BARNYARDS & BACKYARDS

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Big Horn County sugar beet growers look to manage production risk – Part II

By James Sedman and John Hewlett

Brothers Ken and Rich Riff farm in Big Horn County and are seeking to manage production risk on their 200 acres of sugar beets.

Their two main concerns: low winter moisture carry-over followed by a dry spring and summer, making it difficult to establish and raise a viable stand of beets. They are concerned with high input prices and want to guarantee a certain level of revenue to cover costs.

The Riffs examined two main crop insurance options: multi-peril insurance (MPCI) and catastrophic coverage (CAT). MPCI insures sugar beets for 50 to 85 percent of their APH yield at 55 to 100 percent of the crop price established by the Risk Management Agency (RMA). CAT coverage provides protection against losses of 50 percent or greater at 55 percent of their APH yield for a minimal $300 fee. The Riffs chose an MPCI policy to insure their beets at the maximum yield coverage available of 85 percent coupled with a 100-percent price election of $51.30 per ton.

As the Riffs feared, the spring and summer were extremely dry and caused extensive losses on their sugar beets. They replanted 100 acres, and their ending yield was 12 tons per acre.

Crop Insurance Calculations

The replant provision of their contract allows for a payment equal to the lesser of 10 percent of their APH yield or the value of 1.5 tons. In this case, the tonnage is the lesser amount, equaling $7,695 total ($76.95 per acre).

Harsh summer conditions resulted in an average yield of 12 tons per acre. The indemnity calculations based on the yield are summarized in Table 1. The Riffs production shortfall was 9.25 tons per acre (85 percent of 25 tons per acre less the actual production). This times the price of $51.30 set at the time of policy purchase results in a total indemnity of $474.53 per acre.

Table 1. Riff Brothers Crop Insurance Options Summary

Crop stage	# Acres	APH yield	Coverage %	Price per ton	Coverage (per acre)	Total coverage
Initial:	200	25	85	$51.30	$1,090.13	$218,025
Replant: (lesser of 10% of APH or 1.5 tons)	100	25	10	$51.30	$128.25 $76.95	$7,695
Final Crop Production	**# Acres**	**Final yield/ acre**	**Price per ton**	**Production shortfall (tons/acre)**	**Indemnity (per acre)**	**Total indemnity**
	200	12	$51.30	9.25	$474.53	$94,905
Total Revenue	**Actual production (tons)**	**Price per ton**	**Total actual revenue**	**Replant payment**	**Indemnity payment**	**Total crop revenue**
	2,400	$51.30	$123,120	$7,695	$94,905	$225,720

Strategy Comparison

Had the Riffs not chosen crop insurance, their production losses would have resulted in lost revenue of $102,600 (the indemnity payment of $94,905 plus the replant payment of $7,695). Keep in mind these calculations do not include premium amounts.

If the Riffs had purchased only CAT coverage, their shortfall would have been much greater. Their loss would have qualified, as it was more than a 50-percent yield loss, but would have been paid on 55 percent of that amount for an indemnity payment of $89.78 per acre.

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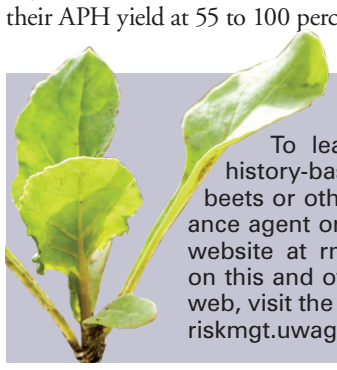

FOR MORE INFORMATION

To learn more about actual production history-based, multi-peril insurance for sugar beets or other crops, consult a local crop insurance agent or visit the Risk Management Agency website at rma.usda.gov. For more information on this and other risk management topics on the web, visit the Western Risk Management library at riskmgt.uwagec.org.

How to resolve autotoxicity issues in alfalfa stands

By Anowar Islam

Autotoxicity is the process by which some chemical compounds secreted by plants inhibit the growth or development of nearby plants of the same species.

Autotoxicity is common in alfalfa, especially when alfalfa is reseeded in fields where alfalfa was recently grown.

The roots of young seedlings are affected first. Root growth will be inhibited or stopped, and plant growth will be stunted with reduced yield.

Reasons for Autotoxicity

The reasons or the chemical compounds responsible for causing autotoxicity are not well known yet. It appears toxins are more concentrated in roots than in shoots. The toxic compounds are water-soluble and can be easily washed out of soils by precipitation or irrigation water. Plowed-down plants or plants killed by herbicides can further enhance this process by releasing more toxic compounds into the soils.

Research suggests the effect and persistence of the toxic compounds on new seedlings vary with soil type and precipitation. Autotoxicity may be more severe in heavier soils and in locations with low precipitation than in lighter, sandy soils. In heavier soils, the autotoxicity effect is longer, but the intensity may be lessened by absorption of compounds by soil particles.

In contrast, the autotoxicity effect is shorter in sandy soils because precipitation will carry out compounds quickly from the root zones through leaching. However, the toxic intensity may be higher during this short period.

Other factors enhancing autotoxicity include density and age of preceding crops and how much time has passed since the previous stand was killed.

Controlling Autotoxicity

The effect of toxins may disappear over time, but its impact stays throughout the life cycle of the affected stand. Plants remain stunted and yields low after the autotoxicity effect has disappeared.

There is no single recommendation to follow for controlling autotoxicity in alfalfa. However, the following options may help reduce the incidence of autotoxicity and may increase alfalfa yield:

(1) Avoid planting alfalfa after alfalfa. Plant other crops for one or two years to avoid yield decreases.

(2) Kill old alfalfa stand in fall. Wait and plant new alfalfa the following spring.

(3) Kill the old stand in spring and plant an annual crop, for example, oats. Plant new alfalfa seeds in late summer.

(4) Delay reseeding at least three weeks after killing the previous alfalfa stand.

Yields of new alfalfa stands will probably be reduced to some extent in all options except option 1. However, in the long-run, yields will be increased from the healthier stands and offset the yields lost during establishment.

The impact of autotoxicity on alfalfa root morphology. Taproots of plants seeded within two weeks of tillage of an existing alfalfa stand (left) die resulting in formation of branched roots less effective in nutrient and water uptake. Taproots of plants seeded 18 months after tillage of an existing alfalfa stand (right) possess the normal, carrot-like morphology. Adopted from Jeff Volenec and Keith Johnson of Purdue University Cooperative Extension Service (*Managing Alfalfa Autotoxicity*, AY-324-W); Photo: John Jennings, University of Arkansas.

Alfalfa is expected to remain productive in stands for four to 10 years or even more. When alfalfa stands become thin because of declining plant populations, renovation of the stands becomes necessary. Replanting alfalfa immediately following alfalfa is not recommended due to autotoxicity, seedling disease, and insect pests in the old stands; therefore, a rotational interval is generally recommended between killing an old stand and reseeding new alfalfa for successful stand establishment.

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