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Technical Note

Potato Leaf & Petiole Sampling Protocol

1. Collection of samples – Timing and growth stages

In order to monitor the availability of the macro and micronutrients major during the growing season, it is recommended that petiole samples are taken at regular intervals from king tuber length 10mm - 150mm. Nutrient analysis can be carried out at any plant stage, however, it is generally recommended that regular analysis be performed from tuber initiation through to the early bulking stage.

To enable reliable interpretations from the chemical analysis of potato petiole samples, it is important to record the size of the largest tuber (ie the king tuber size) when collecting samples for analysis. This parameter is extremely important, as the interpretation guidelines have been established at specific growth stages within the crop.

2. Developing your analysis program

To both manage and monitor the nutritional status of the crop, we recommend that you develop a sampling plan which features at least 5 to 8 individual samplings per block per season. This is necessary to enable the tracking of the nutritional status of the crop from tuber initiation to harvest.

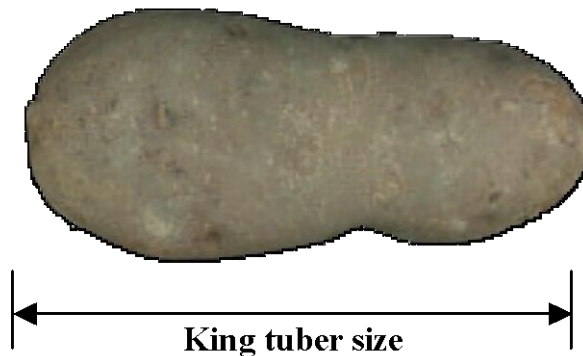
As a general guide, we recommend that you should plan to collect petiole samples at around 10mm, 30mm, 50mm, 70mm, 100mm and 130mm king tuber sizes. This will enable **Phosyn Analytical** to plot the key nutrients against the guideline levels to assess the crops nutritional status.

3. Collecting the sample

3.1 To collect a petiole sample, select the 4th petiole from the growing point and immediately strip off the attached leaflets. Each individual sample should consist of at least 40 individual petioles (about 200g fresh weight).

3.2 Also expose the tubers from the soil and record the length of the largest tuber in millimeters. This dimension is known as the 'king tuber size' and the dimension should be written on the **Phosyn Analytical** analysis request form (in the 'growth stage' column).

IMPORTANT NOTE - King tuber size is defined as the distance between the two furthest points on the tuber. For analysis purposes, petioles are usually collected at regular intervals from 10mm - 150mm. (see picture below)



3.3 Complete the details on the analysis request form and please remember to include:
 (a) The Grower details in the Client details field and
 (b) King tuber size (in the Growth stage column)

An example of a completed test form is attached

Please also consistently name the 'Paddock Ref' with the same name for each sample from the same paddock. This will enable us to produce an updated graph of the same paddock being monitored.

LAB SAMPLE REF	CLIENT SAMPLE REF	PADDOCK REF (& GPS Ref if available)	SAMPLE TYPE (soil, leaf, fruitlet, fruit, tuber, petiole etc)	CROP DETAILS *Potato Variety	GROWTH STAGE *Planting Date	AREA (Ha)	TESTS REQUIRED (See inside of front cover)
Office use only							
EXAMPLE	Sebago 2001	North Paddock 1	Petiole	Potato	30mm King tuber	100	P6

NOTE - Leaf sampling is also recommended at early to mid season to assess the nutritional status of the trace elements, especially copper and zinc. This will present an opportunity to identify and treat any nutritional imbalances at early growth stages. Analysis interpretations, together with recommended treatments will be provided on the **Phosyn Analytical** report.

When sampling leaf samples, please collect about 200 grams (about two handfuls) of the youngest fully expanded leaves available.
 Iron levels cannot be reliably assessed from leaf analysis as the leaves will contain physiological inactive forms of Iron.

4. Taking A Representative Sample

Each sample should be taken from a uniform section of the paddock that is the same soil type, variety and root-stock. As detailed above, you should collect about 40 individual petioles (about 200g fresh weight) from separate plants. It is sometimes useful to carry out comparative sampling from good or poor performing areas within a variety, this is also known as a diagnostic testing.

5. Care of Samples – Collection and despatch

Samples can be contaminated by some fungicides and nutrient sprays, which may give erroneous laboratory results. Always wash hands before sampling and preferably use the white **Phosyn Analytical** paper bags provided. A commonly used practice is to 'clean' your hands with the leaves of a potato plant prior to handling petiole samples. Avoid the use of plastic bags for plant tissue samples because of moisture condensation and possible breakdown of the samples.

Wherever possible, please collect and dispatch samples by the first half of the week to ensure that the samples arrive at the laboratory before the weekend. Always mail samples on the same day as they are taken from the plant.

6. Sample Information

Carefully complete both the **Sample Analysis request form** and sample details section on the sample bag. Include the top (white) request form with the samples when mailing to the laboratory for analysis, and retain the carbon copy for your own information. Within 5 working days, **Phosyn Analytical** will forward the analysis results to you in a report complete with analysis interpretations and recommendations.

For further information contact Phosyn Analytical or your local agronomist/consultant.

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