

Peppers (*Capsicum annuum* L.)

French: Piment; Spanish: Pimiento; Italian: Peperone; German: Gemüsepaprika

Under Temperate Conditions

Crop data

Can be considered as an annual when grown for sweet pepper production. Harvested part: fruits, which vary in shape, weight and colour. The root system consists of a deep tap root with branches spreading laterally about 50 cm, and adventitious roots.

Transplanted at 2-3/m², spaced 40-50 cm apart in rows 70-100 cm apart. Can be direct sown but mainly in crops for processing. Yields 35-50 t/ha depending on cycle length and fruit characteristics. Protected cultivation under low or large tunnels, or in cold or heated greenhouses, very common.

Thrives well in deep, well-drained soils rich in organic matter. Tolerates a wide range of pH, with optimum 6.5-7.5. Sensitive to brackishness.

Temperatures required for germination, 18°-35 °C (optimum 29.5 °C); for growth, night 16°-18 °C, and day 20°-25 °C; and for fruit ripening, 18°-24 °C.

Nutrient demand/uptake/removal

180-400 kg N, 45-120 kg P₂O₅, 250-675 kg K₂O, 32-50 kg MgO, 110-160 kg CaO per ha depending on yield, growing conditions and whether harvested green or final colour. Both uptake and plant growth proceed more rapidly from flowering to the gathering of the first fruits.

Fertilizer recommendations

For normal outdoor crops: 250-300 kg/ha N, of which 100 kg/ha before transplanting, followed by three to five topdressings (before flowering, at fruit set, and during harvest); 100-150 kg/ha P₂O₅ and 200-300 kg/ha K₂O all before planting or, on sandy soils, in split dressings. The K₂O rate may need adjusting according to soil analysis. Peppers respond well to N in the form of urea. K increases plantlet resistance to wilting.

The crop is rather sensitive to Mg deficiency.

7.2.10 Peppers (*Capsicum annuum* L. var. *grossum*)

Under Tropical/Subtropical Conditions

Crop data

Transplanted or direct seeded. Harvested: 65 - 80 days after transplanting. The roots thrive with good soil aeration. The crop is therefore preferably grown in sandy loams and loams

with good drainage, with pH between 6 - 6.8. The crop is adapted to warm conditions. Generally irrigated.

Target marketable yields in intensive commercial production: 11 - 25 t/ha.

Nutrient demand/uptake/removal

| Nutrient uptake/removal - Macronutrients | | | | | |
|------------------------------------------|-------|------|-----|-----|-----|
| Yield t/ha | N | P2O5 | K2O | MgO | CaO |
| | kg/ha | | | | |
| 21 | 70 | 16 | 92 | 18 | 67 |
| Source: various | | | | | |

Plant analysis data

| Plant analysis data - Macronutrients (optimum fertility conditions) | | | | | | | |
|---------------------------------------------------------------------|----------------|-----------------|-----|-----|-----|-----|-----|
| Plant part | Growth stage | % of dry matter | | | | | |
| | | N | P | K | Mg | Ca | S |
| Young mature leaf | Early fruiting | 3.7 | 0.3 | 3.4 | 0.4 | 1.0 | 0.2 |
| Source: various | | | | | | | |

| Plant analysis data - Micronutrients (optimum fertility conditions) | | | | | | |
|---------------------------------------------------------------------|----------------|----------------|----|----|----|----|
| Plant part | Growth stage | ppm dry matter | | | | |
| | | Fe | Mn | Zn | Cu | B |
| Young mature leaf | Early fruiting | 45 | 33 | 26 | 4 | 23 |
| Source: various | | | | | | |

Fertilizer recommendations

The greatest absorption of nutrients occurs in the first 8 to 14 weeks of growth and again after the first fruit removal. Therefore, high N levels are required by the plant early in the growing season with supplemental applications after the fruit initiation stage. Improved N use efficiency and greater yields are achieved when N is applied under polyethylene mulches and with 12 weekly N applications in a drip irrigation system. At least 50 % of the total fertilizer N should be NO₃-N.

For optimum P placement, band 5 - 8 cm deep in the rows. Blossom-end rot may result from Ca deficiency which may be corrected with foliar sprays of calcium chloride or calcium nitrate. The crop is also sensitive to Mg deficiency and has a low salt tolerance, but root inoculation with vesicular-arbuscular mycorrhizal fungi may improve growth under salt stress conditions.

Present fertilizer practices.

Senegal (Cambarene)

In a light soil in a semi-arid area apply 10 t/ha organic manure, 140 kg/ha N, 100 kg/ha P₂O₅, and 200 kg/ha K₂O. At planting, basal applications of all the organic manure, dolomitic limestone if required, 60 % of the P₂O₅ and 15 % of the N and K₂O. The balance of the N and K₂O is applied in localized top dressings at 3-week intervals, beginning 15 days after planting. The balance of the P₂O₅ is either applied before flowering or it is split into three dressings at 6-week intervals.

Brazil (Minas Gerais)

General recommendations are, firstly, 60 kg/ha N, 240 kg/ha P₂O₅ and 180 kg/ha K₂O incorporated in the soil at planting and, secondly, 240 kg/ha N and 50 kg/ha K₂O broadcast in two applications 15 and 30 days after planting. Greater yields are obtained by incorporating into the soil 20 t/ha organic matter two or more weeks before planting.

India (Bangalore)

Applications on sandy loams in moderately fertilized soils are 150 kg/ha N, 80 kg/ha P₂O₅ and 40 kg/ha K₂O. Broadcast all the P₂O₅ and K₂O at planting time together with 50 kg/ha N. The remaining N is applied in equal split doses at 30 and 60 days after planting.

Further reading

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