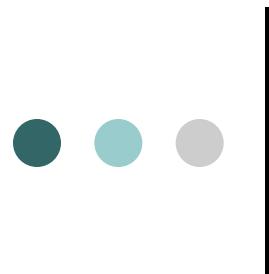




# **Green Bean Production in ER**



**IDEA-NEW**



# Green Beans

- The most important type of bean grown commercially is the snap bean (*Phaseolus vulgaris*), also referred to as the green bean or string bean
  - Snap bean
    - Bush types (dwarf)
    - Vines types (climbing)
    - Pods can be yellow or purple in addition to the common green type

# Green Beans

- Bean is extensively grown in the spring and summer for its tender and fleshy pods

Bush bean



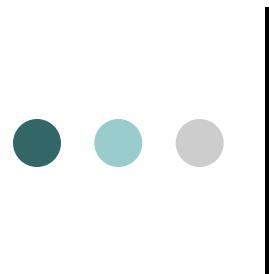
Climbing bean





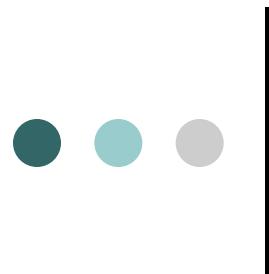
# Green Bean Cultivars

- Snap beans
  - Bush types, they have determinate growth, this means that the bean plants stop producing new leaves (growing vegetatively) once the flowers have developed.
    - Contender, Isar
  - Climbing or poles types, have indeterminate growth, meaning they continue to grow, flower and set pods as long as temperature and moisture permit.
    - Snoopy, Kentucky wonder
- Most varieties require a growing season of between 50-60 days.



# Climate and Soil

- Snap beans are a warm-season crop.
  - Temperatures 19 - 27 °C are suitable for growing most cultivars.
  - Temperature extremes can result in reduced growth. Temperatures greater than 32° C can cause buds and flowers to drop.
  - Rain during flowering can also cause flowers to drop.
  - Growth and development stop when temperatures drop below 10° C.
  - Some bush varieties are able to withstand a short dry period.
- Green beans will grow on a wide range of soils.



# Seeding Rate

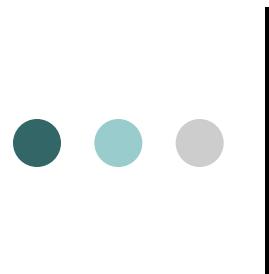
- Seed rate, 6 – 8 kg/jerib
- Sowing time
  - Can be cultivated most of the year
    - Plain areas, Feb – March and Aug – Sep.
    - Mid – elevation, March – June
    - High – elevation, April - June

# Green Beans

- Sowing

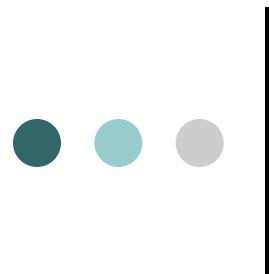
- Beans are sowed directly on raised beds for commercial production
- Seeds are planted 2-2.5 cm deep, 3 seeds per hole. The young plants are thinned to two plants per station.





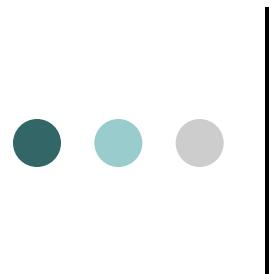
# Green Beans

- For commercial production, the recommended practice,
  - for raised beds 1.1 m bed-center to bed-centre,
  - two rows per bed, 40 cm apart, alternate planting, with 30 cm between plants.
  - This will give a plant density of 12,000 plants/jerib.



# Fertilization

- Base fertilization
- Top-dressing
- Beans are also sensitive to micro-elements such as boron, molybdenum, iron and zinc.
  - Supplemental foliar sprays such as Cropmax or Bayfolan can supply these elements to the plants.



# Irrigation

- Before sowing, the field should be irrigated with 15 cm of water in the furrow.
- Additional irrigation can be done as needed. Because green beans have shallow roots excess moisture will be harmful.
- It is essential to maintain optimum soil moisture during
  - flowering,
  - pod/ fruit set and
  - pod development



# Weeds

- 2-3 hand weeding and 1-2 hoeing according to crop needs
- Eliminates weeds before Nitrogen application

# Bean Leaf Beetle

- The bean leaf beetle is reddish to yellowish brown and about  $\frac{1}{4}$  inch long.
- The beetles feed on the foliage, chewing small round holes into the leaves. Adult feeding reduces plant vigor, plant size and yield. Later in the season, the second generation beetles will feed directly on the bean pod.
- Cypermethrine, Malathion, Lorsban



# Potato Leafhopper

- They extract sap from the undersides of leaves causing them to crinkle and curl downward.
  - Extensive feeding can cause a characteristic triangular yellowing or bronzing of the leaf tip  
These plants are usually stunted, have small root systems and have reduced yields and quality.
  - Cypermethrine, Malathion, Lorsban



# Bacterial Blight, *Xanthomonas* sp. and *Pseudomonas* sp.

- Common bacterial blight is favored by moderate to warm temperatures, high moisture and plant wounds during and after flowering.
- The pathogens can survive in infected debris and are seed-borne.
- Disease management recommendations rely upon crop rotation, sanitation, planting treated certified seed, varietal selection, stress and wound avoidance, and proper pesticide scheduling.



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# Anthracnose

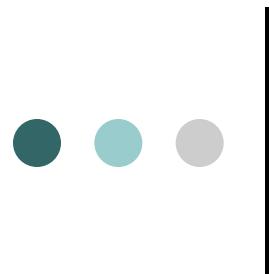
- Dark brown sunken spots
- Control
  - Resistant cultivars
  - Treated seed





# Harvesting and Handling

- All pod beans should be harvested when the pod is bright green and fleshy, and the seeds are small and green.
- Beans should be hand picked in the morning before it becomes hot.



# Harvesting and Handling

- Grading

- Sort according to size.
- Beans should be well formed and straight, bright in color with a fresh appearance, and tender but firm. They should snap easily when bent.