



GROWING POTATO PROFITABLY for ORGANIC DRY MATTER in Western Nebraska

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ABSTRACT

Can potatoes be grown profitably for organic dry matter production? The objective of this study was to grow potatoes under organic conditions and reduce the cost of seed in western Nebraska. Operational costs would be planting, cultivating, and harvest; estimated at US \$70/a. The major and variable cost is seed purchasing. In earlier comparison trials, the cultivar Atlantic was the most promising of the several cultivars and types tested. Using Atlantic, identification of the most profitable seed size and spacing to plant to achieve the right balance between seed cost and yield resulting in the highest net income. No irrigation, fertilization or pesticides were applied. Rain from planting to harvest was 7.9 cm (3.1 in), 42% of normal, and temperature 22.2 oC (72 oF), about 1o above normal. Cut seed-pieces, weighing 34, 57, 64, 71, and 85 g, were planted at 15, 23, 30, 38, and 46 cm apart in rows spaced 91 cm at Scottsbluff, NE following dry bean. The highest yields, >11.2 Mg/ha, and lowest stand, <70%, were obtained when plants were spaced 6 or 9 inches regardless of seed weight. Seed weight did not play a significant role; however seed-pieces >57 g performed the best. Calculating net income, fixed costs were assumed to be \$173/ha (\$70/a), cut seed cost to be \$30/a (\$12/a), and sales for dehydration to be \$8.80/100 kg (\$4/cwt). A profit greater than \$247/ha (\$100/a) was achieved when seed pieces, < 71 g (< 2.5 oz), were planted 38 or 46 cm (15 or 18 in) apart. This study is continuing, however, it may be economically feasible to grow a crop targeted for potato organic dry matter production in western Nebraska.

Why the interest ?

- Consistent source of potato starch
- Not depend on culls
- Grow under low pest pressure
- Not depend on pesticides
- Organic potato dry matter
- New markets: Pet foods, chips

Objective

Can potato be grown economically and organically for dehydration products in a semi-arid environment ?

- What potato cultivar to grow?
- Can seed cost be lowered?
- What seed size and spacing to plant ?

Dehydration Market

- Tuber Shape = Not Important
- Blemishes = Not Important
- Culls used because of pricing

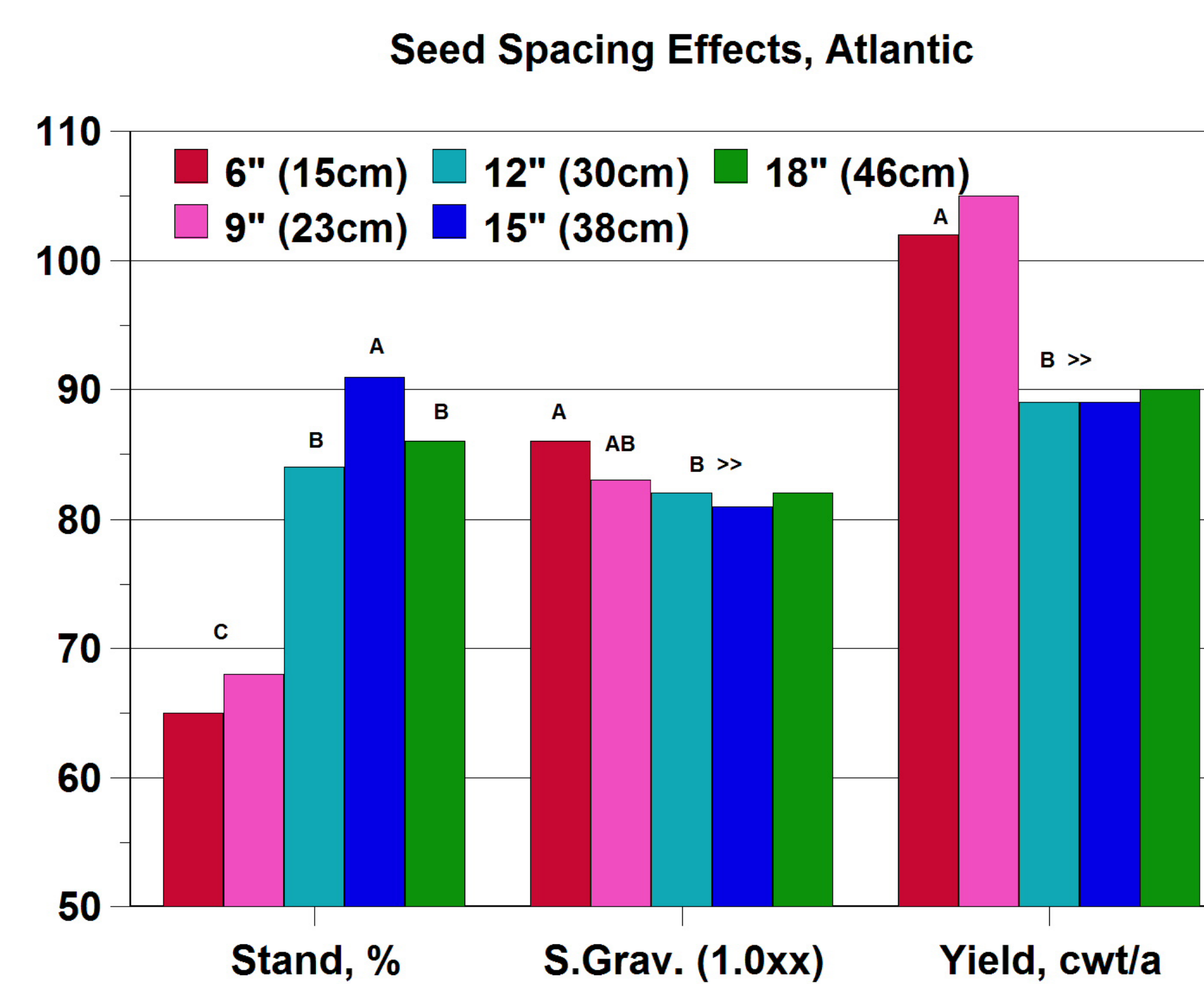
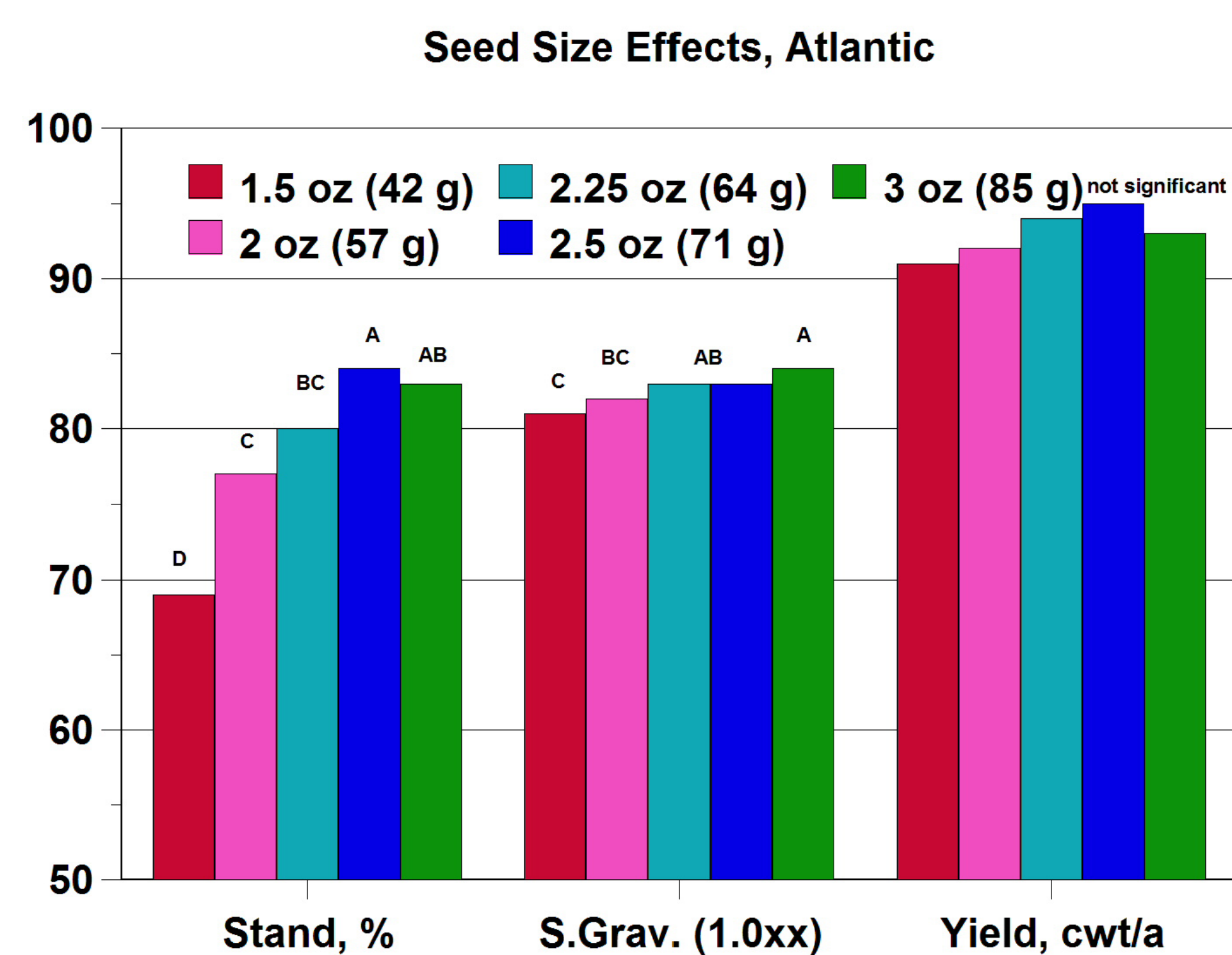
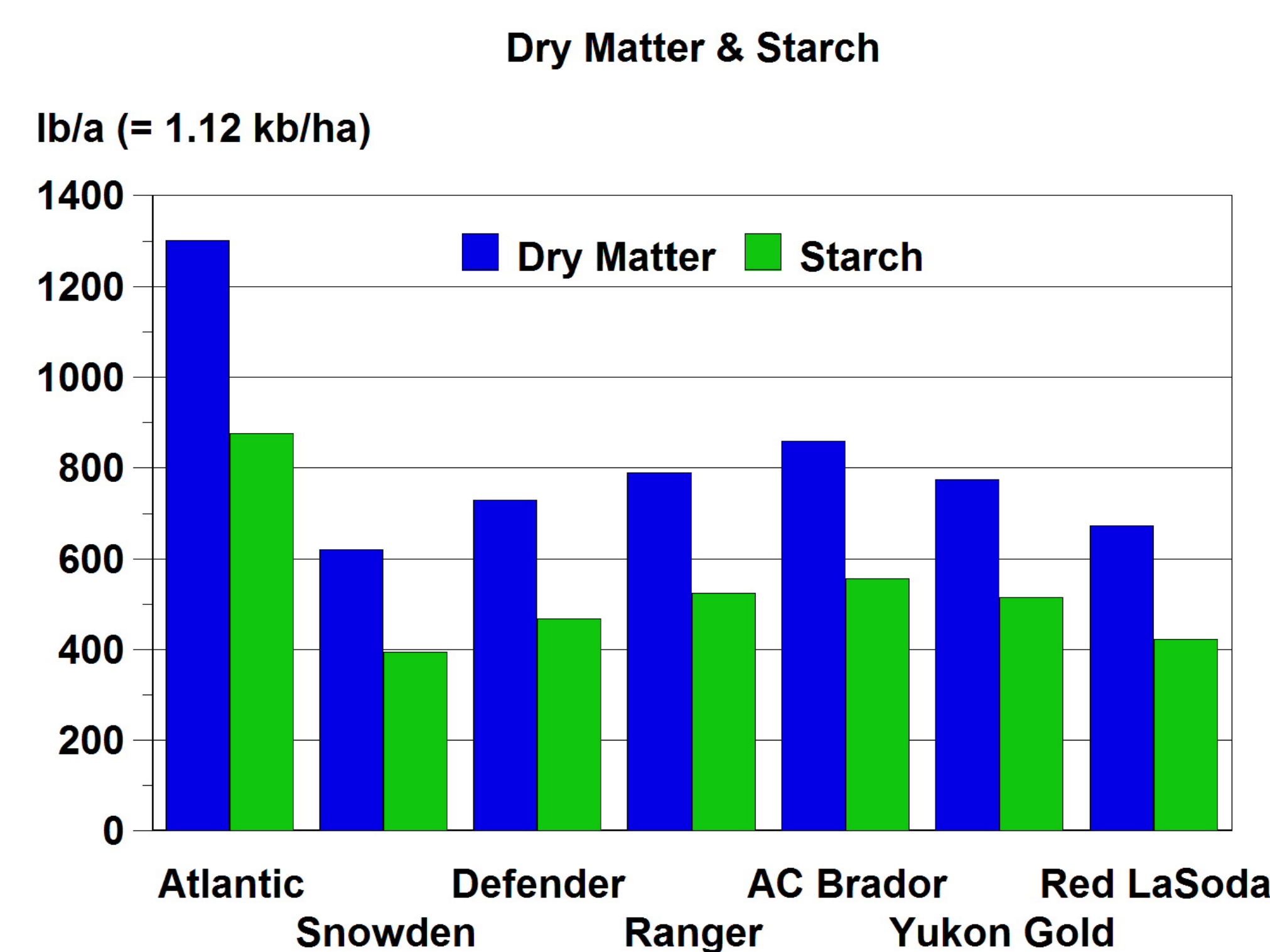
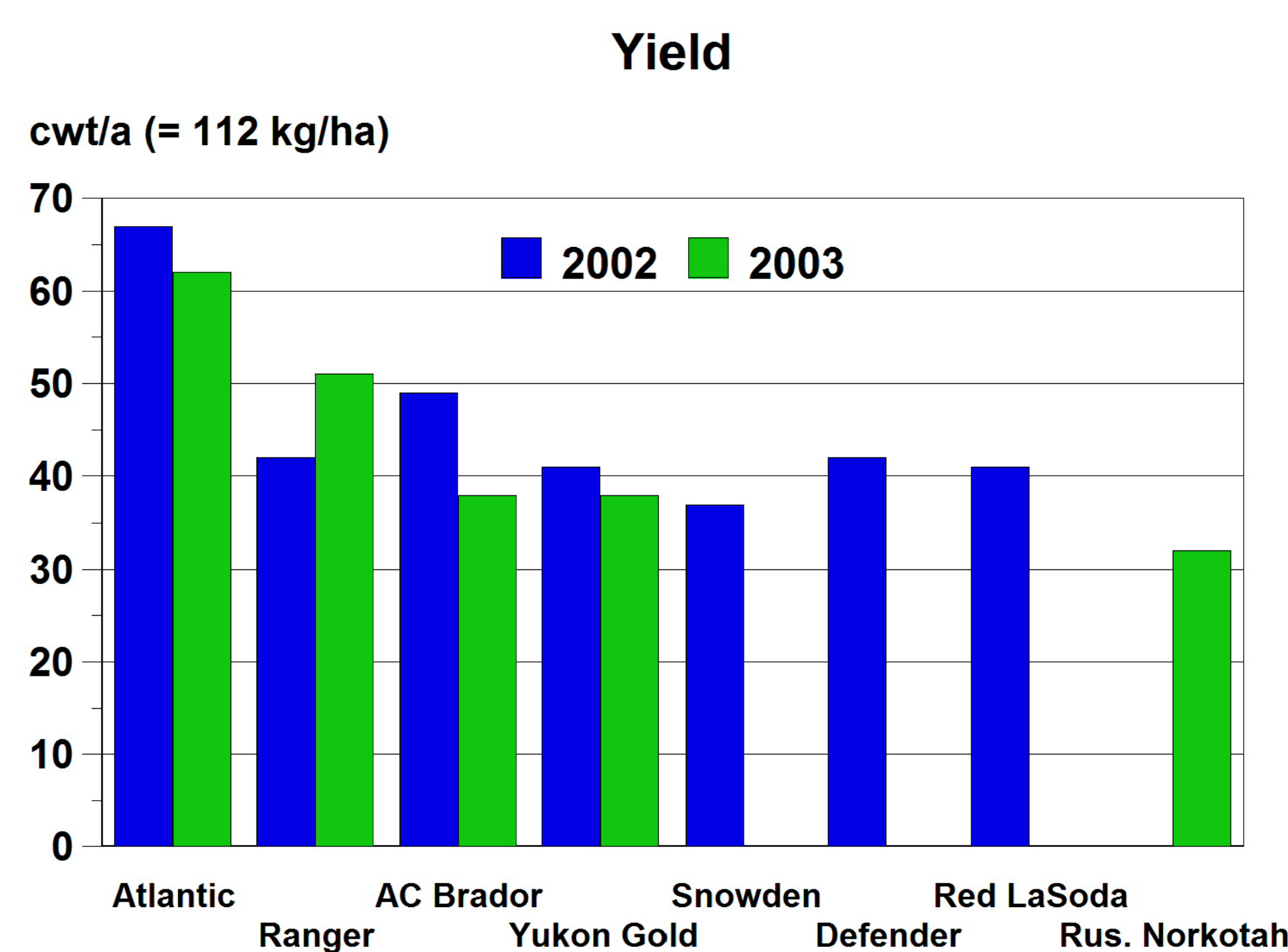
PROTOCOL

Previous Crop = Dry Bean
Residual N = 24 kg/ha, top 40 cm

Seed cut/healed in April
Planted in mid-May
Cultivated pre and early post
Senescence (50%) in Sept.
Harvested in early Oct.

Rain (June-Aug.) = 8 cm, DRY
Temp (June-Aug.) = 22+°C, HOT

Seed Weights: 42.5 to 85 grams
Seed Spacings: 15 to 45 cm
Design: Factorial, five reps



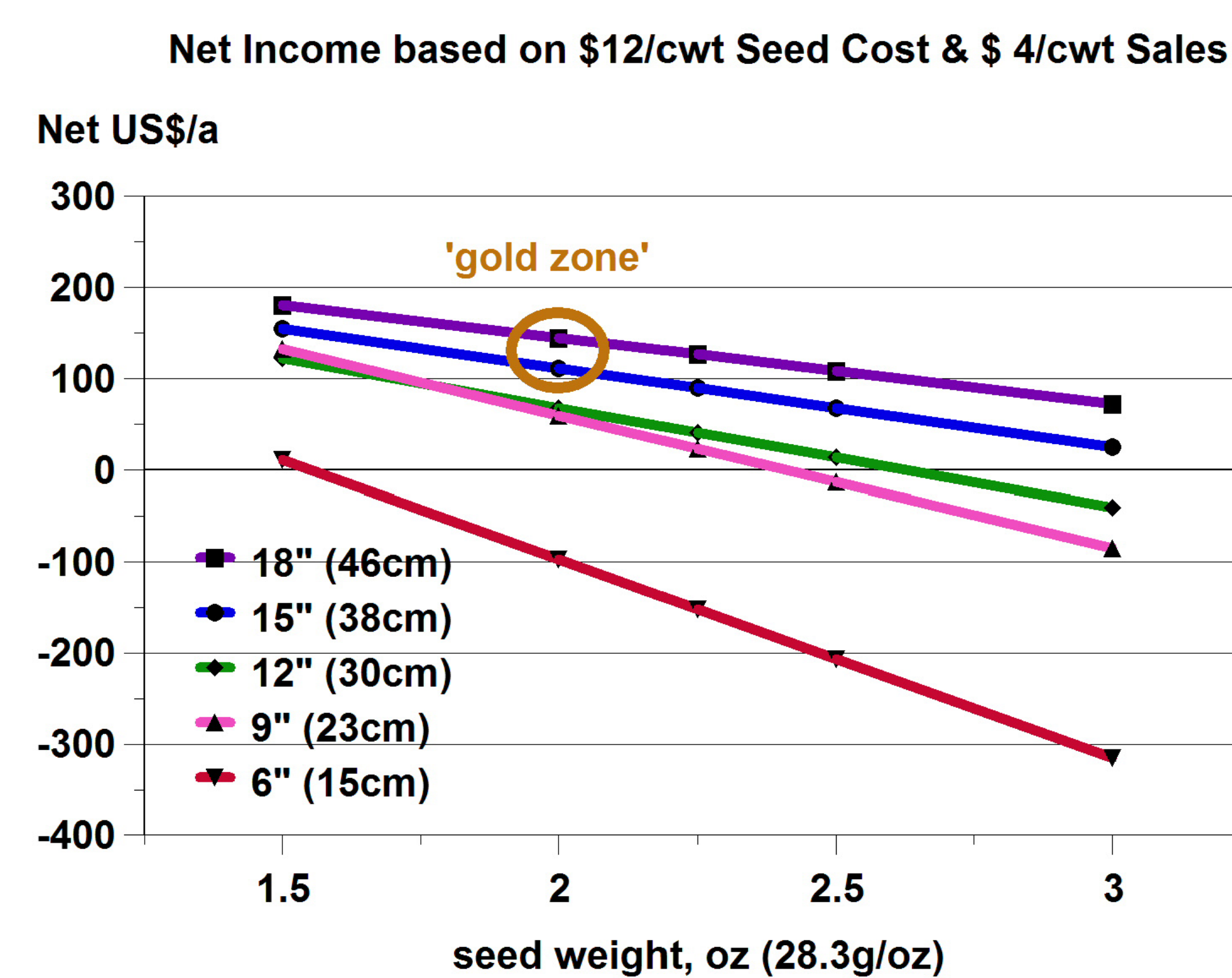
Costs to Grow Potatoes

Planting	\$20/acre
Cultivating (4x)	\$20/acre
Harvesting	\$30/acre
Operations Total	\$70/acre
Seed (Atlantic)	\$11/cwt
Cutting	\$1/cwt
Seed Total	\$12 x # cwt/acre

Potato Dehydration Plant:

Capacity = 3-5 drums/plant
@ 80,000 lb/drum/day
10,000 tons/drum/year
30-50,000 tons/plant/year

Yield @ 100 cwt/a = 5 tons/acre
6-10,000 acres needed/plant



What Potato Cultivar to Grow?

Atlantic:

- Highest Yield
- Highest Dry Matter and Starch
- ONLY Variety to turn a Profit in 2002 and 2003

What Seed to Plant?

	<u>Seed Weight</u>	<u>Seed Spacing</u>
Yield	Slightly higher with 2.25-3.0 oz	Higher with 6-9 in.
Dry matter	Higher with 2.25-3.0 oz	Higher with 6-9 in.
Stand	Higher with 2.5-3.0 oz	Higher with 12-18 in.

Can This Be Profitable?

Seed-piece Weight	2 ounces
Seed-piece Spacing	15-18 inches
Population	9,700 to 11,600 pl/acre
Seeding@ 2 oz	12? to 14 1/2 cwt/acre
Seed Cost@ \$12/cwt	\$145-\$174/acre

Profit Comparison Based on 2013:

(\$/acre)	<u>Millet</u>	<u>Winter Wheat</u>	<u>Potato</u>
Operation	75	80	70
Seed	7	25	174
Pesticides	13	30	0
Fertilizer	25	60	0
Expenses	\$120/acre	\$195/acre	\$244/acre
Yield	40 bu/acre	40 bu/acre	100 cwt/acre
Price	\$4.8/bu	\$6.8/bu	\$4/cwt
Gross	\$190/acre	\$270/acre	\$400/acre
Net	\$80/acre	\$75/acre	\$156/acre