

## **Cucumber** (*Cucumis sativus* L.)

French: Concombre; Spanish: Pepino; Italian: Cetriolo; German: Gurke

### **Under Temperate Conditions**

#### **Crop data**

Plant density: 1-2.5/m<sup>2</sup> or more, depending on pruning and training system.0

Yields commonly 30-60 t/ha can reach 100 t/ha or more (up to 300 t/ha under glass).

Prefers sandy or well-structured soils rich in organic matter. Tolerates rather low pH (down to 5.5).

Requires a long warm season (optimum temperatures for growth: night, about 18 °C, and day, about 28 °C) and a high light intensity.

#### **Nutrient demand/uptake/removal**

Depends very much on yield. Typical values reported:

Yield 300 t/ha under glass: 450-500 kg N, 200-250 kg P<sub>2</sub>O<sub>5</sub>, 800-1 000 kg K<sub>2</sub>O, 130 kg MgO, 300 kg CaO per ha.

High-yielding outdoor crop: 170 kg N, 130 kg P<sub>2</sub>O<sub>5</sub>, 270 kg K<sub>2</sub>O per ha.

Yield 30 t/ha outdoors: 50 kg N, 40 kg P<sub>2</sub>O<sub>5</sub>, 80 kg K<sub>2</sub>O per ha.

Yield 15 t/ha outdoors: 47 kg N, 13 kg P<sub>2</sub>O<sub>5</sub>, 65 kg K<sub>2</sub>O per ha.

#### **Fertilizer recommendations**

Organic manures useful even for outdoor crops. In addition, on soils of normal nutrient content, fertilizer rates of 100 kg N, 100 kg P<sub>2</sub>O<sub>5</sub>, 200 kg K<sub>2</sub>O per ha are recommended for yield levels up to 30-40 t/ha. The N application should be split into several dressings according to the length of the harvesting cycle, preferably every 2 weeks if practicable.

Cucumber is very sensitive to N deficiency, which can alter the fruit shape, and is intolerant of salinity. Deficiencies of Mg and of B, Fe and Mn, can occur and demand direct application of these nutrients.

### **Under Tropical/Subtropical Conditions**

#### **Crop data**

Annual. Harvested part: Fruit. Directly seeded. Flowers 35 - 45 days after planting. Harvested: 45 - 55 days after planting. Plant density: 33 000 to 54 450 plants/ha. Preferably grown in well drained, non saline soils. Adapted to a wide-range of soils, but will produce early in sandy soils. Generally irrigated.

Target marketable yields in intensive commercial production: 13 - 30 t/ha.

## Nutrient demand/uptake/removal

Nutrient uptake/removal (outdoor) - Macronutrients					
Yield t/ha	kg/ha				
	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MgO	CaO
20	39	27	70	10	35
Source: various					

## Plant analysis data

Plant analysis data - Macronutrients							
Plant part	Growth stage	% of dry matter					
		N	P	K	Mg	Ca	S
Young mature leaf	Fruit set	3.3	0.4	2.8	0.4	1.8	0.3
Source: various							

Plant analysis data - Micronutrients						
Plant part	Growth stage	ppm dry matter				
		Fe	Mn	Zn	Cu	B
Young mature leaf	Fruit set	108	60	23	8	25
Source: various						

## Fertilizer recommendations

Cucumbers are sensitive to Mg deficiency and respond to Mn and Cu applications.

## Present fertilizer practices

### Senegal (Camberene)

On light sandy soils in a semi-arid area apply 20 t/ha of organic manure, 130 kg/ha N, 95 kg/ha P<sub>2</sub>O<sub>5</sub>, and 200 kg/ha K<sub>2</sub>O. Before planting broadcast all the organic manure and P<sub>2</sub>O<sub>5</sub> and one-third of N and K<sub>2</sub>O. At 30, and again at 50 days after planting apply one-third of the N and K<sub>2</sub>O.

### Brazil (Minas Gerais)

General recommendations are, firstly, 50 kg/ha N, 200 kg/ha P<sub>2</sub>O<sub>5</sub> and 150 kg/ha K<sub>2</sub>O incorporated in the soil at planting and, secondly, 50 kg/ha N and 50 kg/ha K<sub>2</sub>O broadcast in two applications 15 and 30 days after transplanting. Greater yields are achieved by incorporating 20 t/ha organic matter two weeks or more before planting.

### Philippines

In the dry season 120 kg/ha N, 120 kg/ha P<sub>2</sub>O<sub>5</sub> and 120 kg/ha K<sub>2</sub>O. Band one-third at planting. When the vines have reached about 1 m in length, sidedress a second one-third. Sidedress the remaining one-third when the first fruit is about the size of an egg.

### India (Assam)

In sandy loam soils with pH 6.5 and soil boron content of 0.58 ppm, apply 80 kg/ha N, 45 kg/ha P<sub>2</sub>O<sub>5</sub>, 85 kg/ha K<sub>2</sub>O and a 0.25 % Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub>·10 H<sub>2</sub>O solution. Apply all the N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O at planting. Spray the 0.25 % boron solution at the six leaf stage and at the flower bud initiation stage.

### **Further reading**

HOCHMUTH, G. (ed.): Cucumber production guide for Florida. Florida Coop. Ext. Serv. Circ. 101E (1988)

MAURYA, K.R.: Effect of nitrogen and boron on sex ratio, yield, protein and ascorbic acid content of cucumber (*Cucumis sativus* L.). *Indian J. Hort.* 44, 239-240 (1987)