

Evaluation of the Spudnik Bed Planter for Chipping Potatoes in Southern Alberta – 2010

Ted Harms and Michele Konschuh

Alberta Agriculture and Rural Development, 301 Horticultural Station Road East, Brooks, AB T1R 1E6

Key Findings

- Consistent with previous findings, soil water content in the bed planted areas of the field retained about 10% more moisture (week to week) compared to the standard shaped hill.
- Different varieties were grown and different plant density strategies were used by growers to test the bed-planting concept. In two of the three fields sampled, yield from the bed-planted area of the field was greater than that from the conventional hill planted area. Both total and marketable yield were significantly greater in Field B. Specific gravity was unaffected by bed-planting in this study.
- Assuming a basic contract price for marketable potatoes, gross economic returns in the commercial fields were 34% greater from beds than from hills once the seed costs were deducted. To our knowledge, other costs (fertility, pesticides, irrigation, manpower, etc.) incurred were the same for hilled or bed-planted regions of each field.
- Additional research may be required to determine the best fit for this type of technology.

Background

There have been a number of recent reports identifying the benefit of planting potatoes in wider beds for moisture conservation. Moisture conservation is important, primarily when potato production relies on supplemental irrigation to provide sufficient soil water for growth and bulking of the tubers. The main interest of producers regarding bed planting of potatoes is for uniform size, regular shape, increased production per unit area and better economic return.

Bed planting of potatoes is fairly new to North America but is widely practiced in Europe as the production method of choice. Plant densities within the beds can be varied depending on the equipment used.

Growers in Idaho have been experimenting with bed planting over the last few years using a planter developed by Spudnik. Responding to the interest expressed by a few growers and a processor, Growers Supply secured one of the Spudnik bed planters and brought it in to Canada for a limited trial in 2010.

The Spudnik Bed Planter

The Spudnik bed planter used was designed to seed 7 rows of potatoes in a 98" bed (Figure 1). The configuration used in 2010 was to block the center row of the seeder and plant 6 rows in a 98" wide bed (Figure 2). With conventional hill seeding, 4 rows would be planted within the same width.



Figure 1. Spudnik bed planter



Figure 2. Bed planted section of field after emergence. Soil water monitoring site shown in upper, left part of picture.

Methods

The Spudnik bed planter was used on a portion of 3 commercial potato fields in southern Alberta in 2010 and at Alberta Agriculture and Rural Development's Irrigation Demonstration Facility in Lethbridge (CACDI). Growers Supply staff assisted with the set up of the bed planter at all sites, Western Tractor supplied a John Deere 8345RT with wide spaced tracks to ensure the power equipment straddled the beds.

Samples were obtained from three of the sites immediately prior to the main harvest by AARD staff. Four samples (3m) were dug from rows in the conventionally planted area and compared with four samples of 3m x 1/2 bed section within the bed planted area.

Samples were evaluated for total yield, marketable yield, tuber deformities, specific gravity and internal defects and are presented in ton/acre.

A basic analysis was performed to evaluate the economic benefit or penalty of bed planted potatoes in 2010.

Results

Table 1. Comparison of yield and size profile and specific gravity of samples from conventional and bed-planted areas of each field.

Field	Treatment	Total Yield (ton/ac)	Small Yield (ton/ac)	Mkt. Yield (ton/ac)	Large Yield (ton/ac)	SG
A	Hills	28.1 a	1.8 a	17.8 a	8.3 a	1.084 a
A	Beds	33.5 a	3.1 a	23.0 a	7.4 a	1.088 a
B	Hills	29.8 b	5.1 b	23.4 a	1.2 a	1.085 a
B	Beds	42.2 a	8.6 a	31.5 b	1.9 a	1.086 a
C	Hills	30.6 a	4.0 b	26.3 a	0.0 a	1.104 a
C	Beds	31.7 a	5.9 a	25.6 a	0.2 a	1.106 a

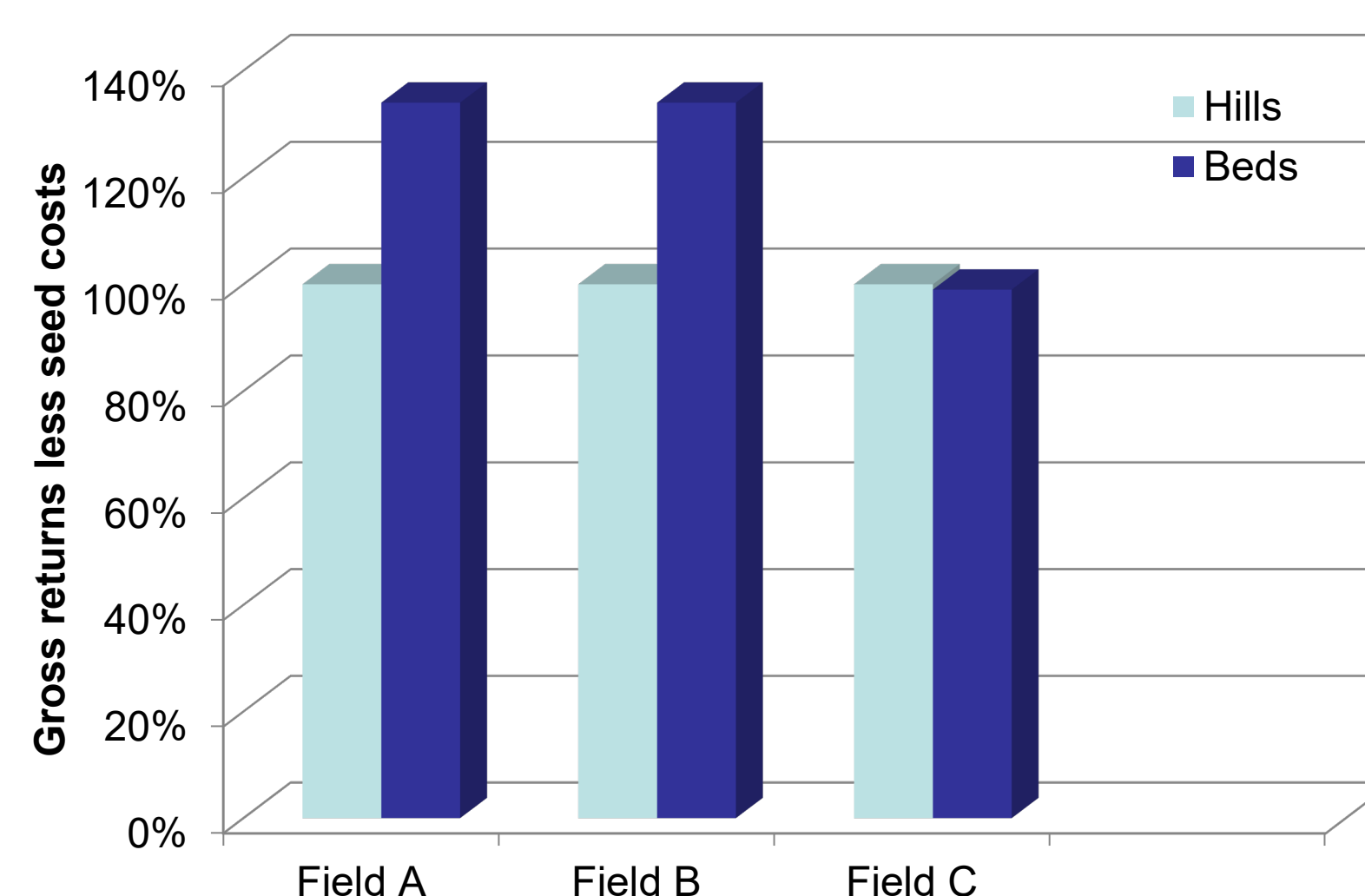


Figure 3. Economic returns from hill planted and bed-planted areas of potato fields as a percentage of conventional hill planted areas. For comparison, a basic contract of \$10/cwt for marketable yield (2 to 3.5") was used. Seed was estimated at \$340/cwt. All other costs were assumed to be equal.

Future Considerations

The growers expressed interest in the Spudnik planter but they had suggestions for modifications. As well, there were concerns with the final construction of the bed (relying solely on the drag bar to form the bed).

Planting in a wide bed definitely has a fit for irrigated potato production in southern Alberta. However, to get a complete picture or thorough evaluation of the technique, it would be advantageous to try other bed configurations such as the Quad planted bed (Figure 4) which has 4 off-set rows in a 72" (1.8m) wide bed. Standen-Pearson Corporation out of England sells planters that will seed 3 to 9 rows in a bed with variable seed spacing from 13 cm to 45 cm.

As well, it would be worthwhile to try a selection of the common potato varieties to evaluate the possibilities and/or potential problems with bed planted potatoes.



Figure 4. Four row bed using Standen Quad bed planter

Acknowledgements

The authors would like to thank Growers Supply Ltd. for their interest in the project and all the technical assistance they provided, Western Tractor, Grand Forks Farms Ltd., Perry Produce Ltd., and Torsius Tater Farms Ltd., Old Dutch and finally the technicians who helped with weekly soil water readings and yield evaluations.