



PEI Analytical Laboratories  
Soil Testing

23 Innovation Way  
Charlottetown, PE  
C1E 0B7

Tel: (902)-620-3300  
Fax: (902)-569-7778

[www.gov.pe.ca/agriculture/labservices](http://www.gov.pe.ca/agriculture/labservices)

## Split Nitrogen Applications for Potatoes

### Introduction:

To maximize crop yields, nutrients must be supplied to the growing crop in sufficient amounts at the time they are required by the plant. Although the plant requires nutrients throughout the growing season, within potato production, traditionally all the fertilizer is applied banded at planting.

The practice of applying some of the required nutrients, especially nitrogen, during the growing season has gained popularity in recent years. This technique has gained wide acceptance in much of the major growing areas of the Northwestern United States where irrigation systems are widely used and fertilizer can be injected into the irrigation system. Although conditions in Prince Edward Island are considerably different, the use of split applications of nitrogen has some advantage here.

### Advantages:

Research at the Charlottetown and Fredericton Research Stations has shown that the conventional practice of banding all fertilizer at planting is very effective on the varieties they evaluated. There are a number of points, however, which make the practice of applying fertilizer in multiple or "split" applications, a logical procedure to consider for many growers.

Nitrogen, particularly in the nitrate form, is subject to significant losses if heavy rains occur early in the season, before the crop's demand for nitrogen is high. By withholding a significant portion of the nitrogen application until the pre-bloom stage of growth, potential nitrogen losses can be minimized, as nitrogen application would be timed with greater nutrient uptake by the crop.

Practically speaking, by withholding some of the fertilizer at planting, the total rate of application is reduced at that time. This would reduce the amount of fertilizer transported to the field during planting and the need to fill planters with fertilizer would occur less often.

The increasing use of urea in blended fertilizers also places limits on the amounts of nitrogen which should be banded with the seed. By splitting the nitrogen application, the lower application at seeding poses no threat of damage to emerging sprouts or roots. Another benefit to split application of fertilizer is that it could decrease the amount of salt that the seed pieces are exposed to, given that nitrogenous-based fertilizers often have a high salt index. Fertilizers with a high salt index can also cause burning to the roots, and reduce sprout viability.

The application of high rates of nitrogen at planting (in excess of 180 kg/ha) can delay tuber initiation in some varieties such as Russet Burbank. This can effectively reduce the time available for tuber development and maturation. In cases where growers find high applications of nitrogen necessary, split applications are highly recommended.

### Recommendations:

If, for any of the reasons outlined, it is decided that a split nitrogen application procedure is to be used, the following guidelines should be followed:

Apply 60-100 kg/ha of nitrogen at planting, preferably banded with the planter. This will provide an adequate amount of nitrogen to sustain the crop to the early blossom stage of growth.

Apply the remainder of the annual nitrogen requirement as a broadcast or side-dressed application of granular fertilizer prior to the final hilling operation (or with hilling if a one pass hilling system). Urea or ammonium nitrate can be used as the nitrogen source unless visual nitrogen deficiency symptoms are present, in which case ammonium nitrate or calcium nitrate would be preferred. It is desirable, but not essential, that this fertilizer be incorporated with a hilling or cultivation operation.

Monitor the nitrate-nitrogen levels in the potato crop at the early bloom stage of growth by plant tissue analysis (petiole sampling). Potato petiole samples can be helpful estimators of the current crop's nitrogen status, and can be repeated throughout the season, as necessary. Based on the petiole analysis levels, additional nitrogen may be required and can be applied as a broadcast granular application or as a foliar application.

For more details on split nitrogen applications and general information regarding potato tissue analysis, contact a Nutrient Management specialist at (902) 316-1600.

(Revised April 2014)