

## Mantra RZ – Climbing Flat Podded Bean

Characteristics	
Maturity	Early
Plant Habit	Strong Growth / Open Plant
Pod	Length 22-25cm, Width 20mm
Colour	Middle Green
Shape	Flat
Firmness	Very Good
Shelf Life	Lone
Disease Resistance	BCMV (Bean Common Mosaic Virus)

Mantra RZ is the best choice for the quality market. This variety is successfully grown in greenhouses around the Mediterranean and the Middle East. For a successful cultivation keep the growing advice in mind.

### Soil and Fertigation

Beans have a shallow root system and prefer a good aerated soil. Overwatering has to be avoided, especially on heavier soils. Beans are sensitive to salinity. EC in the soil is preferable below 1.5 ms/cm.

There is no need for a high basic dressing. It is better to supply soluble fertilizers in small quantities during the cultivation. In case of a too high nitrogen level, the plant will develop more vegetatively and fruit set will be a problem. PH in the soil should be in the range between 6.5 and 7.5.

### Sowing

In general, the growers prefer direct sowing. Preferred rate is 2 seeds / dropper. Sowing distance is 40-50 cm in the row. Distance between the rows of 125cm +/- 4 plants / m<sup>2</sup> is sufficient to guarantee a good production. For 100m<sup>2</sup> you need 300 grams of seed.

Sowing in trays or boxes using peat moss or sawdust as your sowing material is another possibility. One week after sowing the seedlings are ready to transplant. Advantage: uniform plant material  
Disadvantage: extra labour required.

The optimum germination temperature is 20-22°C. Sowing below 15°C soil temperature will decrease the germination figure and increase disease susceptibility. Irrigate the soil before sowing. In order to diminish the risk of Pythium and other crown rot fungi, maintain an optimum germination temperature.

### Irrigation

Beans do not need large quantities of water. Limit the quantity of water until flowering starts. At this stage sufficient water has to be available in combination with a sufficiently high humidity to avoid flower drop.

## **Flower Drop**

This can be a serious problem in bean cultivation and can be caused by:

- Lack of water
- Extreme high temperatures
- Low humidity
- High salinity
- Too much vegetative growth

Keep these points in mind. During a hot period in spring and summer, plastic tunnels are sometimes whitewashed to reduce the temperature.

## **Minimum Temperature During Cultivation**

During wintertime, temperature is the limiting factor for the quality of the beans. Below 12°C your crop is at risk of deformed and curved beans. Heating systems should be used in order to keep the minimum temperature at the advised level. This is already used in several countries.

## **Twisting**

One rope per two plants is sufficient. The plant twists itself. Once the plant reaches the top wire, it is advisable to make a ceiling by fixing a piece of rope from wire to wire and give the plant a helping hand.

## **Leaf Picking**

Until the first flowering there is no need for leaf picking. Later on, regular leaf picking (1-2 leaves per plant / per week) will contribute to better aeration in between the plants. Fruit quality will improve and harvesting will be easier.

## **Harvesting / Storing**

Depending on the season, 2-3 times per week harvesting needs to be done. Regular harvesting will improve the uniformity and colour of the beans. Do not pick the beans too small. The shelf life of the product will reduce if the beans are too small. Store the beans after grading preferably at 12°C.

## **Diseases**

Beans are sensitive to insects such as thrips, spider mites, leaf miners and aphids. Monitor your crop for early detection and get control of your pests early. Although biological controls are used in glasshouses, so far in plastic tunnel cultivation, chemical control is used.

Fungi diseases like Botrytis and Sclerotinia appear especially in dense crops in warm and humid weather. Improve aeration and control with chemicals.