Treatments and Layout

Ten rates of N, P and K fertilizers were applied (April 20/04) to a field of grower-managed Russet Burbank potatoes, near Taber, Alberta. Each plot was 8 rows wide (24 ft) and 115 ft long (see back of brochure).

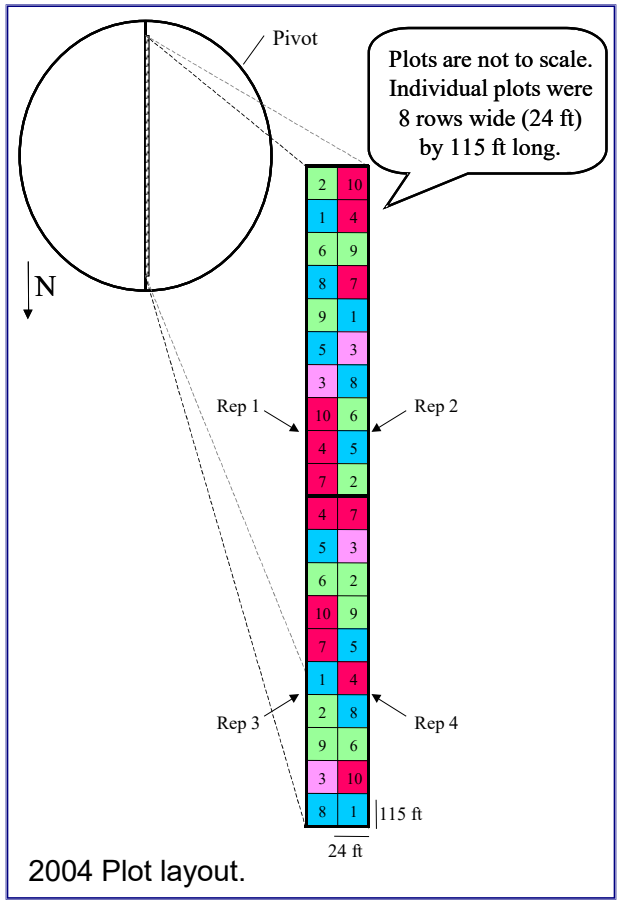
The potato crop was planted April 28/04 and was damaged by hail on July 7/04.

Petiole samples were collected and analyzed for each plot 7 times in the 2004 growing season.

Tuber samples (2x25 ft strips) were collected (Sept 22-23/04), graded for marketable yield (total yield minus smalls) and analyzed for specific gravity.

Fertilizer rates 2003-2004.

Treatment		Total		
		N	P_2O_5	K_2O
Nitrogen	1	243	137	117
	2	255	137	117
	3	272	137	117
	4	367	137	117
Phosphorus	5	274	15	117
	6	272	72	117
	3	272	137	117
	7	268	246	117
Potassium	8	272	137	55
	9	272	137	84
	3	272	137	117
	10	272	137	238



2004 Plot layout.

Acknowledgements

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This is year 1 of a 3-year study

A more detailed report is available upon request from the PGA office

Petiole Nutrient (N, P and K) Recommendations for Russet Burbank Potatoes Grown in Southern Alberta (2004)

S.A. Woods[1], L.E. Hingley[1] and M.N. Konschuh[2]

[1] Soil and Water Agronomy Program and
[2] Potato Agronomy Program
Crop Diversification Centre South
Brooks, Alberta

PGA

Alberta
AGRICULTURE, FOOD AND RURAL DEVELOPMENT
Crop Diversification Centre South

Background

The analysis of potato petiole samples is used to monitor the nutrient status of potato crops throughout the growing season. This can be a useful and timely technique for monitoring any nutrient deficiencies that may occur mid-season that were not identified in spring soil samples.

Petiole analysis results from previous Russet Burbank studies in southern Alberta indicated that the current recommendations (NW USA) may be somewhat high for phosphorus (P) and potassium (K), especially early in the growing season. Results also indicated that recommended nitrate nitrogen (N) concentrations may need fine-tuning to better suit southern Alberta growing conditions.

Objectives

Determine optimal petiole nutrient concentrations, throughout the growing season, for Russet Burbank potatoes, specific to southern Alberta.

Determine the relationship between potato petiole nutrient concentrations and tuber specific gravity.

Results Summary (2004)

Nitrogen (N) Fertilizer Rates

- The highest N rate (367 lb/ac) consistently showed the highest **petiole N**. Petiole N declined from late June to mid-July but recovered quickly.
- Treatment 3 (272 lb N/ac) had the highest **yield**, but results were not significantly different.

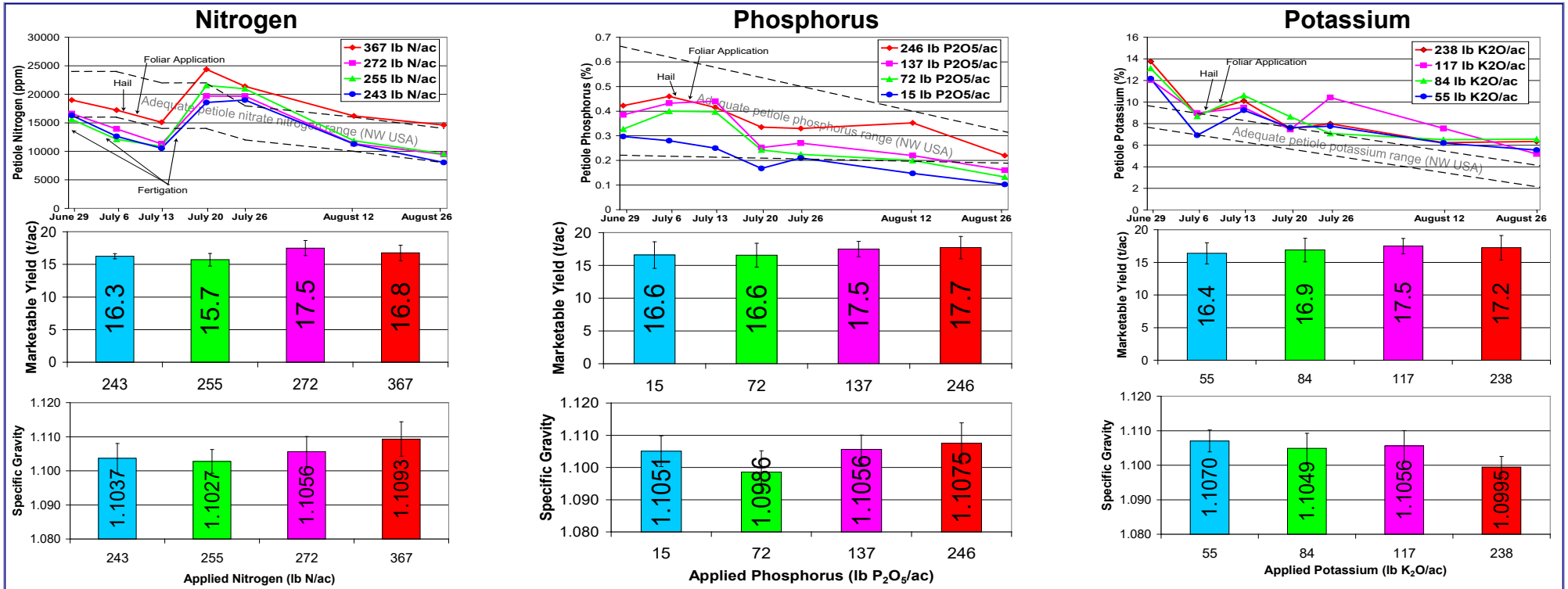
Results (cont.)

Phosphorus (P) Fertilizer Rates

- Increasing rates of fertilizer P gave increasing amounts of **petiole P**.
- The two higher rates of fertilizer P had a slightly greater **yield** than the two lower rates of fertilizer P but results did not show significant differences.

Potassium (K) Fertilizer Rates

- Increasing rates of fertilizer K had no effect on **petiole K**. Initial soil K was high at the study site.
- There was a trend toward slightly increased **yield** with increasing fertilizer K with a small decrease for the highest rate.
- There was a trend toward decreasing **specific gravity** with increasing fertilizer K but differences were not statistically significant and all treatments gave acceptable values.



Potato petiole N, P, K content, marketable yield and specific gravity, for fertilizer rates (2004).