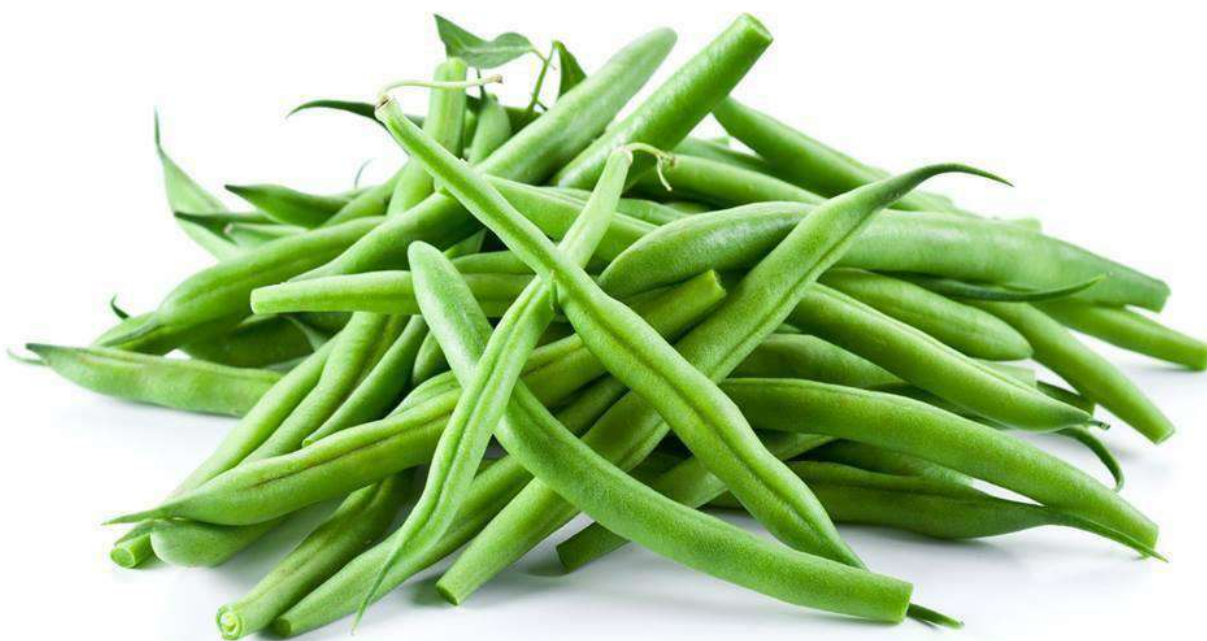


BEANS



Designed by:

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Varieties

Common beans range from being determinate to indeterminate. The extreme indeterminate types are grown as climbers with staking to support their stems.

Determinate growth means that the bean plants stop producing new leaves (growing vegetatively) once the flowers have developed. Vine-type field bean varieties have indeterminate growth, meaning they continue to grow, flower and set pods as long as temperature and moisture permit.

Determinate beans are also called bush or dwarf and grow up to about one and half feet high, while climbing beans may grow as high as 2.5m.

In Tropical areas like Uganda we have Nambale, K131 (1994), K132 (1994), NABE 2(1995), NABE 3, NABE 4, NABE 5 etc. All these varieties are bush type. Climbing types include NABE (7C, 8C, 9C, 10C), the most recent is NABE 12 released in 2003.

Soil requirement

You can grow your beans on both fertile smooth and rough seedbeds. However, when you grow beans on smooth soils, you should be cautious enough to avoid soil erosion. Your beans will need optimal levels of Nitrogen, phosphorus and potassium; these are major limiting factors for production.

Climatic requirements

Beans are annual crops which thrive in warm climates. They grow optimally at temperatures between 18-24°C. The maximum temperature during flowering should not exceed 30°C. High temperatures during the flowering stage leads to abscission of flowers and poor pod set, resulting in yield loss. Day temperatures below 20°C will delay maturity and cause empty or immature pods. Sugar beans should be cultivated under rain-fed conditions which record a minimum of 400 to 500 mm rainfall during the rainy season. However, an annual rainfall total of 600 to 650mm is considered ideal.

Fertilization

Adequate soil fertility is a requirement for profitable dry bean production. Prevention of nutrient stress during the growing season ensures optimum crop production and decreases the impacts of adverse environmental conditions. Prior to planting, test soils to measure the soil fertility status to determine the appropriate kind and level of fertilizer application. Because dry beans fix a portion of their total nitrogen (N) needs from the atmosphere, N fertilizers are only needed on soils with low levels of residual NO₃ -N. Phosphorus (P) is often limiting on soils in the High Plains.

Planting

Row planting is highly recommended

The depth of planting shouldn't exceed 5cm as your seeds may not germinate when planted deep.

We would recommend spacing of (50x10cm or 25x20cm) for bush types, and (50x15cm or 50x20cm) for climbing beans.

Weed control

Beans should be kept weed free especially in the early stages of the crop growth.

You will normally need just one weeding operation at about 3 weeks after planting.

Diseases

Bacterial Brown Spot



Symptoms

- Small brown spots on leaves.
- The spots sometimes fallout, giving the leaf a shot-hole appearance.
- Small dark-brown spots develop on pods, early pod infections can result in malformed pods.

Management

- Crop rotation.
- Use resistant varieties.
- Apply copper-based bactericides.

Bacterial Wilt



Symptoms

- Infected plants temporarily wilt during warmer parts of the day which wilt disappears during cold.
- Wilting continues steadily and plant dies.
- Stem canker and water soaked pods occur.
- Dark-brown to black discoloration occurs in the vascular tissue in the root.

Management

- Use resistant cultivars.

Common Blight



Symptoms

- Water soaked spots on leaves.
- These spots later become brown, light brown, irregular shaped with bright yellow margins.
- Defoliation might occur.

Management

- Use clean, certified seed.
- Practice crop rotation.
- Deep plowing to eliminate infested bean debris from field.
- Some chemicals might also help minimize symptoms.



Alternaria Leaf Spot



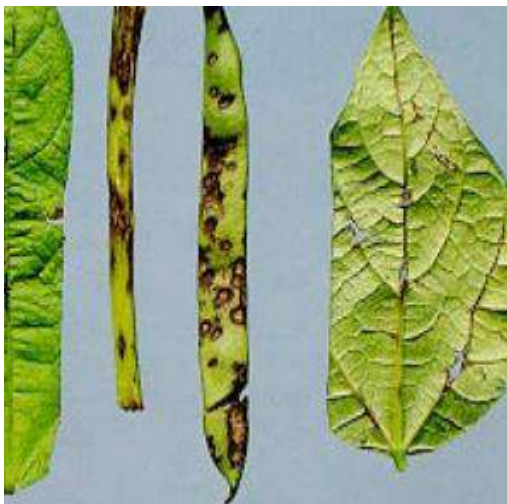
Symptoms

- On leaves, small, brown irregular-shaped lesions develop into large, gray-brown oval lesions.
- For severe cases entire leaf becomes brown/necrotic.
- The necrotic/brown areas of the leaf fallout to create a shot-hole.
- Premature defoliation starting with lowest levels.

Management

- Cultural measures might be used say: wider plant and row spacing.
- Crop rotation.
- Chemical measures can also be adopted.

Anthracnose



Symptoms

- Early signs of infection by this fungal disease appear on the underside of leaves and cause black lesions on pods.

Management

- Adopt cultural measures as earlier discussed.
- For chemical control apply Dithane M45, Thiram 80 WP.

Rust



Symptoms

- Early symptoms are small yellow lesions on the underside of older leaves which can cause defoliation
- Plant vigor may be diminished.

Management

- Dithane M45, Bravo or Folicur.

Bacterial Brown Spot



Symptoms

- Causes stunted growth.
- Distorted leaves that curl at the edges.
- Dark green mosaic blotches

Management

- Control aphids using Dimethoate 40 EC.

Harvesting

Beans have a moisture content of 50% at physiological maturity. The beans however are only ready for harvesting when the moisture content drops to 16 % (the ideal being 15%). Seeds may split during threshing when the moisture content is less than 12 % and such seeds are rejected by canners and seed companies and is difficult to clean without further seed split or broken coats occurring. Sugar beans should be harvested when all the pods have turned yellow, but before becoming so dry that they begin to shatter.

Sugar beans can be harvested in three ways

- The plants are pulled by hand and threshed by driving a tractor over them on a threshing floor. Smaller quantities can be threshed by hand by beating with a stick in a hessian bag. The seed can be separated from the chaff by using the wind.
- Partially mechanized systems- the plants are pulled by hand placed in windrows and threshed with a harvester or stacked where-after they are threshed with a stationary threshing machine.
- Fully automated system-the beans are pulled mechanically, raked into windrows and threshed with a stationary threshing machine.