

IMPACT



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Nutrient Management Following the Sugarbeet Payment-In-Kind Program

The Situation

High U.S. sugar stocks resulted in the Federal government offering a production diversion program in the fall of 2000 called Payment-In-Kind (PIK). This was a voluntary program in which producers were paid not to harvest and process a portion of their sugarbeet acres.

Although the diversion program was successful, several questions concerning nutrient management were raised. Would the decaying beets tie-up nutrients in the spring and/or release a large amount of nitrogen during the late summer? Unfortunately, no clear answer was available.

Our Response

In response to these questions, an Integrated Pest Management grant, totaling \$2,238, was used to sample soil and tissue from various crops and to evaluate nutrient differences on fields that contained both PIK and non-PIK ground.

Fields that had acres involved in the 2000 PIK program, and had acres that were harvested, were chosen to sample. Since each field was split into PIK and non-PIK, this allowed a comparison between the two treatments under the same management conditions. Five fields were selected for sampling, including Harrington malt barley, Galena malt barley, soft white spring wheat, Durum wheat, and potato. Representative soil samples, 12-18 inches deep, were taken approximately every two weeks from May to August in grain crops, and from May to

early-September in the potato crop. A whole plant sample and a flag leaf sample were taken and analyzed for total nitrogen in the grain fields, except for the Galena malt barley. Four petiole samples were taken in the potatoes from early-July to late August.

In addition, insect and disease symptoms were scouted in each field to see if there were any differences between PIK and non-PIK acres. Observations were made during each tissue sampling allowing for a representative sample over a larger area.

Goals

- Collect soil and tissue samples from each field regularly to compare nutrient differences between PIK and non-PIK acres in each field.
- Look for signs of disease or insect pressure at each tissue sample date.
- Organize the findings in a presentable manner to share with growers and fieldmen.

Program Outcomes

It appears that those sugarbeets left in the field did not significantly impact the nutrient levels as first predicted. Salts, pH, and organic matter stayed relatively level between the PIK and non-PIK ground across all fields. Organic nitrogen, nitrate nitrogen, phosphorus, and potassium showed no clear pattern or major difference between the PIK and non-PIK ground. However, there were some clear differences between the PIK and non-PIK

ground for certain samples in certain fields. With that said, looking at all fields collectively there appears to be no more difference between the PIK and non-PIK ground than what would be considered normal variation in the field under standard management practices.

A question that has been raised during the course of this observational study is whether or not the results of the soil samples can be correlated to nutrient availability? Early observations in late-May to early-June indicated that nutrients may not have been as readily available in the Harrington and Galena malt barley because of soil and tissue nutrient test differences between the PIK and non-PIK ground. The results of the total plant sample for the malt barley fields on May 22 showed that total nitrogen in the plant was higher on the non-PIK ground compared to the PIK ground. However, the soil sample taken on the same day showed that organic-N and nitrate-N were higher on the PIK ground than on the non-PIK. Was nitrogen tied up in the soil and not made available to the plant on the PIK acres?

It is important to keep in mind that a soil sample only measures nutrient levels in the soil at that point in time, not what is available to the plant.

Sample results in the Durum wheat indicated that there was essentially no nutrient difference in the soil or tissue samples between the PIK and non-PIK ground. But differences in foliage color were still observed with the PIK ground appearing stressed for nitrogen. Color differences were not observed in the malt barley; therefore, it is unclear what was happening in the crops.

Disease and insect pressure did not appear to be impacted by the PIK program. In soft white spring wheat field, swarms of sugarbeet root maggot flies made sampling difficult but did not harm the wheat. Cereal leaf beetle was also observed on the Durum wheat field but no difference between the PIK and non-PIK ground was observed. No insect or disease symptoms were observed in the potato or malt barley fields.

Although the excess sugarbeets from the PIK program did not appear to harm the various crops due to late season nitrogen release, producers are still encouraged to destroy the crop as completely as

possible in the fall. Pungent smell, difficulty making furrows, and sugarbeet root maggots were common problems last spring. Fields that were destroyed in the fall as completely as possible, either through disking or feeding, had fewer management problems and frustrations.

In the fall of 2001, the sugarbeet PIK program was repeated. Results from the sampling study were shared with the Farm Service Agency offices in Minidoka and Cassia Counties and distributed to growers who were applying for the 2001 program. In Minidoka County, 180 growers applied for the program, while over 140 applied in Cassia County. The results from this study will also be published in the 2002 Winter Commodity School Proceedings, as well as published on the Minidoka County Extension website.

Cooperators

Brent Bowen, Cassia County Farmer; Duane Grant, Minidoka County Farmer; Jim McCall, Minidoka County Farmer; Harold Mohlman, Minidoka County Farmer; Rod Jentekz, Minidoka County Farmer; and Stukenholtz Laboratories

The Future

Results will be published on the Minidoka County Extension website, <http://extension.ag.uidaho.edu/minidoka/PIKwork.htm>, and otherwise made available to growers.

For More Information

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