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Agronomy Notes

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Features . . .

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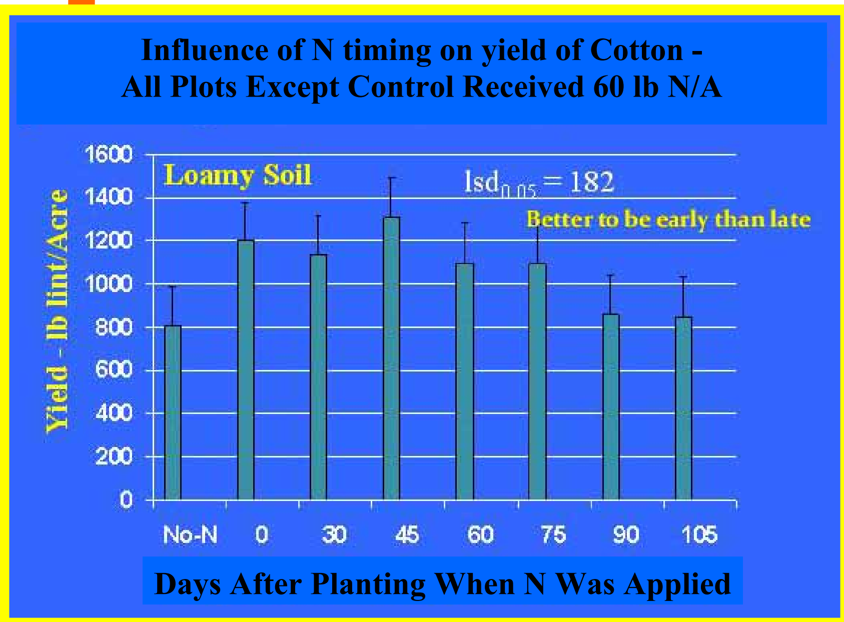
Timing Is Everything

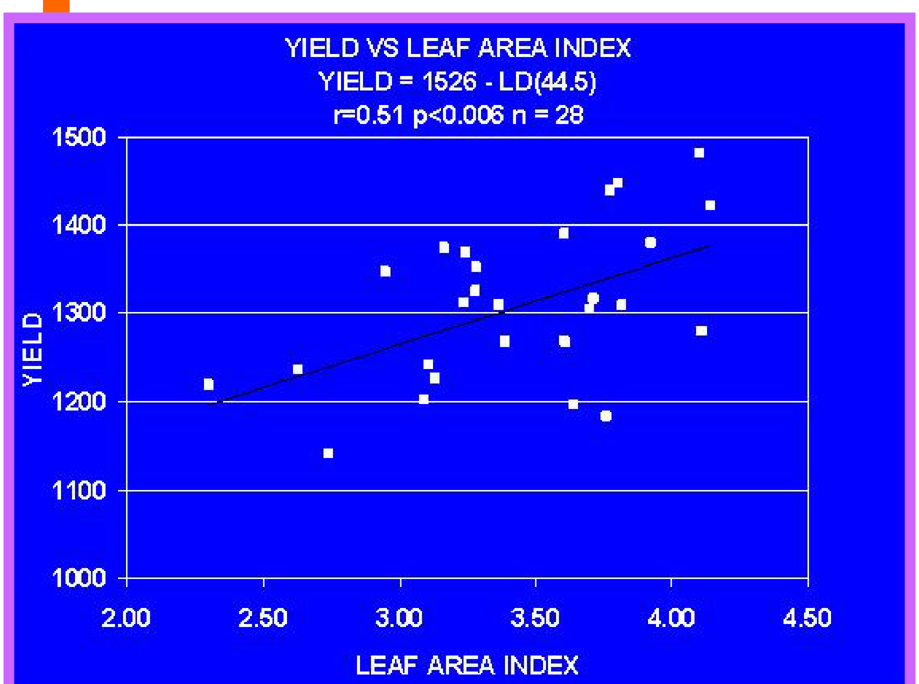


In most areas of life we find that timing is everything. Nitrogen fertilization is no exception. Peak uptake by most crops starts around 6 weeks after planting. Cotton starts squaring at 5-6 weeks after planting and this starts a peak uptake period for N uptake. Yield of cotton is highest from N applied about 42 days after planting but was not significantly different from N applied earlier in the season. Nitrogen applied after the 3rd week of bloom did not increase yield above the control with no N. These data indicate that it is better to apply N early than too late for top yield. Applications made too early may leach out in times of heavy rain or on sandy soils so applying N from 5-6 weeks after planting for cotton is the best timing when cotton is squaring to early bloom.

Dr. David Wright

Cotton And Corn As Influenced By Foliar Disease

There are articles in most farm magazines about fungicides on both cotton and corn which have typically not had fungicides applied. Are they necessary and will they increase yield? The answer to this is that it depends on environmental conditions and that there are locations that have diseases routinely and other areas that do not. In fields that are known to have had disease problems in the past, there may be a good likelihood that there will be again. Some of our data (shown below) with cotton has shown that there is a good correlation to yield with leaf area. In other words, if we can keep the plants healthy and retain leaves, we have a better chance of making higher yields. Fungicides should not be used routinely on cotton or corn unless there are fields that are known to have a history of getting leaf diseases and in the case of cotton defoliates early. Early defoliation on cotton has also been associated with potassium deficiency so that should be checked out and necessary management included to eliminate that if possible.



Dr. David Wright

Small Grain For Grain

Fertility Fall & Spring

Fall N (Ibs/a):

- Behind peanuts:10-20; soybeans:10-20; corn and fallow:25-30; cotton: 35-40
- Should provide growth till January. Plan to count tillers and possibly tissue analysis. Red color often a response to cold temperatures, Sugar accumulation.

Spring N (Ibs/a):

- < 80 tillers/sq ft apply 30 lbs early January and remainder @ stem elongation.
- > 80 tillers/sq ft apply all N at late January to early February.

Small grain can be a very profitable crop in a wheat/ soybean rotation. Proper planting date and variety selection is important to obtain high yields. Timing of nitrogen (N) applications is important on wheat and other small grain and rate depends on crop rotation and tillering. Suggested rates of N are shown below when grown after other crops and timing. On very sandy soils, N applications may be split into two applications in the spring similar to applications made with lower tiller numbers.

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Soil Testing For Forage Production

Periodic soil testing, followed by liming and fertilization according to soil test recommendations, is critically important to achieving good forage production and maintaining forage stands.

Soil testing is the most effective way to determine the nutrient status and pH of the soil in a pasture or area where forages are to be planted. Soil test results are useful to determine whether fertilizer or lime applications are needed. It is recommended to do the testing well before it is time to plant because in the case of lime it is recommended that you allow sufficient time for the soil to react with the lime.

Soil samples should be analyzed at the University of Florida/IFAS Extension Soil Testing Laboratory (ESTL; http://soilslab.ifas.ufl.edu) or other reputable laboratory. The ESTL uses soil test methods that were developed specifically for Florida soils. The lab determines soil pH, lime requirement, and the available soil nutrients in the sample. These test methods have been calibrated across Florida and other Southeastern states for many years to guarantee that the results are valid under Florida conditions. Private laboratories may or may not use soil tests that are calibrated for our region; therefore, if you choose to have your sample analyzed by a private laboratory, it is important that you know which tests are offered. Additionally, UF/ IFAS fertilizer recommendations are specific to the soil tests offered through the ESTL, which is important when interpreting the results.

Next is the link to the nutrient testing for bahiagrass pastures:

http://soilslab.ifas.ufl.edu/ESTL_files/BahiaProtocalForm.pdf

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Grass Tetany

Grass tetany or grass staggers is a disorder in cattle associated with low levels of magnesium in the blood of the ruminants grazing ryegrass, or small grains in late winter and early spring. In Florida, grass tetany tends to occur when cattle graze plants grown on soils low in available magnesium, or when grazing the first flush of growth from cool-season forages when forage is at a young stage. Once the forage is more mature the likelihood of the problem is reduced. It can also occur when cattle graze areas right after a frost or very low quality pastures causing them to be deficient in magnesium at a time when lactation requires a substantial quantity of this element. Wet soils, low in oxygen, may also prevent plants from taking up sufficient magnesium regardless of the soil magnesium level.

Grass tetany is more likely to occur on soils low in phosphorus but high in potassium and nitrogen because this combination tends to inhibit magnesium uptake by the plant. This can be a problem with cool season grass forage fertilized with high rates of N or broiler litter. Generally, forage containing 0.2 percent magnesium or more is unlikely to cause tetany.

To avoid grass tetany, if pastures are deficient in magnesium, they need to be limed with dolomite or dolomitic limestone. Dolomite is a mineral composed of calcium and magnesium carbonates; pure dolomite contains 40 to 45% $MgCO_3$ and 54 to 58% $CaCO_3$. Dolomitic limestone has a lower concentration of $MgCO_3$ usually 15 to 20%.

Pastures containing sufficient legume forage will normally offset the problem because legumes have a high concentration of magnesium in their tissues. However, legume growth is often limited in winter, so most of the early season forage may be grass. The most dependable control is supplemental feeding of a mineral mix fortified with magnesium during the potentially dangerous tetany season.

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Calendar

Feb. 4-15	**Florida State Fair**, Tampa
Feb. 7-8	**American Society of Agronomy Southern Branch**, Orlando
Feb. 24-26, 2010	**UF Water Institute Symposium**, Gainesville
May 3-6	**Aquatic Weed Control Short Course**, Coral Springs
May 5-7	**Florida Beef Cattle Short Course**, UF Gainesville, Hilton UF
July 12-16	**Greater Everglades Ecosystem Restoration Meeting**, Naples
Aug. 1-5	**Ecosytem Restoration Conference** (NCER) Baltimore, MD

Control Of Winter Weeds In Hayfields

Winter weeds are always a problem early in the spring, but the lifecycle is over soon after the first hay cutting. The first hay cutting often serves to remove these winter weeds to aid in increasing the quality of subsequent harvests. Since winter weeds don't linger, we have come to accept that hay bales from the first cutting are typically weed infested and low in quality. With the frequent rain that the state has received this fall, winter weeds will be more prevalent than normal. Taking steps now to reduce the winter weed infestations will result in better quality hay. There are many herbicide options that will effectively control these winter weeds and increase the quality of the hay from the first cutting. Below is a short list of products that I have found to be valuable for control of winter weeds.

Taking steps now to reduce winter weed infestations will result in better quality hay.

- ⇒ **Glyphosate.** In north Florida, where bermudagrass goes completely dormant in the winter, glyphosate can be highly effective and cost less than $5 per acre. Apply 11-16 oz/A (see product label for specific use rate) for control of winter grasses (except ryegrass) and broadleaf weeds. If wild radish or cutleaf evening primrose is present, the addition of 1-2 pt/A 2,4-D will be necessary. Do not apply glyphosate if bermudagrass has any green tissue present. Glyphosate applied to bermudagrass during transition will delay greenup and extend the first cutting. If the grass is starting to transition, Gramoxone Inteon (40 day cutting restriction) can be substituted for glyphosate. Broadcast applications of glyphosate are not recommended in hayfields in south Florida because many of these fields never go totally dormant.

- ⇒ **Metsulfuron.** Metsulfuron, *formerly sold as Cimarron*, is now available under a variety of trade names. This herbicide is fairly inexpensive and effective on a wide variety of broadleaf weeds. Wild radish, chickweed, and red sorrel are very sensitive to this herbicide. Bermudagrass injury is not a concern with this herbicide and it can be applied at any time since there are no grazing or haying restrictions.

- ⇒ **Chaparral.** Chaparral is a relatively new herbicide that combines metsulfuron and aminopyralid (the active ingredient in Milestone). Metsulfuron controls many winter weeds, as noted above, while the aminopyralid component improves control of thistles, cudweed, Carolina geranium, and fireweed. The combination of these herbicides will likely control a majority of the broadleaf weeds present on a given hayfield.

- ⇒ **2,4-D.** 2,4-D is often the least expensive way to control a variety of troublesome broadleaf weeds. This herbicide will be effective on pepperweed, wild radish, cutleaf eveningprimrose, and small thistles. Application rates in excess of 1 qt/A will be necessary if the wild radish is blooming or if thistles are greater than 12" in diameter. 2,4-D will not adequately control fireweed or red sorrel. For optimum control of sensitive weeds, it is best to use the ester formulation when applying during cooler temperatures.

Winter weed control can be relatively easy and inexpensive. Removing these weeds will allow the bermudagrass to transition from dormancy more quickly, and greatly improve the quality of the first hay harvest.

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FQPA's Effect On Pesticide Use Trends

A recent article in the IR-4 newsletter provided some interesting pesticide use trends since the passage of the Food Quality Protection Act (FQPA). The FQPA of 1996 resulted in major regulatory changes in the registration of pesticides with special focus on the older pesticides such as organophosphates and carbamate anticholinesterase insecticides, and the B2 carcinogenic fungicides, including captan, chlorothalonil, iprodione, mancozeb and maneb. Many of the uses of these pesticides were cancelled and/or restricted because of potential health hazards and worker safety concerns. At the same time, the registration of newer Reduced-Risk (RR) pesticides was encouraged.

The goal of the RR program is to quickly register commercially viable alternatives to riskier conventional pesticides such as neurotoxins, carcinogens, reproductive and developmental toxicants, and groundwater contaminants. This ensures that these RR pesticide uses get into the marketplace and are available to growers as soon as possible. Expected participants in this program are the chemical companies and state or Federal agencies that submit to the EPA initial registration and amended registration applications for pesticide products.

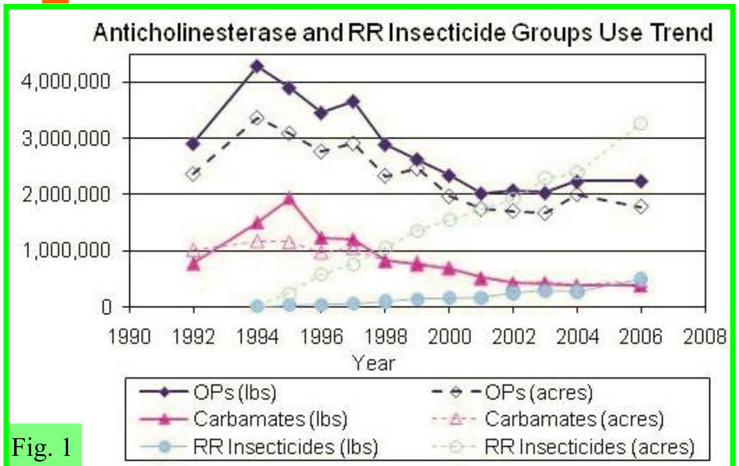

Fig. 1

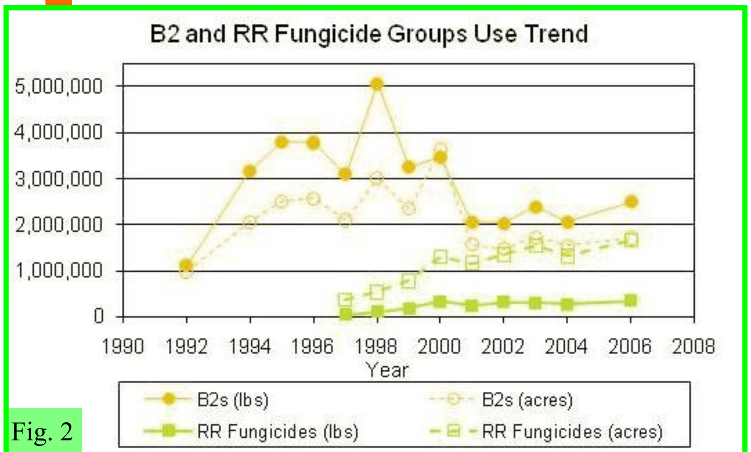

Fig. 2

The IR-4 program has focused on supporting the registration of RRs and organophosphate replacements by conducting 70 - 80% of food use studies on such compounds since the passage of the FQPA. Despite the initiative to substitute RR pesticides for these older, toxicologically suspect compounds, there has been little public analysis of changes in pesticide use and residue levels or of changes in risk resulting from FQPA. In this study, several pesticide use databases such as the California Department of Pesticide Regulation (CA-DPR) and the CropLife Foundation (CLF) that are publicly-available were used to determine how pesticide usage has changed in the United States since FQPA. The data presented are for usage in California from CA-DPR but they reasonably represent the less comprehensive data on national use trends from the CLF database. The most commonly used organophosphate and carbamate insecticides showed an overall decline in use of about 50% and 70%, respectively, from 1994 to 2006 (Figure 1). The B2 fungicides showed much less decline in use, about 10-20% (Figure 2).

Conversely, the RR insecticide and fungicide groups showed a steady increase in use over this time such that they are now key components in pest management programs for fruits and vegetables.

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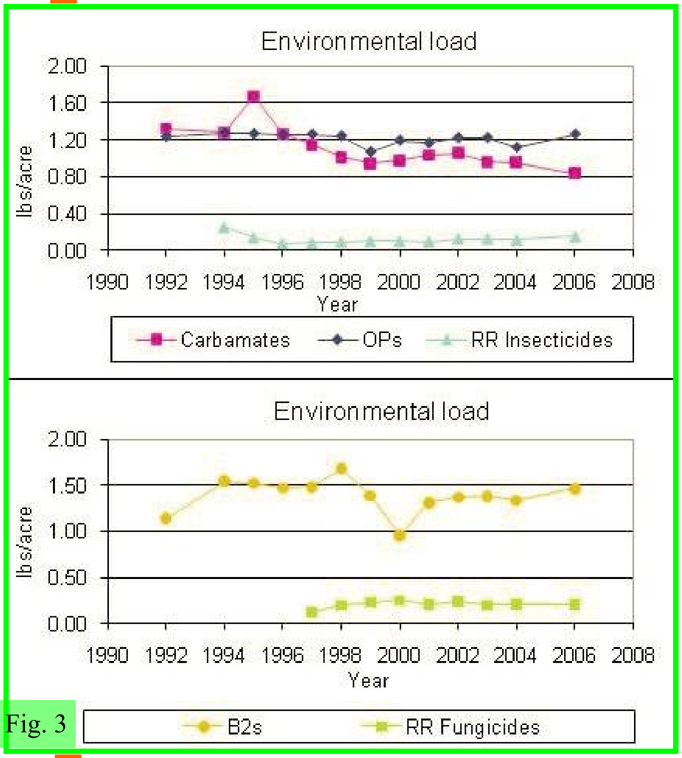

Fig. 3

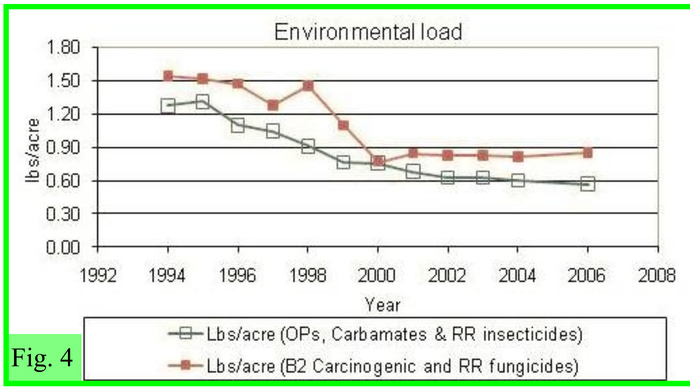

Fig. 4

The environmental load is the rate of application (lbs/acre) of chemicals to the environment. Figure 3 (*on the left*) shows the environmental loads (calculated as the ratio of the total lbs of pesticide applied and the total acres treated based on the CA-DPR data) for the anticholinesterase and RR insecticides, and for the B2 carcinogenic and RR fungicide groups. The RR pesticides are generally used at significantly lower application rates than the conventional compounds they are replacing, which has the effect of decreasing the amount of chemical applied to the environment.

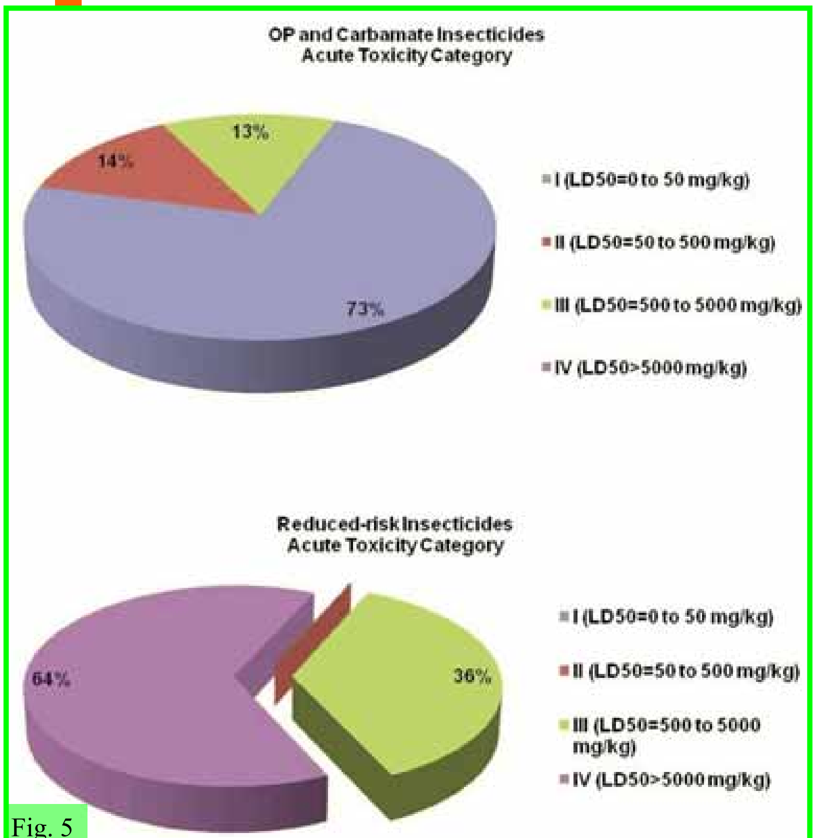

Fig. 5

Figure 4 (*above*) shows the combined environmental loads of the new and the old pesticides grouped into insecticides and fungicides. This demonstrates the impact of the increasing use of RR compounds on the overall environmental loads of the insecticide and fungicide groups. The RR pesticides have substantially decreased the overall loads in these groups from 1994 to 2006 by 45% for the insecticides and by 54% for the fungicides.

The main concern with the anticholinesterase insecticides is acute toxicity. As shown on the left in Figure 5, 73% of these compounds most widely used in the U.S. fall into the highest toxicity class of EPA and none are in the safest class. By contrast, 64% of the RR insecticides fall into the highest safety class and the rest are in the next safest group III. On the other hand the major concern with B2 fungicides is potential carcinogenicity rather than acute toxicity. All of the RR fungicides included here were classified as “not likely to be carcinogenic” and they introduced no appreciable acute risk. While formal risk assessment requires knowledge of exposure levels as well as toxicity, the radical change in toxicity properties of the RR compounds coupled with their lower use rates suggests that the replacement of the older groups by the RR compounds has significantly lowered or eliminated risks to consumers, applicators and the environment.

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