FROM THE GROUND UP

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AGRONOMY NEWS

Volume 14, Number 3 March 1994

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WORKER PROTECTION STANDARD - IT'S STILL COMING

Robert McLavey, Deputy Commissioner for the Colorado Department of Agriculture, reported that EPA does not intend to roll back the April 15, 1994 deadline date for Worker Protection Standard (WPS) regulations. The current request into EPA is to roll back the compliance date to September, 1994. However, this will not occur unless Congress is able to apply enough pressure to delay compliance.

Assuming the April 15 compliance deadline sticks, what does this mean? On or after April 15, all WPS requirements are enforceable when a product is being used that references the WPS.

Product specific requirements include:

- using label-specific personal protective equipment (PPE)
- obeying label-specific restrictions on entry to treated areas during restricted-entry intervals (REI's)
- obeying the requirement on some labels to provide oral warnings and treated-area posting

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Other WPS requirements include:

- training workers and handlers
- providing decontamination supplies
- providing certain notification information
- cleaning, inspecting, and maintaining PPE
- providing emergency assistance

One major concern with the April 15 compliance date is the slow release of materials to assist in compliance. For example, the training verification cards, which are given to workers and handlers when they have received training, are ready but the regulations for using them are not. The booklet for training handlers was released this week, but it may be several weeks before CSU obtains an allocation to distribute to the public.

Be aware:

Know WPS regulations and how they impact farming practices

and

Encourage growers to obtain private pesticide applicators certification

The best thing we can do for our growers at this time is:

1) continue to make them aware of the WPS regulations and how these regulations relate to their farming practices; and

2) encourage growers to obtain their private pesticide applicators certification. This certification allows them to train their own handlers and workers.

Ed Stearns, EPA Pesticide Specialist at Denver, commented that their office has been able to keep up with meeting requests and telephone questions. Therefore, do not hesitate to give Ed a call at (800) 227-8917 if you need assistance or clarification on the WPS regulations. ▫Apley

POLYPHOSPHATES VERSUS ORTHOPHOSPHATES

There is confusion concerning the agronomic effectiveness of phosphorus in ammonium polyphosphate and orthophosphate fertilizers. Most of the disagreement relates to their effectiveness when band applied as starter fertilizers. Claims have been made that one form may be more effective than the other.

A brief chemical description of these fertilizers may be helpful in understanding these fertilizers. Most phosphate fertilizers contain phosphorus in the orthophosphate form, expressed by the anions, $H_2PO_4^-$, HPO_4^{-2}, and PO_4^{-3}. The main orthophosphate fertilizers are monoammonium phosphate (MAP, 10-52-0), diammonium phosphate (DAP, 18-46-0), and triple superphosphate (0-45-0). These fertilizers are mostly water soluble and will dissolve after soil application. The relative fraction of occurrence of these phosphate ions is related to soil pH level. However, all of these ions are available to plants.

Ammonium polyphosphate (APP, 10-34-0) contains about 50% of its total phosphorus in the polyphosphate form, and the remaining 50% in the orthophosphate form. Polyphosphates are "condensed" orthophosphates, with pyrophosphate ($P_2O_7^{-4}$) as the main form. Polyphosphates are manufactured by removing water molecules from orthophosphates, thereby combining two or more orthophosphates into a polyphosphate. After soil application, polyphosphates "hydrolyze" or react with soil water to split into orthophosphates. This chemical reaction is rather rapid in most soils, and its rate depends on

soil moisture, temperature, and microbial activity.

Research results have shown that water soluble orthophosphates and polyphosphate fertilizers are equally effective as starter fertilizers for corn and other crops. This is not surprising, because 50% of the phosphorus in APP is in the orthophosphate form. In addition, most of the polyphosphate-phosphorus is converted to orthophosphate during the first month after application to soil. Plant roots usually take up phosphorus in the orthophosphate form. Therefore, uptake efficiency per unit of applied phosphorus is similar for ammonium orthophosphate and ammonium polyphosphate fertilizers.

Choice of form of phosphate fertilizer depends upon cost and equipment and how it fits into your management system.

Selection of the form of phosphate fertilizer as a starter fertilizer depends upon available equipment, price, and how it fits into your management system. ▫Mortvedt

IS HOMEGROWN SEED CHEAPER?

Most progressive farmers believe that seed is an important input in their cropping system. To plant good seed, they can either buy it or grow it themselves, and many believe that homegrown seed is much cheaper. In reality, what on the surface might look like a low cost for seed might show hidden costs that could translate to higher prices than purchased certified seed, and with the potential of lower quality.

As an example, let's assume a farmer purchases enough foundation seed to plant 80 acres of wheat. He plants the seed at a rate of 50# per acre on a field with low weed history and handles his equipment in a manner that prevents contamination, and therefore, he can be relatively sure that the seed produced is of good quality. The production from the field at 35 bushels per acre produces sufficient seed for three years planting on the rest of his farm. Before the seed is planted, it is cleaned through an air screen cleaner and 12% cleanout is incurred.

Additional costs for the foundation seed at $17.50/acre translate to an extra $0.488 for each bushel of bin-run seed. Seed conditioning and cleanout loss add another $0.50 to the seed cost. Since 1/3 of the seed is being stored for 1 year and another 1/3 is stored for 2 years, storage costs of $0.40 are incurred. Add another $0.20 for incidental expenses and the extra costs of making the grain into seed are at $1.59/bushel.

Let's assume that the wheat price at harvest is $2.90/bushel, and adding the $1.59 to the $2.90 gives a cost of $4.49/bushel for the seed, a price substantially lower than the cost of purchased seed. But, there is a problem with this calculation. Most grain is not sold at the August wheat price, but sometime later when the price is higher. If a majority of the seed is sold in March at $3.45/bushel, one must then use that figure when figuring seed costs. That increases the cost of homegrown seed to over $5.00/bushel.

In many cases, the $5.00 figure now becomes very competitive with the cost of certified seed. Some farmers have told me that they feel more secure knowing that seed came from their own field where no problems exist, but farmers often overlook or miss field problems that can damage seed quality. Even in certified fields,

our inspectors might find weeds or crop mixtures in fields that the grower doesn't know about. For a few cents more, the farmer can have the benefit of independent third-party inspection of production fields, better seed conditioning, testing of seed for germination and purity, and peace of mind knowing that the seed is of the best quality. ¤Stanelle

SPRING WEED CONTROL IN WINTER WHEAT

Weeds rob wheat producers of millions of dollars each year. Weeds compete with wheat for water, nutrients, sunlight, and space.

The time has arrived when decisions regarding spring weed control in winter wheat will have to be made. Weed problems that can be managed by spring herbicide treatments include winter annual broadleafs such as the mustards and prickly lettuce, and summer annuals such as kochia, sunflower, lambsquarter, and Russian thistle. Infestations of winter annual grasses such as downy brome or jointed goatgrass cannot be effectively managed with spring herbicide treatments and require other control strategies. The herbicide treatments fall into two broad categories: 1) soil active types, and 2) contact or burn down types. The contact herbicides labeled for selective control of weeds in growing wheat consist of 2,4-D, Banvel, Buctril, Bronate, and MCPA. Banvel also has residual soil activity and label restrictions should be carefully followed, particularly for sensitive crops.

Many of these herbicide treatments will provide effective control for many broadleaf weed problems. Most of these herbicide treatments require appropriate timing of application in order to provide for maximum weed control and avoidance of crop injury. The time window for 2,4-D and Banvel application is very specific and requires careful attention to the label.

Most of the soil active herbicides labeled for selective weed control in wheat consist of sulfonyl-urea herbicides. Glean was the first of these herbicides to be released, but is no longer labeled for use in Colorado. Other herbicides falling in this category, which are labeled for use in Colorado, include Ally, Amber, and Harmony Extra. These herbicides, in general, have the same spectrum of weed control, with the main differences being in length of residual soil activity. For example, Ally will provide residual broadleaf weed control for about 4-6 weeks after application, whereas, Harmony Extra has very little residual soil activity. Treatments involving Ally or Amber will, in many cases, provide weed-free wheat stubble after harvest. This provides the producer with added time after wheat harvest to implement other weed control measures.

With regard to application methods, it has become popular with many producers to combine spring nitrogen fertilizer top-dressing with application of one of the above herbicides treatments. This allows the producer to fine tune fertilizer recommendations based on available soil moisture condition as well and apply appropriate weed control measures.

Another issue that warrants discussion is the recent appearance of weed populations, in particular kochia, that have exhibited resistance to the sulfonyl urea herbicides in Colorado. A 1992 survey of Colorado showed that about 3% of the fields sampled have kochia resistant to sulfonyl urea (SU) herbicides. If a producer suspects SU resistant kochia is

present, then combinations of other herbicides should be used. For example, a mixture using 0.1 oz. (0.1 oz. of active ingredient/A) of Ally and 3-4 oz. of Banvel (along with surfactant) would be a good mixture to combat SU resistant kochia. Sulfonyl-urea herbicide labels specify tank mixtures for the management of resistant weeds.

▫Shanahan, Westra

PRODUCTION OF BLACK BEANS AND LIGHT RED KIDNEY BEANS IN COLORADO

Since pinto beans constitute approximately 95% of the production in Colorado, many producers often overlook the opportunity to diversify dry edible beans into other market classes. Two frequently grown classes in Colorado are black beans and light red kidney beans. Varieties in these classes have unique levels of disease resistance, growth habits, and harvest maturities when compared to the pinto varieties, thus providing an opportunity to diversify the production system. Appropriate selection of a market class and variety can result in fewer chemical inputs and spread out the time of harvest.

Consider diversifying your market classes - potentially you can spread out the time of harvest and have fewer chemical inputs.

Black bean varieties such as UI-906, T-39, Panther, Midnight and others have resistance to the prevalent races of rust in Colorado. They also have good to moderate levels of white mold tolerance, partly due to their upright growth habit. Black beans may be a good choice when these pathogens are a regular problem in your area, and you want to limit the use of chemical controls. All black bean varieties that are available in Colorado are later maturing than the standard pinto cultivars such as Bill Z, UI-129, Othello, et al. The later maturity is a liability for growers that want to undercut beans in late August or early September, but growers with large areas of pinto beans can benefit by spreading out the harvest season over a longer period. Care must be taken not to allow black beans to become overly dry during field curing because they are more prone to splitting during harvest and cleaning operations. Hence, black beans require a more carefully timed curing and harvest operation than pinto. Black beans normally yield 79 to 95% of pinto but may need higher seeding rates (no. seeds/acre), to achieve a yield potential more comparable to pintos. The prospect of an economic advantage for the production of black beans over pinto in 1994 does not appear favorable. Today's prices (March, 1994) are higher for pinto at $28-32/cwt compared to blacks at $18-22/cwt. However, prices are prone to change and the price differential may turn around, especially if Mexico decides to buy black beans in the future, and/or the pinto market has a surplus of production in 1994.

Light red kidney bean production represents approximately 2 to 5% of the total production in Colorado. Light red kidney bean varieties all possess bush growth habit and tend to have a slightly shorter growing season than many pinto varieties. The bush growth habit provides a more open canopy, providing mechanical tolerance to white mold. According to observations made by Dr. Howard Schwartz in eastern Colorado, most light red kidney varieties are resistant to the prevalent strains of rust and white mold. Similar to black beans, they can provide an opportunity to reduce the dependence on agrichemicals where these pathogens are expected to be a problem. However, most light red kidney bean

varieties are susceptible to bacterial brown spot. Yield potential of light red kidney bean varieties is usually 75 to 90% of pinto varieties. The larger seed size predisposes them to mechanical damage during harvest and cleaning, thus they need closer attention during handling to reduce seed damage. Prices for light red kidney are in the $23 to $27/cwt range today. Lower prices, coupled with lower yield potential, make the prospect of a higher economic return on light red kidneys than pintos appear unfavorable. However, as mentioned previously, if pintos are overproduced in 1994, that price differential could be reversed quickly. In fact, long term average prices for both light red kidney and black beans are higher than for pinto.

The choice to diversify your bean production should be based on many factors, not just the price in today's market. If you are interested in growing other market classes, discuss the idea with your local elevator or buyer first and remember that the harvest and handling practices are slightly different than pinto beans. ▫Brick

ALFALFA SEEDING TECHNIQUES

If you plan to seed alfalfa this spring, it should be planted early (somewhere between mid-April and mid-May, depending on location in Colorado)

Alfalfa can be seeded in spring or late summer in Colorado and either practice can be very successful, depending on the procedures utilized. Spring seeded stands must be planted early (somewhere between mid-April and mid-May, depending on location in Colorado) so emergence is near the average frost free date for the area. Spring seeded stands can be planted with or without a nurse crop. While nurse crops provide weed control, they also compete for water, space, and nutrients. If a nurse crop such as oats is used, it must be planted at a light rate of 30 pounds per acre. The nurse crop may be planted first and the alfalfa crop cross-seeded about a week later, but in most cases, both crops are planted at the same time. Alternative seedbed situations include planting alfalfa in wheat or other standing small grain residue from the previous year. Accurate seed placement is much easier if the soil is not disturbed. However, the use of pre-plant incorporated herbicides is not possible when a nurse crop is planted or stubble from a previous crop is present.

A late summer planting in mid to late August can be very successful and is preferred by many. This is as late as alfalfa can be planted if the crop is to develop a good root system and survive the winter. Alfalfa can also be seeded into existing, small grain residue at this time, providing protection from winter conditions. A nurse crop is not used at this time.

A seeding rate of 8 to 15 pounds of Pure Live Seed (PLS) per acre is adequate for most situations and will result in about 45 plants per square foot. A 6 inch drill spacing would result in about 22 seeds per foot of row or 2 seeds every inch of row. The amount of PLS needed is calculated by dividing seeding rate per acre by the percent germination. So if 10 lbs PLS is required and seed with 90 percent germination is used, then 11.1 lbs of seed per acre will be needed.

Alfalfa must be planted in a firm seedbed. In a properly prepared seedbed, one should sink in only ½ to 1 inch when walking across the field. Seed should be placed ¼ to ½ inch deep. If the soil is dry or cloddy, seed may be planted up to ¾ inches deep. Loose seedbeds make shallow plantings very difficult, even with use

of depth bands on the drill. Water should be available to irrigate and keep the soil moist to prevent crusting.

▫Croissant

Where trade names are used, no discrimination is intended, and no endorsement by the Cooperative Extension Service is implied.

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The next four pages provide the summary index by topic/title of all newsletter articles that were written by Extension agronomists and other contributing Colorado State University faculty during 1993.

Sincerely,

Robert L Croissant

Robert L. Croissant
Editor
Extension Agronomist -Crops

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