

Crop Talk

A Newsletter For The Clients Of Agri-Technologies, Inc.

It's The Water! **W. Scott Weathington**

The quality of irrigation water is becoming a common concern to many growers. Water quality is of major importance to yield and quality of crops as well as many soil structure issues.

Salts are the most important factor for water penetration and infiltration. Most all water contains salts of some kind, but the important ones are calcium, magnesium, sodium and potassium. There are also salt molecules of chloride, bicarbonate, carbonate and various sulfates. One of the most challenging concepts to understand is the additive and antagonistic

effects these compounds have in the soil. As water moves through the soil profile it is carrying these salts with it and combines with fertilizers either in the water or solubles in the soil. As the water moves it is either depositing or taking away elements as it moves. Therefore, neither the soil or the water is the same each time water moves through the soil profile.

The single biggest problem exists

when water has a high bicarbonate level and a low calcium level. Couple those factors with a little sodium and chloride, and a high pH and you can have the proverbial "recipe for disaster". Water with high bicarbonate levels has to be treated with acid to prevent the formation of lime and the possibility of an acid soil becoming a "sodic" or salty soil.

Some areas treat irrigation water with acid as well as adding calcium. However, most soils in our area respond well to soil applied gypsum combined with the use of low salt fertilizers.

In drip irrigation systems, water and fertilizer combinations can cause problems with clogging and uniformity of the irrigation emitters. Water should be tested annually and the intended fertilizer to be injected should be "jar tested" with the irrigation water to see if any cloud precipitates form which indicate compatibility problems. Using fertilizers like calcium nitrate mixed with potassium sulfate can cause precipitate problems. Some other rules of thumb to remember are: never mix calcium nitrate with VAN solutions; never mix nitrate N with urea sulfuric acid; and never allow phosphoric acid to come in contact with other fertilizers.

Blaine Hanson at UC Davis has reported that emitter uniformity decreased from 85% to 24% due to chemical fertilizer precipitates in the drip tape. He suggests that the high pH water (7.5 or above) that contains 122+ ppm bicarbonate will cause calcium precipitate. Also, if you have this situation and you are using fertilizer with CN9 you will precipitate calcium as well. Another potential problem exists when sulfate fertilizers are added into water with more than 400 ppm calcium. This will cause not only clogging but non-uniform delivery for the irrigation water and fertilizer.

Manganese linked to higher yields in Glyphosate-Resistant Soybeans

Dr. Don Huber of Purdue University has evidence in his research that shows how glyphosate-resistant soybean yields may lag behind that of conventional soybeans due to insufficient uptake of manganese. This information could be very helpful for farmers since many are noticing that soybean yields are not as high as expected. Some scientists suggest that the problem could be that the herbicide-resistance gene could have altered some physiological processes such as when soybean root exudates have been changed and plants no longer take up enough soil manganese. Supplemental manganese at the proper time may help correct deficiency problems and increase yields.

Dr. Barney Gordon of Kansas State University has evidence in his research that helps support that of Dr. Don Huber. Dr. Gordon indicates that glyphosate-resistant soybeans do indeed respond differently to both soil and foliar applied manganese than conventional soybeans. Manganese fertilization strategies also help to prevent or correct manganese deficiency and can have profitable yield benefits for soybean producers. These studies also indicate that this problem is just not linked to a single variety of soybeans. In one test a glyphosate-resistant variety and its conventional isoline were grown on a silt loam soil with sprinkler irrigation. This research concluded with a positive response in growth and yield in glyphosate-resistant varieties with a 5lb. - 7.5lb. /A. application of manganese sulfate applied broadcast, pre-plant. The conventional variety showed a positive response also, but only when no manganese was applied. The yield of the conventional variety declined with increasing manganese rates, possibly due to a micronutrient interaction.

Foliar applications of manganese have proven to be quite effective in correcting problems and increasing yields. Research is continuing with different forms of manganese for foliar applications. More research is being conducted with the possible benefit of both soil and foliar applied manganese that will help to also increase yields. Growers need to keep these studies and discussions in mind when planting glyphosate-resistant and conventional soybean varieties.

Ashley McLamb



Tomato Yellow Leaf Curl Virus

Christian Dameron

Tomato yellow leaf curl virus (TYLC) was identified in 1997 in South Florida. The disease spread rapidly and was found in north Florida and South Georgia in the Fall of 1998. TYLC is transmitted by adult silverleaf whiteflies. TYLC is not transmitted through seed but the virus can quickly spread to 20 or more plants around the first infected plant.

TYLC virus has become the most significant issue with tomato production in Florida. Infected whiteflies can travel long distances and transmit the virus from plant to plant during 15-30 minutes of feeding. Commercial varieties are equally susceptible, but often present different symptoms. Infected plants at an early stage can be stunted, develop



erect branches and have small chlorotic leaflets which cup and twist upward. Severely infected plants generally do not set any fruit.

As with most insect-vectored viruses, the emphasis is on controlling the vector not the virus. The whiteflies are able

to transmit the virus into the plant fairly quickly, so the interval between when an adult lands on a tomato and the opportunity to kill the whiteflies is very short. It is impossible to kill all the whiteflies before they transmit the virus.

Attempting to control this virus is a year around process. Growers should minimize the number of whiteflies that can enter a field by reducing the reservoirs such as volunteer plants and host weeds.

Quick destruction of crop residue after harvest is also helpful in controlling the whiteflies and helps keep whiteflies from entering neighboring fields or a new crop. The Resistance Management Working Group recommends spraying plants within five days of harvest with a burndown herbicide mixed with a heavy oil and a surfactant. Adding oil to the burndown herbicide will keep whitefly nymphs on the residue from maturing.

Reflective or Aluminized film is becoming a popular whitefly management tool during the first six to eight weeks of the season. The metallic mulches essentially confuse the whiteflies and other chewing and sucking insects and prevent them from landing on the plants to feed. Reflective mulches can reduce the incidence

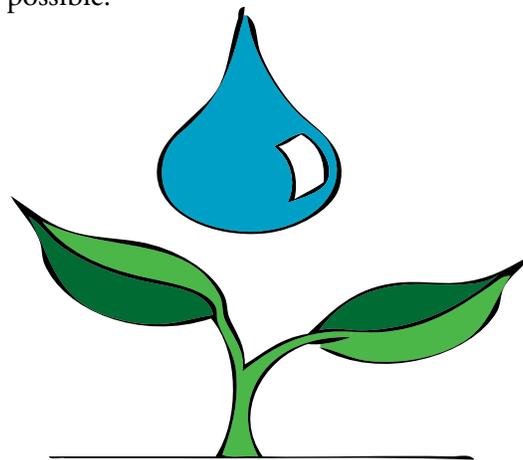
of TYLC as much as 50% in some incidences. The problem with the reflective mulches is that they are significantly more expensive and do not gather as much heat as traditional black film in cool weather situations. Reflective mulches also become dull and less effective as more fungicides are applied to the crop.

An integrated chemical approach that emphasizes product rotation and scouting is highly recommended. Neonicotinoid's such as Admire, Platinum, Provado, and Actara have been used to control chewing and sucking pest since the mid 1990's with very good results. Over the past couple of years with more chemicals with the same chemistry being released whiteflies have become increasingly tolerant to this chemistry. Neonicotinoids should only be used during the first six weeks of the crop, leaving a period in the cropping cycle with a neonicotinod free period.

A Typical program should begin with an Admire, Platinum, or Venom drench at transplanting. Then begin applications of Endosulfan by itself alternated with

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pyrethroids for the first couple of weeks. At four weeks after transplant we recommend using insect growth regulators such as Knack or Courier to interfere with the normal growth and development of the nymphs. These chemistries are not toxic on contact with the adults but do cause the treated female adults to lay infertile eggs. With increasing usage of the neonicotinoid chemistry it is important that we are aware of the chemistries that we are using and make sure that we rotate chemistries as much as possible.



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Resistance Matters

DeLeon Pope

A growing concern across the nation is the likelihood and in some cases the reports of glyphosate-tolerant weeds in Roundup-Ready cropping systems. The question many growers are facing is how to deal with this problem as it becomes apparent that more weed species are becoming tolerant to both glyphosate and ALS inhibitors. For many years we have enjoyed the simplicity and economic benefits of glyphosate based products. The products have proven to be extremely effective and in most cases easy to handle and administer. Economically speaking the introduction of generics in the marketplace has accelerated the popularity of the glyphosate-tolerant cropping systems throughout the global community. As the products popularity has grown the use of preplant herbicides has declined. Most growers have been forced to cut expenses wherever possibly to ensure profitability. In many cases the logical deletion of preplant herbicides has made “cents”. The problem is that certain chemistries may be lost due to the ever-increasing ability of weeds to evolve and adapt. The adaptation and tolerance to certain herbicides and their characteristic modes of action is a serious problem that demands attention. The problem of resistance raises many questions about the future of weed management. I will list a few for reflection:

- If weeds become resistant to glyphosate and ALS inhibitors what options do I have?*
- Do the options available lend themselves to profitability or are the costs restrictive?*
- How long can I expect the current chemistries to remain viable?*
- No-till versus convention tillage systems, should I change my tillage practices to alleviate the pressures put on herbicides to control early season weeds?*

Many questions have been asked and many strategies have been discussed. This problem is and will continue to be an issue across the Southeast for many years to come. Many extension specialists and experts have suggested reverting back to the early years of production when pre-plant herbicides were the norm. Pre-plant herbicides and tillage practices are the most effective ways to combat the growing resistance problems along with a good crop rotation. Remember that weeds do not become adaptive or tolerant overnight. This problem takes years to develop and can be avoided by taking a few cautionary steps when developing a crop production plan. The obvious restriction is cost; however, the cost of prevention is usually less expensive than the cure. Proactive measures tend to be more productive and less inhibitive in regards to net profit when you compare the costs of late season rescue treatments and the possibility that certain situations cannot be corrected. As a grower we can only hope that new chemistries will continue to become available in the marketplace at a faster rate than we are losing them. The key to success is becoming educated and then applying that knowledge to your farming operation. If everyone throughout the agricultural community begins to take an active role in managing the resistance problem, both weeds and insects, we can slow down the rate at which these pests adapt. Remember that weeds and insects reduce crop yields and the quality of the crops being harvested. With that being said, it is in everyone's best interest to be the best possible stewards of the land and technology to insure the viability and success of those systems. You can gather information to help make educated decisions from local consultants, extension specialists, and company representatives.

Around January and February every year, farmers are trying to make plans for their next crop. Decisions that face cotton growers in '07 that they were not facing a few years ago would be: "Should I plant Flex cotton?"; "Should I put down a pre-emergence herbicide because of potential resistant pigweed?"; "Should I plant BT II cotton?"; and "Should I shift some acres over to grain because of higher grain prices and lower cotton prices?"

Should you plant Flex cotton? Every grower has different circumstances. If you are a grower that has livestock, tobacco, possibly some produce and grain crops then planting Flex might help greatly because of labor being tied up in other places. Planting farms that have a bad weed problem, or a farm that is far from the shop or a farm that normally gets wet, making the early season Roundup sprays more difficult could be beneficial. Then the remaining farms could be planted in regular Roundup Ready cotton. Growers that are able to grow regular Roundup Ready cotton and have in the past been timely would most likely come out better by staying with the best regular Roundup BT cotton varieties that we have been planting. It

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takes more time to hood and you have to be more timely early in the season but if cotton is your main crop you should focus on profit more than convenience. The best RR-BT varieties that we have been planting are yielding better than the best Flex varieties. In a few years the breeding of the Flex varieties should be as good.

Should you plant conventional, BT, or BT II cotton? I still think the best varieties are RR-BT varieties. BT II is better on worms than regular BT but the technology is not available in the best varieties. Regular BT, even though it is not as good on worms as BT II, it is still pretty good and will give you some insurance knowing that if it gets wet around the moth flight, the BT will protect you some until you can get it sprayed where conventional cotton without the BT genes would be damaged greatly. Growers that have BT II cotton possibly could get damaged more by stinkbugs because the growers are not spraying anything for worms. Any sprays made would be primarily for stinkbugs. Stinkbugs will hurt yields and grades so if you do plant BT II cotton, you might not save any sprays over BT cotton because you should still have to make a spray trip.

Should you use a pre-emergence herbicide for possible resistant pigweed? If you have any farms that you have had a problem with then you need to have some pre-emergence herbicide down before the pigweed germinates. If Roundup is not going to kill them overtop, they have to be controlled before they come up. Some growers are thinking about pre-emergence herbicides on all the farms and not just the farms they have problems with. This would help to keep the pigweed from eventually becoming a problem on those farms. Valor, in with your burndown 21 days before planting, is one option. Valor is hard to get out of your sprayer so it is not advisable to put out the Valor with the sprayer that you will spray your cotton with overtop throughout the season. This year, Valor has a tank cleaner that should help. Another option is Reflex and Prowl behind the planter. Staple behind the planter is another option but you need to be careful because pigweed can also be resistant to Staple. After the cotton is up, spraying Roundup and Dual is very good. If you already have pigweed up when you the Roundup and Dual is sprayed, it will still work well unless the pigweed is resistant to the Roundup. Dual helps keep more pigweed from coming up but does not help kill what is already up. If you have pigweed up that you think or know is resistant to Roundup, then you will need to spray Roundup (for the other weeds) and Staple and hope that it is not ALS resistant also. The last option that most growers do not want to do would be to cultivate. This could only be done on conventional tilled land.

Should growers be thinking about shifting any acres over to grain? If a grower has his own combine, then this year might be a good time to rotate some farms. For farms that are not as productive as they have been in the past, a rotation could improve the land for future cotton crops. Planting grain on fields that are far away from the shop could save time during season since grain is less intensive than cotton. Planting corn on wet fields might mean getting your crop harvested before the weather got bad in the fall. Also grain prices are higher than normal and profit potential could be better than cotton depending on weather conditions. If a grower does not have a combine, I would have to think before I shifted too

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much to grain, if any, because normally it is not as easy to get the crop picked as timely when someone else is picking for you. If more corn is planted this year, then growers have more to pick for themselves before they are able to custom pick for others. If you have thought about buying a combine, make sure you are going to grow enough to justify the expense. Picking corn and beans would most likely be pulling some of your labor away from cotton picking. The farm needs to be big enough to justify two different picking operations.

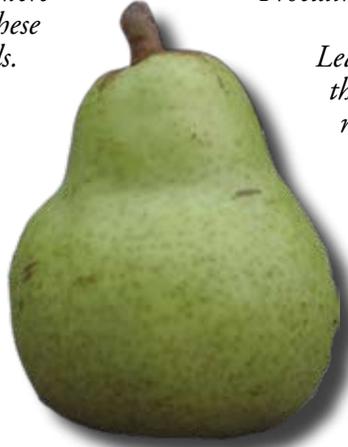
In conclusion, 2007 brings a lot of decisions that have to be made and make sure you do your homework before making your decisions.

Target Pests At All Growth Stages In Apples and Pears

Pear and Apple growers battle a variety of pests, including the codling moth and leaf rollers. There have been some new methods of combating these pests, as well as the comeback of older methods.

One of the best, new insecticides is Rimon. This is an ovicide that controls codling moth. It also acts as a growth regulator for leaf roller. Growers in the northwest have seen good results in the first year of use, especially in the first generation of codling moth. Control tapers in the second generation at the lowest labeled rate. Rimon can also be sprayed at petal fall to help control leaf roller.

Some alternatives to Rimon are Assail and Calypso. These control codling moth larvae and aphids. Other benefits include their toxicity to codling moth eggs and battling apple maggots. Older methods of using Intrepid and Esteem are also being



used for leaf roller and codling moth. In the future, Proclaim may be an important tool against leaf rollers.

Leafrollers in apples and pears have been on the rise, mainly due to resistance. Organic methods have been adopted by some growers to kill the larvae with a virus spray. Regular use of these sprays in a program can help improve overall moth control. Provado gives good control against green aphid and leafhoppers. Alternatives are Assail and Calypso in apple and pear, and Actara in just pears for aphids and leafhoppers.

It is important to know the pest that you are trying to control. An organic spray will reduce the risk of resistance, and may also lower cost. There are many methods, both old and new, that will help to control harmful pests in apples and pears.

Andy Malik

Soybean Insect Control Management

Ralph Johnson

Soybeans, typically like all other row crops, are inhabited by many different kinds of insects, pests and beneficials alike. Awareness has been heightened around soybean pest insects since more production is concentrated toward monoculture systems and large acreages, which are causing an increase in traditional soybean insects. Proper insect management is an essential factor toward maximizing yield potential and reducing yield-robbing threats imposed by soybean insects. Insect management in soybeans can be achieved throughout the growing season by implementing the use of scouting and crop monitoring to determine insect types and population numbers. Through accurate identification and quantifying the various insect populations within the soybean crop during the season, the decision whether to treat can be determined based on insect threshold (pressure) levels depending upon the crop stage of growth. Scouting and crop monitoring are invaluable tools in soybean production systems for assessing whether treatment sprays are warranted to preserve crop yield potential or unnecessary where costly overspraying is conducted and insect resistance issues may arise.

Generally in Southeastern soybean production areas, insect problems are low in the early season with soybeans inhabited by aphids, bean leaf beetles, thrips, and occasionally the armyworm complex. From the end of the early season until plants mature, soybeans can be invaded by large numbers of two main categories of insect pests: foliage feeders and pod feeders.

Foliage feeders consist mainly of foliage feeding caterpillars and beetles. Typically the traditional foliage feeding caterpillars include the green cloverworm, soybean looper, velvetbean caterpillar, corn earworm (before bloom), and occasionally members of the armyworm complex. Proper identification and defoliation levels of these insects are the important factors for determining if threshold recommendations have been met. Defoliation represents the amount of combined feeding by all leaf feeding insects in a particular field and the total amount of damage that has occurred. Typically treatment thresholds for defoliation must be 30% loss of foliage in pre-bloom soybeans and then decreased to 15% loss of foliage when plants are two weeks prior to bloom through pod fill.

Pod feeding insects generally consist of stinkbugs, corn earworm, armyworm complex, grasshoppers, and bean leaf beetle. Stinkbugs are of major concern because they are difficult to control since they can be evasive and may require many re-treatment applications. The damage that results from their feeding includes shriveled seed that are underdeveloped and causing small pods to abort. The corn earworm is primarily a foliage feeder prior to bloom but when blooms and pods appear, it shifts to pod and bloom feeding. The corn earworm is the most damaging insect pest in soybeans and their feeding can cause reduced yields and delay plant maturity. Grasshoppers and bean leaf beetles are able to feed on pods as well as foliage. Both insects are capable of pod feeding that can increase susceptibility to disease development

Given the array and spectrum of insect pests that infest and feed upon the soybean crop throughout the season, it is vital that scouting and crop monitoring be incorporated in the soybean crop management program each season. These are sound management tools that when used effectively can be utilized in conjunction with other management parameters toward producing optimal yields and providing profitable crop returns.

Agri-Technologies, Inc.

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**Contact us for more information
about our services!**

Agri-Technologies is a mission-driven organization with a clearly defined set of values. We encourage our employees to have a strong sense of purpose: a high level of self-esteem, and the capacity to think clearly and logically.

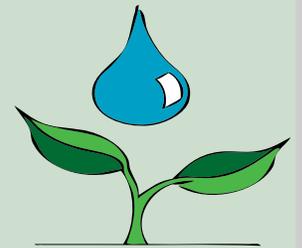
We believe we have a distinct competitive advantage and that competitive advantage is largely in the minds of our management and our employees as represented by their capacity to turn ideas into profits which enhances the accomplishment of our mission.

Agri-Technologies currently is providing production planning, in-season monitoring, contract research, and third-party certification on the following crops:

Tomato - Corn - Canola - Wheat - Soybeans - Cotton - Cucumber - Eggplant

Peanuts - Pepper - Squash - Tobacco - Cole crops - Potatoes - Citrus Fruit

Onions - Sweet Potatoes - Fruits and Nuts - Strawberries - Grapes



Crop Talk is a newsletter written for our clients by Agri-Technologies employees. Crop Talk's main purpose is to keep our clients informed of current news in the agriculture industry.

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