

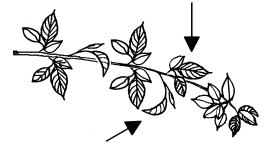


## Sampling Notes

The nutritional status of boysenberries is monitored using soil tests and plant analysis. Annual monitoring is important to help sustain optimum levels and avoid nutritional disorders. If disorders do occur, rapid diagnosis is necessary to assist correction.

### Leaf

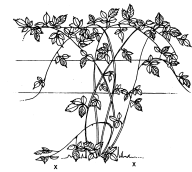
- Sampling Time:** During fruit set.  
**Plant Part** Youngest mature leaf (blade & petiole).  
**Collect From:** Current season's non-fruiting canes.  
**Quantity per Sample:** 5 representative leaves from each of 10 vines.  
**Recommended Tests:** Basic Plant (BP).



**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 and annually at any time of the year, although autumn to early winter is recommended.  
**Core Depth** 15cm.  
**Collect From:** From the rooting zone of the vines.  
**Quantity per Sample:** 12 - 20 cores.  
**Recommended Tests:** Basic Soil (BS), Sulphate S (SO<sub>4</sub>), Available Nitrogen (AN).  
**Comments:** Soil samples are usually collected for analysis prior to planting the crop.



If trickle irrigation is used, the wetted zones of the soil should be sampled separately, as minerals in the water may produce abnormal test levels.

If trying to diagnose a problem with crop growth and yield, samples should be collected from the rooting zones of the worst affected vines. In these circumstances, a second sample taken for comparative purposes from the rooting zones of normal vines may be useful.

## Interpretation

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

| Leaf       |       |             | Soil               |        |             |
|------------|-------|-------------|--------------------|--------|-------------|
| Analyte    | Unit  | Range       | Analyte            | Unit   | Range       |
| Nitrogen   | %     | 2.8 - 3.7   | pH                 | pH     | 5.8 - 6.5   |
| Phosphorus | %     | 0.17 - 0.34 | Olsen Phosphorus   | mg/L   | 40 - 60     |
| Potassium  | %     | 1.4 - 1.9   | Potassium          | me/100 | 0.50 - 0.80 |
| Sulphur    | %     | 0.18 - 0.32 | Calcium            | me/100 | 6.0 - 12    |
| Calcium    | %     | 0.65 - 1.4  | Magnesium          | me/100 | 1.0 - 3.0   |
| Magnesium  | %     | 0.22 - 0.46 | Sodium             | me/100 | 0.0 - 0.50  |
| Sodium     | %     | 0.0 - 0.10  | CEC                | me/100 | 12 - 25     |
| Iron       | mg/kg | 50 - 150    | Volume Weight      | g/mL   | 0.60 - 1.0  |
| Manganese  | mg/kg | 130 - 300   | Sulphate Sulphur   | mg/kg  | 20 - 50     |
| Zinc       | mg/kg | 28 - 60     | Available Nitrogen | kg/ha  | 100 - 150   |
| Copper     | mg/kg | 8.0 - 29    |                    |        |             |
| Boron      | mg/kg | 38 - 57     |                    |        |             |

## Comments

Symptoms of boron deficiency include dieback and delayed bud break, or even complete bud break failure. Young leaves may become distorted with large petioles and necrotic border tissue. Leaves forming later are not affected. Less severely affected buds give rise to small, deeply indented leaflets which persist throughout the growing season. Primocanes tend not to show symptoms.

Boron in berryfruit is mobile and can translocate in young, fruiting crops. Symptoms and detection of boron toxicity may be more difficult to evaluate if this is occurring.

Caution in applying boron is necessary, as berryfruit are thought to be susceptible towards boron toxicity.

Optimum soil pH range for berryfruit is 5.8 - 6.5. Manganese and magnesium deficiencies may arise where soil pH values are in excess of 7.0.

Soil magnesium levels should be at least twice the potassium level.

All canefruit are vulnerable to salt stress. This is normally only a problem for low lying coastal areas, or where irrigation water has high dissolved solids.

Chloride toxicity is possible, and more so in irrigated or low summer rainfall areas.

## References

Fertiliser recommendation for horticultural crops. HortResearch HortNET, 1997.

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.

## Disclaimer

Normal Range levels quoted 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.