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REVISED NITROGEN RECOMMENDATIONS FOR CORN

Last fall the CSU Soil, Water, and Plant Testing Lab modified the nitrogen recommendations for corn. This was done to better relate nitrogen recommendations to crop needs at realistic yield goals. Yield goals (expected yield) for individual fields should be determined by adding 5% to the most recent five year average yield of corn. Yield reductions due to hail or other disasters should be excluded in determining yield averages. The new algorithm (equation) decreased the factor for crop N needs according to yield goal and increased the credit for nitrate-N in the top 2 feet of soil. Other N credits were not changed except for a credit of 10 lb (instead of 5 lb) of

available N per dry ton of applied manure (when growers do not have a lab analysis of the manure).

The new algorithm is:

$$N \text{ rate (lb/A)} =$$

$$35 + (1.2 \times \text{expected yield in bu/A})$$

$$- 8 \times \text{ppm NO}_3\text{-N in the top 2 feet}$$

$$- 0.14 \times \text{expected yield} \times \% \text{ organic matter}$$

$$- \text{other credits (lb/A) from manure, irrigation water, and legumes}$$

Examples of calculating N recommendations with this algorithm were given in the October 1993 issue of *From the Ground Up*. Setting realistic yield goals and obtaining soil, water, and manure analyses are important components of making sound N recommendations for corn. Without such data, N applications could be excessively high (which could result in loss of return on fertilizer investment and potential groundwater contamination), or too low (which could limit crop yields). In-season soil or plant analyses can be used to determine the N status of the growing crop. If the N status of the crop is low or growing conditions appear to be above average, additional N can be applied at sidedressing or in controlled irrigation systems. Mortvedt, Self, and Waskom

protective equipment. The equipment must be clean and in operating condition.

- b) Entry must be restricted during the restricted entry interval (REI).
- c) Workers must be notified about an application either orally or by posting or both.

Provisions Delayed Until January 1, 1995:

- 1) Safety training for agricultural workers and pesticide handlers.
- 2) Providing decontamination supplies (towels, soap, water, change of coverall).
- 3) Notice in a central location of pesticide applications.
- 4) Maintaining an application log.
- 5) Displaying a safety poster.

Additional Changes:

- 1) The limit of one hour/person/day during an REI has been removed for non-hand labor tasks such as irrigation work or maintenance.

WORKER PROTECTION STANDARD PRESIDENT SIGNS LEGISLATION DELAYING ENFORCEMENT

Legislation delaying implementation of the Worker Protection Standard (WPS) passed the U. S. Congress the week of March 21. President Clinton signed the bill (S. 1913) into law April 6, 1994. The bill maintains the April 15, 1994 compliance deadline for some items and delays compliance for other items until January 1, 1995. Additional changes have also been implemented into the bill.

However, the following items still remain in effect:

- a) No early entry is allowed for the first four hours after application (and until any ventilation criteria are met).
- b) Hand labor tasks are not allowed during the REI.

It is important to note that although legislation has been signed delaying enforcement of WPS, certain provisions are still within the April 15 compliance deadline.

Provisions Maintaining the April 15, 1994 Compliance Date:

- 1) Pesticide registrants must change their labels by April 21, 1994 to reflect WPS requirements.
- 2) Agricultural employers must comply with the WPS requirements stated on the label:
 - a) Handlers and early entry workers must be provided with personal

- 2) Irrigation workers (in minimal contact situations) may substitute coveralls and chemical resistant gloves and boots for the early entry personal protective equipment specified on the label.
- 3) Crop advisors are removed from WPS coverage.

The delay, according to EPA, will allow "employers time to learn about the requirements, provide safety training to employees, and be ready to comply".
□Apley

WATER QUALITY IMPACTS FROM URBAN LANDSCAPES

Water quality concerns have prompted scrutiny of the use of pesticides and fertilizers in urban landscapes. Previous research in the eastern U.S. has indicated that well established turfgrass may deter chemical runoff and leaching. The thatch layer of turf has been shown to act as a filter which removes pesticides from water moving through the soil profile. The U.S. Geological Survey and Northern Colorado Water Conservancy District have recently conducted studies that may increase our understanding of water quality impacts from the urban use of agrichemicals.

The U.S. Geological Survey (USGS) is conducting a study in which water quality in a predominately urban basin is compared to an agricultural basin. They selected Cherry Creek in Denver for the urban basin and Lonetree Creek in Weld County for the agricultural basin. This work is still in progress, but they have released preliminary pesticide data that are relevant to a discussion of urban water quality impacts.

The USGS monitored surface water flows in the Cherry Creek basin during 1993 for a range of pesticides. They detected 10 herbicides and 6 insecticides in surface water, but none of the detections were greater than the EPA established health limits. Atrazine was found in 95% of the samples collected in Cherry Creek, indicating how widespread this compound is in our environment. Simazine was detected in

71%, Dacthal in 62%, Eptam in 24%, and 2,4-D in 14% of the surface water samples. Dacthal was present in the highest concentration, but EPA has not established a Maximum Contaminant Level (MCL) for that compound. Of the insecticides found in the Cherry Creek basin, Sevin was the most prevalent and found in the highest concentration. Eighty-one percent of the samples contained Sevin, 76% contained Diazinon, 43% had Lorsban, and 38% contained Malathion. It was interesting to note that the urban samples had a higher percentage of insecticide detections in surface water than the agricultural basin.

These data indicate that the urban use of pesticides causes surface water quality impacts similar to the agricultural use of these products. That is, if they are widely used in an area, they can usually be detected at some level. Most detections are at low levels that apparently pose little threat to human health. However, it should be noted that the agricultural sector uses 3 to 4 times the volume of pesticide that the urban sector uses.

Northern Colorado Water Conservancy District (NCWCD) conducted a study during 1993 on irrigated bluegrass at their Loveland headquarters. They installed bucket lysimeters under the root zone to capture all water and NO_3 leached below the root zone. The site was irrigated according to water balance calculations and liquid fertilizer was applied by a commercial lawn care company. The lawn care service applied their standard fertility program consisting of 4 applications of a mixture of urea and Coron for a total of 3.92 lb N/1000 ft² (171 lb/acre). Although 17 inches of water was collected in the lysimeters, only 0.5 lb $\text{NO}_3\text{-N}$ (0.12 ppm) moved below the root zone during the entire season.

The USGS found atrazine in 95% of the surface water samples collected in south Denver, indicating how widespread this compound has become in our environment.

They concluded that very little NO₃ leaches under established turf on fine textured soils, even when significant quantities of water move through the profile.

The water quality hazards associated with good turfgrass management have been shown to be significantly less than other land uses. However, landscape managers and homeowners can avoid adverse environmental impacts by implementing the following Best Management Practices:

- Use an Integrated Pest Management (IPM) approach, incorporating careful scouting and monitoring, rather than the use of preventive sprays. Pesticides should be considered only after other cultural, mechanical, and biological methods fail to control pests.
- Apply spot pesticide treatments, rather than spraying the entire area, if pests are localized.
- Dispose of pesticides and containers properly. Contact your county Department of Natural Resources prior to disposing of any pesticide.
- Utilize split applications of slow release N fertilizers such as IBDU, sulfur-coated urea, and organic based fertilizers.
- Apply irrigation according to plant needs, avoiding surface runoff.

□Waskom

SEED LAW REGISTRATIONS

The October 1993 issue of *From the Ground Up* contained new registration requirements under the Colorado Seed Law. As of March 31st, over 844

registration requests have been received by the Department of Agriculture in the following categories: 137 seed labellers, 21 custom seed conditioners, 36 farmer seed labellers, 594 retail seed dealers, and 56 additional sales locations.

Please call me at (303)491-6202 if you need additional information about who should be registered and for which classes. Many calls can be referred to the Department of Agriculture. However, anyone dealing in labelling, sales, or conditioning of seed must be registered. Certified seed growers, large out of state seed companies, farmer seed corn dealers, individuals who clean seed for hire, and grocery stores who sell seed in containers of more than 2 pounds, among others, all must be registered under one of the categories. Registration is mandatory prior to seed sales through the Colorado Department of Agriculture.

Seed labelling regulations are described by federal and state laws. The Federal Seed Act and the State Seed Law say that any seed sold must be accompanied by a label showing germination, purity, date of the germination test, and information about the crop and labeller. In addition, the amounts of restricted noxious weed seeds must be listed on the label. It is illegal to sell seed that contains any prohibited noxious weed seed or any seed lot that contains more than 2% weed seeds. For example, a bulk truck load of uncertified wheat seed sold from one neighbor to another must be labelled and pass restrictions as described.

□Stanelle

Registration through the Colorado Department of Agriculture is now mandatory for anyone dealing in labelling, sales, or conditioning of seed prior to any seed sales.

PREPARATION FOR THE 1994 DRY BEAN CROP

As planting season approaches, most bean producers are thinking about the 1994 crop. There are a few tips to think about before planting time is upon us. First, order your Certified seed early. The Certified bean seed crops in western Colorado and Idaho were below average last year. The shorter seed crop, coupled with the high current prices for pintos, may create a high demand for quality seed of the popular pinto varieties. The USDA Crop Reporting Service has indicated that planting intentions for all dry beans in the U.S. will be 1,921,900 acres in 1994, up from 1,849,900 acres in 1993. However, planting intentions in Colorado are projected to be lower in 1994 at 180,000 acres, compared to the 205,000 intended in 1993. If these figures are correct, the seed crop should be adequate, but not in great supply. Varietal selection should be based on yield potential and adaptation to Colorado growing conditions. For information on varietal performance of dry beans in Colorado, refer to Cooperative Extension *Bulletin TR93-8*, which includes a summary of performance in Colorado over the past three years.

Soil fertility is another important consideration for a successful bean crop. If you haven't taken a soil sample on your 1994 bean ground, you still have time to obtain a sample and get it tested. Dry beans require approximately 30 to 50 lbs/acre available N, 40 to 50 lbs/acre of available P, and 40 lbs/acre of K. Do not apply excess nitrogen, as it will only stimulate plant growth and increase disease pressure. While you are sampling the soil for nutrients, evaluate your fields for soil compaction. Soil compaction can significantly reduce bean yields by reducing root growth in

the soil profile, preventing water from infiltrating through the soil profile and increasing the incidence of root rot and white mold disease. Evaluation of soil compaction can be done with a home made soil probe. A 1/2 inch diameter solid steel rod, 36 inches long, with a handle welded on it, can be used to probe your soil. The rod should be able to penetrate the soil profile down to 18 to 24 inches without a great deal of resistance. More importantly, the resistance should not change greatly as you penetrate the profile. Compacted layers can be detected when the rod is difficult to push through the profile and often occur 8 to 12 inches below the soil surface. If resistance to penetration is higher in the 8 to 12 inch zone than in lower zones, the field has a compaction problem. If compaction is detected, either deep chisel down through the compacted layer to break it up or plant a crop that is less sensitive to compaction, such as corn or wheat. Deep chiseling should only be done when the soil is relatively dry, because if it is chiseled when wet, the chisel points do not break up the compacted layer. ■Brick

Bean Tips:

- ◆ **Order Certified seed early**
- ◆ **Check soil fertility by obtaining soil sample for analysis**
- ◆ **Evaluate soil compaction**

**Remember Earth Day
April 22nd**



PVP VIDEO AVAILABLE

The video, "What About Tomorrow" (February 1993 issue of *From the Ground Up*), tells the story of the justification behind the Plant Variety Protection Act. Copies of this video, used often in Colorado during the last year, were distributed to many county Extension offices.

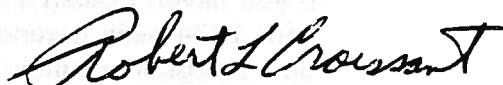
The Colorado Seed Growers recently received a large supply of this video and will send a copy to anyone interested. To receive one, call CSGA at 303/491-6202. This is a great way to better understand one of the most important and far reaching laws that affect the seed industry and farming. ^oStanelle

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