

# KIDNEY BEAN FARMING



## **SOIL REQUIREMENTS: -**

- Kidney beans prefer well-drained soils that are rich in organic matter. Sandy loam or loam soils are ideal for kidney beans, as they provide good drainage and water retention.
- Kidney beans prefer a soil pH between 6.0 and 7.5. If the soil pH is too low, the beans may suffer from nutrient deficiencies, while high soil pH can lead to poor nutrient uptake.
- Kidney beans have moderate nutrient requirements, particularly for nitrogen, phosphorus, and potassium. A soil test can help determine the nutrient content of the soil and any necessary amendments.
- Kidney beans benefit from soils with high fertility, which can be achieved by adding organic matter such as compost, manure, or cover crops.
- Kidney beans require adequate moisture for germination and growth, but they are susceptible to waterlogged soils. Proper drainage is important to avoid soil saturation and root rot.

- Kidney beans prefer warm soil temperatures, with the optimal temperature range for germination and growth between 18°C and 27°C.

## **CLIMATE & TEMPERATURE: -**

**Temperature:** Kidney beans require warm soil temperatures to germinate and grow. The optimal temperature range for germination is between 18°C and 27°C, with a minimum temperature of 10°C. Temperatures below 10°C can slow or halt germination and growth.

**Climate:** Kidney beans are grown in a wide range of climates, but they perform best in areas with warm summers and moderate rainfall. They are typically grown as summer crops in temperate regions, and as winter crops in subtropical or tropical regions.

**Frost:** Kidney beans are susceptible to frost damage, and should not be planted until after the last expected frost date in the spring. In areas with early frosts, it may be necessary to plant early maturing or cold-tolerant varieties.

**Rainfall:** Kidney beans require moderate rainfall for optimal growth, with a range of 500 to 1000 mm per growing season. Excessive rainfall or standing water can cause root rot and other diseases, so proper drainage is important.

**Sunlight:** Kidney beans require full sun for optimal growth and yield. They should be planted in areas with at least 6 to 8 hours of direct sunlight per day.

## **VARAITIES OF KIDNEY BEANS: -**

### **1. White kidney Beans:**

- White kidney beans scientifically known as *Phaseolus vulgaris* is an herbaceous annual plant in the Fabaceae (legume or bean family) that originated in Central and South America and is now grown in many parts of the world for its beans, which can be harvested and eaten immature, still in the edible pod, or when mature, shelled, and dried.



## **2.Red Kidney Beans:**

- Red kidney beans are commonly used in chill corn crane and are used in the cuisine of India ,where the beans are known as rajma, Red kidney beans are used in India for red bean rice.



### **3.Black Kidney Beans:**

- Black beans have a 26:77:213 macronutrient ratio, while kidney beans have a 26:67:7 macronutrient ratio. Kidney beans do not contain much sugar, with only 0.23g of sugar per 100 grams, whereas black beans do. In contrast to kidneys, the nutritional value of black beans is 12 times higher. Kidney beans, on the other hand, contain more Vitamin B6, in addition to thiamine, riboflavin, pantothenic acid, and folate. Kidney beans contain 70% more calcium than black beans.





## **PLANTING SESSION & MATERIAL: -**

- Kidney beans are warm season crops that are typically planted in the spring after the last expected frost date. In some areas, they can also be planted as a second crop in mid-summer for a fall harvest.
- Select high-quality, disease-free kidney bean seeds for planting. Choose varieties that are well-suited to your climate and soil conditions. It is also recommended to choose certified seed for better quality and yield.
- Prepare the planting area by removing weeds, debris, and rocks. Kidney beans prefer well-drained, fertile soil with a pH between 6.0 and 7.5. Add organic matter such as compost or manure to improve soil fertility and structure.
- Plant kidney beans at a depth of 2 to 4 cm and a spacing of 5 to 10 cm between seeds. Rows should be spaced 45 to 75 cm apart, depending on the variety and growing conditions.
- Kidney beans require adequate moisture for germination and growth. It is recommended to irrigate the soil before planting to ensure good seed-soil contact. After planting, water the beans regularly, but avoid overwatering or waterlogging the soil.

- Kidney beans require moderate fertilization to support growth and yield. A soil test can help determine the nutrient content of the soil and any necessary amendments. Fertilizer can be applied at planting or during the growing season as needed.

## **PLANTING METHOD: -**

**Prepare the soil:** Clear the planting area of weeds, rocks, and debris. Loosen the soil to a depth of 15-20 cm with a hoe or tiller. Add organic matter such as compost or well-rotted manure to improve soil fertility and structure.

**Planting:** Kidney beans are typically planted directly in the soil, as they do not transplant well. Plant the seeds 2-4 cm deep and 5-10 cm apart in rows spaced 45-75 cm apart, depending on the variety and growing conditions.

**Watering:** Water the seeds immediately after planting to ensure good seed-to-soil contact. Water the soil regularly to keep it moist but not waterlogged. Avoid overhead watering to prevent the spread of diseases.

**Fertilization:** Kidney beans require moderate fertilization to support growth and yield. A soil test can help determine the nutrient content of the soil and any necessary amendments. Fertilizer can be applied at planting or during the growing season as needed.

**Mulching:** Mulching can help conserve moisture, suppress weeds, and regulate soil temperature. Apply a layer of straw, leaves, or other organic material around the plants, being careful not to cover the seedlings.

**Support:** Some varieties of kidney beans require support for their vines to climb. Install trellises or stakes before planting to provide support for the plants.

## **FERTILIZERS: -**

- Kidney beans require moderate fertilization to support growth and yield. The specific fertilizer requirements will depend on the nutrient content of the soil and the variety of kidney beans being grown .
- Nitrogen (N)
- Phosphorus (P)
- Potassium (K)

## **PESTS AND DISEASES: -**

### **Pests:**

**Aphids:** These small, soft-bodied insects can cause stunted growth and distorted leaves. They can be controlled with insecticidal soaps or oils.

**Bean beetle:** These beetles feed on the leaves and pods of the plant and can cause significant yield losses. They can be controlled with insecticides or by removing the affected plant parts.

**Cutworms:** These caterpillars feed on the stems of the plants and can cause plants to wilt or die. They can be controlled with insecticides or by placing collars around the base of the plants.

### **Diseases:**

**Anthrachnose:** This fungal disease causes brown, sunken lesions on the leaves, stems, and pods of the plant. It can be controlled with fungicides and by planting disease-resistant varieties.

**Rust:** This fungal disease causes orange or brown pustules on the leaves of the plant. It can be controlled with fungicides and by removing and destroying infected plant parts.

**Bean common mosaic virus:** This virus causes yellow mottling and distortion of the leaves, as well as reduced yields. There is no cure for this virus, so prevention is key. Plant disease-free seeds and control aphids, which can spread the virus.

## **HARVESTING OF KIDNEY BEAN: -**

- Kidney beans are typically ready to harvest when the pods have turned yellow or brown and are dry and brittle. The exact timing of harvest will depend on the variety, planting time, and growing conditions.
- To determine if the kidney beans are ready for harvest, test a few pods by opening them and checking the seeds. The seeds should be hard and dry and come out of the pods easily. If the seeds are still soft or difficult to remove, the plants need more time to mature.
- Once the kidney beans are mature, they can be harvested by pulling up the entire plant or by handpicking the pods. Be gentle when harvesting to avoid damaging the plants or the pods.