

Asparagus (*Asparagus officinalis* L.)

French: Asperge; Spanish: Espárrago; Italian: Asparago; German: Spargel

Under Temperate Conditions

Crop data

The crop, propagated by seed or crown, can be exploited for eight to ten years or more (up to 15 years). Tolerates extreme climatic conditions, but requires at least 12 °C in the soil with an optimum near 25 °C to produce shoots.

First picking should be delayed till the third year after planting. The yield reaches the maximum (6-8 t/ha) around the sixth year.

Plant density: 1 up to 4 plants/m². Requires carefully prepared, sandy soil, rather neutral or slightly alkaline, deep and rich in organic matter.

Nutrient demand/uptake/removal

Nutrient uptake - Macronutrients (reported by various authors)					
Yield t/ha	kg/ha				
	N	P2O5	K2O	CaO	MgO
6	86	34	106	-	-
4.5	103	50	123	68	-
6.4	154	43	193	139	10
5	76	17	68	29	5
5.7	62	17	64	36	7
4	100	28	90	-	-
2.2	72	36	90	-	-
Average	93	32	105	68	7

Nutritional requirements increase after the turions picking; i.e. during maximum growth of the epigeous part of the plant.

Fertilizer recommendations

Before planting: 30-40 t/ha organic matter, 150-200 kg/ha P2O5 and 200-300 kg/ha K2O; applied in bands at bottom of planting furrow.

During first year: 50-100 kg/ha N split during spring and summer season.

Following years: (kg/ha) N: 100-150; P2O5: 100-150; K2O: 150-200.

If available, also manure. The P2O5 is to be applied before winter, N and K2O in two or three doses in summer.

N in nitrate form preferred; K2O as potassium chloride (sulphate form could increase the bitter taste of turions).

During the long growing cycle Ca availability in the soil should be increased; a high Ca:P-ratio is important for yielding purposes.

Asparagus might require applications of Mg and B.

Under Tropical/Subtropical Conditions

Crop data

Perennial. Harvested part: young shoots. Direct seeded and crown transplanting. Plant density: 15 000 to 25 500 plants per ha. Preferably grown in muck and light sandy soils well supplied with organic matter and pH range of 6.7 - 7.5. Does not tolerate acid soils but grows well in slightly alkaline and saline soils.

Target marketable yields in intensive commercial production = 1.5 - 4 t/ha.

Plant analysis data

Plant analysis data - Macronutrients (optimum fertility conditions)							
Plant part	Growth stage	% of dry matter					
		N	P	K	Mg	Ca	S
Fern	50 cm	2.4	0.2	1.9	0.4	0.4	0.1
Source: various							

Plant analysis data - Micronutrients (optimum fertility conditions)							
Plant part	Growth stage	ppm dry matter					
		Fe	Mn	Zn	Cu	B	Mo
Fern	50 cm	-	23	13	0	56	-
Source: various							

Fertilizer recommendations

P contributes to the improvement of spear quality, flavour, and texture, while K increases resistance to rust and helps maintain shoot quality. Mg is needed for carbohydrate storage. The crop also responds to B when soil supplies are deficient. Root inoculation with *Glomus fasciculatum* vesicular-arbuscular mycorrhizal fungus improves growth by improving P uptake and by decreasing the effects of *Fusarium* spp. diseases.

For the first year of establishment in the field apply all N, P and K before planting and field preparation. Annual treatments after field establishment should consist of split N applications, one-half before cutting begins and the remainder after harvesting has ended.

Present fertilizer practices

Senegal (Camberene)

During the first year of growth for field establishment in sandy soils of semi-arid areas, 15 t/ha organic manure and 40 kg/ha N, 180 kg/ha P₂O₅, and 90 kg/ha K₂O are broadcast before planting. Annually sidedress all organic manure, P and K before earthing up. The annual N applications are split in two, one-half applied after earthing up and the rest after harvest.

USA (California)

Before field preparation on mineral soils apply 110 kg/ha N, 130 kg/ha P₂O₅, and 130 kg/h K₂O; thereafter annually 110 kg/ha of N after the cutting season has ended.

Chile

In northern areas (for yields of 7- 10 t/ha): in winter, 50 kg/ha N, 50 kg/ha P₂O₅ and 50 kg/ha K₂O and in summer a further 50 kg/ha N. In southern areas rates are doubled.

Further reading

KRARUP, A.; KRARUP, C.: Asparagus production in Chile. *Acta Hort.* 271, 253-256 (1990)

SIMS, W.L.; SOUTHER, F.D.; MULLEN, R.J.: Growing asparagus in California. *Coop. Ext. Univ. Calif. Lf.* 21447 (1988)