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Pesticides of Concern in Burley Tobacco Production

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Quality in burley tobacco was once thought of as primarily color. Now quality means so much more, including other factors such as non-tobacco related material and pesticide residues. The use of non-labeled pesticides or the indiscriminant use of legal pesticides can be illegal and void a contract. Most, if not all, pesticides used in the production of burley tobacco have residue limits that are considered acceptable by the tobacco industry. Cured leaf with residues beyond those limits can present problems for tobacco buyers and could leave them with tobacco that they cannot use.

Products Containing Endosulfan must not be used

One such chemical that has presented a problem is Endosulfan which is also known as Golden Leaf Tobacco Spray and Thiodan. Many producers in the past have used Endosulfan at topping time, whether they actually needed it or not, to make sure that they did not have insect problems such as hornworms. This practice often leads to unacceptable residues above the 1 ppm level considered the maximum acceptable level. Some countries have even completely banned the use of Endosulfan.

One problem has been the product label, which allows the use of Endosulfan up till within five days of harvest. Application made at this time could leave very high residues making the tobacco unusable for a tobacco company. (See University of Tennessee Table below). While university recommendations accounted for this problem by recommending Endosulfan no later than 28 days before harvest, it appears that unacceptable residues are still occurring. To avoid unacceptable residues, **Philip Morris International no longer permits the use of this product on any tobacco they purchase**.

UT Extension

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Endosulfan Residues in Cured Burley
University of Tennessee 2005

Stalk Position	Greeneville *	Springfield **
	-------ppm endosulfan--------	
Cutter	21	38
Leaf	18	30
Tip	14	26

* Harvested 20 days after last application
** Harvested 5 days after application

Better Alternatives Are Available

If producers cannot use Endosulfan what are the alternatives? Actually there are many that may produce better results than previous programs that included Endosulfan.

<u>Alternatives for aphid control.</u>

The first step is to use one of the chemicals that keep aphids under control season long. Most producers are already using products like Imidacloprid (Admire, Admire Pro, Alias, Couraze, Nuprid, or Widow) or Platinum in the transplant water or drenched on plants. These products can give season long control

of aphids. Any aphids that start to show at topping time should be inconsequential and should not cause any crop loss and therefore do not need any control measures.

Alternatives for budworm and hornworm control.
Early season worm control may be necessary as budworm and hornworms develop. Insecticide trials have shown Tracer to be superior to either Endosulfan or Acephate (Orthene) for budworm control. Other options that may produce equal results to Tracer are Denim and any of the BT type products (Agree, Dipel, Javelin, Lepinox, and Xentari). These same products will control early or late season hornworms. There is no need to apply a chemical that has a broad spectrum of control at topping when hornworms are the primary target. Acephate is not a good option for late season application anymore due to residue concerns for this chemical. There are many countries where Acephate has been dropped from registration.

Integrated Pest Management: Scout.
The number of reports of hornworms in curing barns seems to be on the increase. There are no options for control in the barn. The best approach is to monitor tobacco weekly starting a week prior to topping to within one week of harvest. If hornworms reach five out of 50 plants use Denim up until 14 days prior to harvest, Tracer up until 3 days of harvest or any of the BT types up until harvest.

Effective Sucker Control While Meeting Market Needs.
Maleic Hydrazide (MH) is another chemical that can leave unacceptable residue levels if not used properly. Some important international markets have restrictions on the MH residue levels allowed. Producers attempting to control suckers using fine nozzles and MH alone often over apply or make a second application that can drive residues above acceptable levels. Producing tobacco with high residues can result in the rejection of a lot and voiding of a contract.

A better way to spray.
There is a good solution that was first developed in the late 1990's using coarse nozzles and a combination of chemicals. As it turns out a fine spray mist on the upper third of the plant was not a good practice although utilized for almost 50 years. A coarse spray, much like raindrops, hits on the leaf and rolls down the stalk where the sucker buds are. Twelve trials across Kentucky demonstrated that better results were achieved with the coarse nozzles than the fine. Nozzles like the Spraying Systems TG-3 or TG-5 or equivalent are recommended. Using the larger nozzles where application speeds reach 4 to 4.5 mph.

More tools for sucker control.
Just as important as nozzle sizes are the chemicals used. A combination of two types is recommended including a reduced rate of MH at 1.5 gal/a and either Butralin or Prime+ at 0.5 gal/a. The MH provides a systemic action while the Butralin and Prime+ give local systemic action at the bud. This combination can improve sucker control, increase yields, improve rain safety, keep ground suckers in check, not damage the cover crop, improve color quality, extend control, improve grower confidence and reduce MH residue. Those that have not made the switch are missing out on one of the best improvements in sucker control since MH was first introduced almost 50 years ago.

Conclusion.
The sustainability of any business depends on its ability to meet the market needs of its customers while maintaining good practices and improving efficiency. US Burley tobacco growers have the opportunity to do that by

making a few good crop management decisions. Using the best materials in better ways benefits growers, buyers and the entire industry.

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