



Soil and leaf sampling in wild blueberry production

Introduction

Samples of wild blueberry leaves and soils are used to adjust and determine the fertility program for wild blueberries fields. Samples are usually submitted to a government agricultural laboratory, although some private labs are accredited to perform the analysis.

For wild blueberries production, soil sampling is most useful for measuring pH (the acidity of soil) and organic matter. The leaf tissue analysis will provide the status of the nutrient content and these can be compared to standards used in your region.

Leaf sampling

Leaf sampling is used on a number of crops. It is a good indicator of plant nutrition because it measured exactly what amount of nutrients the plant has absorbed in the leaf tissue. It is used to assess that the current fertilizer program being used is adequate or to determine whether there are deficiencies in certain elements. The result of a tissue leaf analysis is to compare the status of the current sample to a set of standards that have been established for the crop.

When to sample wild blueberry leaves

In wild blueberry production, standards have been established for the vegetative year of the growing cycle when the nutrient levels are most stable. This occurs at the tip die back stage, when the newly emerged stems stop elongating, and the growing tip turns brown to black (Figure 1). In New Brunswick, tip die back will tend to occur during the last two weeks of July, but will depend on when the fields were pruned, the season's weather and the latitude.



How to sample wild blueberry leaf tissues

Sample, during dry weather, when 90% of the plants in the field have reached tip die back. Large fields should be divided into sampling areas. Low spots, trouble spots, and areas with obvious differences in soil type should be treated as separate sampling areas. When sampling, be sure to select stems AT RANDOM, walking in a zig-zag fashion. Cut and collect at least 15 to 20 stems in every four-hectare (ten acre) block at ground

Figure 1. The appropriate stage for sampling wild blueberry leaves (tip dieback).

level, since all the leaves will be included in the sample. Avoid sampling areas of severe disease or insect defoliation. Samples should be collected in plastic bags or the bags provided by the NBDAAF and kept cool until they are sent to the laboratory. Do not collect samples in paper bags, since the bag may contain Boron. Boron is an important plant nutrient, and its presence in the bag can lead to false Boron content level measurements in the leaf tissues. It is preferable to send the samples early in the week, so that they do not deteriorate in transit or store by travelling in the postal system too long.

Soil sampling

The analysis of soil samples helps us to understand the nature and the nutrient level of the soil. It is especially useful for soil features like pH (the acidity, or sourness of the soil), organic matter, and certain elements as well. The ideal soil pH for wild blueberries is 4.6 to 5.2,

When to sample soils

Soil samples can be taken at any time of the year, but it is most useful if they are taken at the same time as the tissue samples. It is recommended that soil samples be consistently taken at the same time of the year over the years. Soil sampling every 2 to 3 cycles is sufficient.

How to sample soils

Divide the field in as uniform areas as possible based on soil type or other factors that may influence the results. Within each area of the field, take sub-samples at different locations in a zig-zag pattern (Figure 2). Sub-samples collected are mixed together for one sample representing the area. The number of sub-samples to make up the composite sample is determined by the size of the field (Table 1).

Table 1. Suggested number of subsamples needed for a representative composite sample based on field size	
Field size (hectare/acre)	Suggested number of sub-samples
Less than 2 ha. (5 ac.)	15
2-4 ha. (5-10 ac.)	18
4-10 ha. (10-25 ac.)	20
10-20 ha. (25-50 ac.)	25
More than 20 ha (50 ac.)	30

Adapted from Mahler and McDole 1989

Sampling equipment and methods

Different tools such as a soil sampling probe, shovel or spade can be used for collecting samples. If a shovel or spade is used, dig a V shaped hole. Take a 2.5 cm. (1 inch) slice down one side of the hole to the desired depth (Figure 3). For wild blueberry fields, the sample should only be taken to a depth of 12.5 cm (5 inches). The sample should not include plant debris on the soil surface. If a soil probe is used, insert the probe perpendicular to the soil to the desired depth. Use a plastic bucket or other container to mix the composite sample. To avoid contamination, do not use your hand to mix samples. Ensure that all equipment is clean and free of fertilizers. Avoid using a galvanized bucket or a rusty shovel or spade, as these can contaminate the sample. Avoid

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sampling close to roads and ditches where limestone or fertilizer has been piled. Avoid collecting samples in wet soils, as soil may be difficult to mix properly.

Label samples clearly, with your name and address, and use a code or number that corresponds to the associated samples. The code or number should refer to the field which it represents. The code should always be the same. This allows the monitoring of plant health and soil fertility.

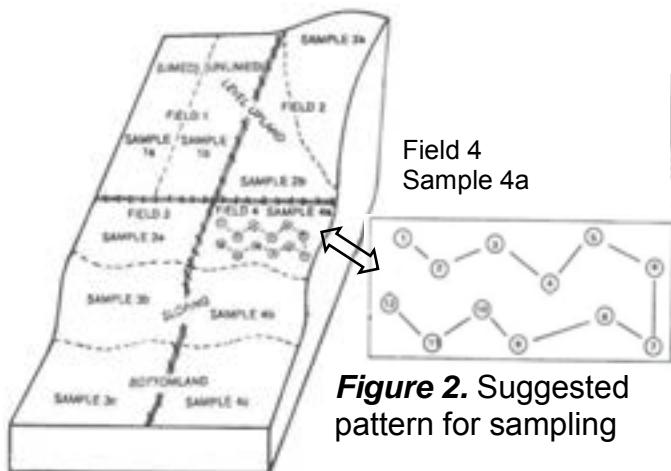


Figure 2. Suggested pattern for sampling

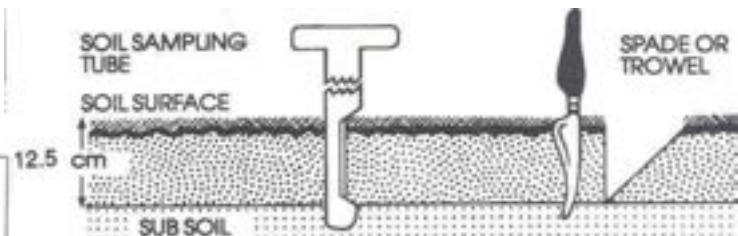


Figure 3. Sampling methods

Reference:

- Smagula, J. and DeGomez, T. 1987. Leaf and Soil Sampling Procedures. University of Maine, Wild Blueberry Factsheet No. 222
Land Resources Branch, NBDARD. 1994. Soil Sampling.