\frac{1}{2}$  urea when true leaves emerge.
- In case of bush type beans, once the plants are 15cm tall, earthing up is done to make small ridges and 2-3 shallow hoeings are given.
- Further irrigation after sowing should be avoided as it delays the germination. Application of excessive amount of water should be avoided.
- Light irrigation as and when required should be given. Irrigation just before flowering and pod setting are quite beneficial.
- The pods are ready for harvest two to three weeks after the first blossom or in about 45 days after sowing. Picking is usually done by hand.





## 12. Lady Finger/ Bhindi (*Abelmoschus esculentus*)

Okra does best in long warm season. Its seeds fail to germinate below 20°C optimum temperature for seed germination is 25-30°C. It is highly susceptible to frost.

It is grown on a wide range of soils but for getting higher yields loamy soils rich in organic matter are suitable.

### Varieties, sowing and transplanting:

Varieties	Sowing	Transplanting
<i>PusaSawani</i>	May	Direct Sowing

### Seed Sowing, seed rate and spacing:

- Seeds are directly sown in the field and 2-3 seeds are sown per hill. Seeds are not sown too deep, as the cotyledons have to emerge out of the soil.
- Seed rate for French beans as per recommended package of practice of SKUAST-K is 80-100 kg/ha for bush type and 25-30 kg/ha for Pole type
- Spacing: 150 -200 cm× 60cm

### Nutrient Management:

- FYM: 1.00 to 1.25 (t/Kanal)
- Vermi Compost: 75- 100 (kg/Kanal)
- Urea : 9.0 (kg/Kanal), DAP: 10.0 (kg/Kanal) and MOP: 5.0 (kg/Kanal)



## Scientific tips:

- Entire FYM or vermicompost, DAP, MOP and  $\frac{1}{2}$  urea is applied as basal dose and the remaining  $\frac{1}{2}$  urea after thinning.
- Land is thoroughly prepared by ploughing it 3-4 times, followed by planking for cold breaking and leveling.
- Seeds are pre-soaked in hot water at 50°C for 30 minutes and directly sown on the ridges which are 15-20cm high above ground and 45 cm apart.
- After the seeds have germinated and plant has attained height of about 7-10cm, plants are thinned to a spacing of 30cm between plants.
- Hoeing is carried out twice or thrice during the early stages of growth to ensure better conditions for plant growth.
- Weeding is done once to twice to avoid weed competition.
- During hot summer irrigation is done at intervals of 5-8 days.