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Sampling

The nutritional status of this vegetable crop is monitored using soil tests and plant analysis. Monitoring regularly is important to help sustain optimum levels and avoid nutritional disorders. If disorders do occur, rapid diagnosis is necessary to assist correction.

These guidelines apply to phaseolus beans (French, dwarf, snap and runner beans).

Leaf - French

Sampling Time: Early flowering.

Plant Part: Youngest mature leaf (without petiole).

Collect From: -

Quantity per Sample: 20 - 30 leaves.

Recommended Tests: Basic Plant (BP).

Comments: To help diagnose an obvious problem, leaves showing the first signs of the distinctive symptoms should be collected as soon as abnormalities appear. If sampling outside the normal sampling time it is useful to take a second sample of similar, healthy leaves from nearby unaffected plants for analysis as a comparative standard.



Soil

Sampling Time: Prior to crop establishment.

Core Depth: 15 cm.

Collect From: Randomly throughout the area to be planted.

Quantity per Sample: 12 - 20 cores.

Recommended Tests: Basic Soil (BS).

Comments: If a problem is suspected during the growing season, then a sample should be taken from the rooting zone immediately adjacent to the plant. Collecting a second sample from an unaffected area may help identify the cause of the problem.

Interpretation

Interpretation of the laboratory's results is possible by comparison with normal levels expected for the crop in question. The interpretation given here are based on the best information available and relate specifically to the sampling instructions given.

Leaf - French

<i>Element</i>	<i>Unit</i>	<i>Normal Range</i>
Nitrogen	(%)	4.0 - 6.0
Phosphorus	(%)	0.35 - 0.50
Potassium	(%)	1.8 - 4.0
Sulphur	(%)	0.25 - 0.50
Calcium	(%)	1.50 - 3.00
Magnesium	(%)	0.25 - 0.70
Sodium	(%)	0.00 - 0.06
Iron	(ug/g)	50 - 300
Manganese	(ug/g)	50 - 300
Zinc	(ug/g)	30 - 100
Copper	(ug/g)	6 - 50
Boron	(ug/g)	40 - 60

Soil

<i>Element</i>	<i>Unit</i>	<i>Normal Range</i>
pH	-	5.6 - 7.0
Olsen P	(ug/ml)	35 - 75
Potassium	(me/100g)	0.70 - 1.40
Calcium	(me/100g)	6.0 - 12.0
Magnesium	(me/100g)	1.00 - 3.00
Sodium	(me/100g)	0.00 - 0.50
CEC	(me/100g)	12.0 - 25.0
Volume Weight	(g/ml)	0.60 - 1.00

Comments:

Being a legume, beans are able to support rhizobia that can fix nitrogen. A small amount of nitrogen fertiliser is often still beneficial.

Beans are known to be susceptible to magnesium deficiency, as well as a range of micro nutrients such as iron, manganese, zinc, copper and molybdenum.

Results for copper, zinc and manganese in leaves sprayed with fungicides will not be reliable due to adhering spray residues on the leaves.

Iron deficiency symptoms may exist even when leaf levels appear satisfactory. This may be due to the presence of physiologically inactive forms of iron within the tissue. Also, soil contamination of leaves growing near the ground may elevate total iron results.

References

Weir, R.G. and Cresswell, G.C. 1995. Plant nutrient disorders 3. Vegetable crops. Inkata Press.
 Blackmore, L.C; Searle, P.L and Daly, B.K. 1987. Methods for chemical analysis of soils. NZ Soil Bureau Scientific Report 80. NZ Soil Bureau, DSIR.
 Geraldson, C.M.; Klacan, G.R. and Lorenz, O.A. 1973. Soil testing and plant analysis. L. Walsh (Ed), Soil Science Society of America, Ch 22.

Disclaimer:

Normal Range levels quotes relate specifically to the sampling procedure given. The Normal Range levels and Comments provided are the most up to date levels available but may be altered without notification. Such alterations are implemented immediately in the laboratory histogram reports. It is recommended that a consultant or crop specialist be involved with interpretations and recommendations.