

Helpful Tips for Improving Specific Gravity

Prepared by the Prince Edward Island Potato Board for PEI Processing Growers

As growers are already well aware, achieving high Specific Gravity (SG) scores is influenced by a number of factors, many of which are out of the control of the grower. Some varieties produce higher specific gravities than others, and the impacts of season length, temperature, and precipitation all have a large impact on specific gravity at the time of harvest.



After reviewing literature relating to agronomic practices that affect specific gravity, and after talking with a number of potato researchers on factors affecting specific gravity, Board staff has produced this factsheet with a few helpful hints that should improve the ability of growers to increase specific gravity.

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Proper Seed Management and Planting Practices:

- **High quality, disease-free, and well-maintained seed should be a priority for all growers for a number of reasons, including higher specific gravity.** Healthy seed of proper physiological age and appropriate seed piece size (1.5 to 2.5 oz) will produce plants with optimum yield and tuber quality and will have a higher likelihood of having high specific gravity.
- **Seed planted earlier, with more days of plant growth under increasing day length, is more likely to have higher specific gravity** than seed planted late and forced to mature later into the fall.
- Seed planted too close together or too far apart can lead to lower specific gravities as well.

Fertilization Practices and Nutrient Sources:

- The majority of studies have shown (summarized by Laboski and Kelling, American Journal of Potato Research, 2007) that when comparing sources of Potassium (K), most "have attributed a more severe reduction in specific gravity to the use of potassium chloride (Muriate of Potash) compared to potassium sulfate (Sulfate of Potash). This is mostly likely due to the "osmotic effects of the increased tissue salt concentrations" present with potassium chloride.
- **A recommendation for growers is to replace some of the potassium chloride that would normally be banded at planting with potassium sulfate.**
- As potassium chloride has been shown to be beneficial at keeping acceptable fry colour, **potassium chloride applied through broadcast application prior to planting could be an effective means of balancing specific gravity with colour specifications.**

(continued on the reverse)

- **Excess application of K in total has been shown to have a negative effect of specific gravity.**
- **Excess application of N has also been shown to decrease specific gravity.** This is because higher rates of N keep the plants greener for longer, delaying maturity and senescence. Potatoes harvested from immature plants are more likely to have lower specific gravity than potatoes harvested from plants that have fully matured. Research has indicated that splitting applications of N may help improve specific gravity, particularly in Russet Burbanks.
- Follow a **balanced soil fertility program** which accounts for all sources of N (manure, nitrogen fixing crops like alfalfa and clover, etc) to ensure that only the require amount of N is applied.
- **Ensuring sufficient Magnesium (Mg)** is present to assist in tuber uptake of Phorphorus (P) will also improve specific gravity.

Additional Production Practices:

- **Pressure from pests and diseases will reduce specific gravity** along with yield potential. Healthy plants have a much better ability to have higher specific gravity.
- **Harvesting potatoes while still green or aggressive top killing increases the probability of lower specific gravity.** Naturally-matured crop vines killed slowly with a chemical desiccant will generally have higher specific gravities.
- Where at all possible, **harvest potatoes after full maturity has been reached but before substantial fall moisture** has the chance to water-log tubers, thereby reducing specific gravity.
- Consider **testing for specific gravity when digging test strips** prior to harvest in the fall to monitor specific gravity.
- While adverse weather conditions (too much rain, not enough, early frost, etc) have major impacts on specific gravity, implementing many of these production practices will increase the likelihood of having higher specific gravity while also being beneficial for total yield improvement.

Thanks to **Dr. Zenaida Ganga, Cavendish Farms Research Division**, for many of the helpful tips in this factsheet.

Additional source: Carrie Laboski and Keith Kelling "Influence of Fertilizer Management and Soil Fertility on Tuber Specific Gravity: A Review" American Journal of Potato Research (2007) 84: 283-290



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