

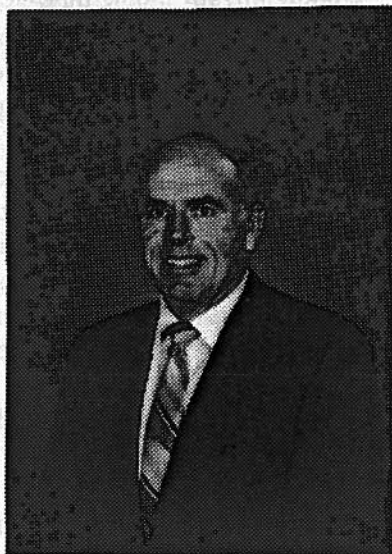
AGRON--GRAM

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JIM ECHOLS RETIRES

Jim Echols, Extension Agronomist, will retire from Colorado State University on December 31, 1991.

Jim will be honored at an afternoon reception on December 12, 1991 from 3:00 to 5:00 p.m. in the Long's Peak Dining Room at the Lory Student Center, Colorado State University. You are encouraged to attend the reception.

Jim has devoted his entire career working with people developing long-range programs. He began his Extension career at Oklahoma State University in 1958 as Manager of Oklahoma Foundation Seed Stocks. In 1964, he accepted the position of Agronomist - Certified Seed at Colorado State University. From 1985 until retirement, his responsibilities included managing the Colorado State University Crops Testing program. He has established an outstanding and widely known small grain testing program. These and many other activities made significant contributions to Colorado agriculture. Jim's expertise will be missed by all. We wish Jim and his family a long and happy retirement.

Jim would appreciate a personal letter from you to be compiled into a bound "book of memories". Letters should be sent flat (in a way to prevent bending), with a 1+" left margin.

Please *send* letters to:

Jeri Dreher
Department of Agronomy
C4 Plant Sciences
Colorado State University
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or *bring* them to the reception. Sommers

RECOVERY VERSUS AVAILABILITY OF FERTILIZER NUTRIENTS

Farmers, consultants, and fertilizer dealers are sometimes confused when terms such as fertilizer availability and percent fertilizer recovery are used. This is especially true for phosphorus fertilizer materials.

Fertilizer nutrients are applied in chemical forms readily available to the plant, but this does not insure that they will be taken up. Uptake depends on many factors, such things as (1) plant nutrient needs and the extensiveness and health of the root system, (2) the chemical status of the soil nutrient and (3) the rate and placement of the fertilizer. Recovery of these fertilizer nutrients will be less than 100 percent.

Nutrient uptake studies of applied fertilizer indicate that an exceptionally good recovery of nitrogen would be 70%, phosphorus 20% and potassium 50%. More typical recoveries would be lower than these figures. Don't let someone sell you on the idea that because their product is supplied in an available form that it will have a better recovery by plants than other products. The nutrient content guaranteed on the label is potentially available to the plant. Phosphorus recovery from various products depends on the factors mentioned above.

When different phosphorus materials are compared, results from testing have indicated there is no difference between sources when the rate and method of application remain the same. □Follett

QUICK NITRATE TEST KITS - RECOMMENDATIONS

In the last issue of the Agron-O-Gram, I talked about the Spectrum technologies and

Hach nitrate kits. The Spectrum nitrate electrode did not work for our soil and water because of bicarbonate interference. We can acidify the soil extract to eliminate bicarbonate interference, but in doing so, the solution pH may be reduced too low for proper functioning of the electrode. Because of these complications, the nitrate electrode aka Cardy meter is not recommended for our soil and water samples.

The Hach soil test kit works well. A color, developed with NO_2 derived from NO_3 is compared with those on a color wheel. The amount of NO_3 in solution is read under the matching color. The color wheel can deteriorate upon exposure to the sun. The cadmium metal used to reduce NO_3 to NO_2 is potentially toxic to man, farm animals and wildlife and should be disposed of properly.

The nitrate kit made by the Hawk Creek Laboratory aka Pennsylvania kit uses filter paper test strips. These strips made by the Merck Company turn pink when reacting with nitrates in the soil extracts and water samples. Higher nitrate levels increase the intensity of pink color. After the color is developed, then strips are inserted into a reflectometer providing digital readings indicating the amount of nitrate in solution. The reading is converted into a nitrate-nitrogen by multiplying it by the nitrate-nitrogen standard factor (ppm of nitrate-nitrogen in the standard solution per unit of the reflectometer reading). The paper strips are kept in a light-proof container and should not be exposed to light before use. The results from the Pennsylvania and Hach kits were very close.

If you would like to have more information about these recommended kits, call me. After buying a kit, I will be willing to show you how to use it. There are ways to cut expenses by buying extraction chemicals in bulk. We may also be able to get discounts on kits by combining orders. □Soltanpour

DOES MULTILEAF TRAIT GUARANTEE HIGH QUALITY ALFALFA?

While the recent weather may not inspire one to think about planting alfalfa, it is a good time to consider which varieties to plant during the next growing season. Over the last decade, alfalfa variety improvement programs have emphasized multiple pest resistance and high forage yield. However, recent efforts have turned to improving forage quality. The term multileaf or multifoliate is used to describe varieties with more than three leaflets per leaf. The concept behind use of multileaf varieties is that they have a higher leaf to stem ratio and should therefore be higher quality. Multileaf varieties have been around for some time. Cornell University released a multileaf variety in 1980. However, poor pest resistance limited its success. More recently released varieties have combined the multileaf trait and pest resistance. Two examples are Multi-7 and MultiKing (Table 1). The other two varieties, WL322HQ and Legend, are traditional trifoliate-leaf varieties.

Table 1. Crude Protein (CP) at mid-bud (MB) and early flower (EF) for 4 varieties.

Variety	MB CP(%)	EF CP(%)
Multi-7	25.5	20.3
WL322HQ	25.3	22.4
Legend	25.1	20.1
MultiKing	24.6	20.8

(Adapted from an article by W-L Research, Inc.)

The data in Table 1 is from a study conducted at the University of Minnesota involving evaluation of varieties for crude protein at two different cutting dates. The study reveals that while the multileaf

varieties had high protein values, the values were no higher for the multileafs than the traditional varieties. In fact, the protein values at early flower were actually lower for the multileafs than one of the trifoliates (WL 322HQ). Thus, in response to the posed question, it would appear that the multileaf trait does not necessarily imply high quality. While the data does not imply that all multileaf varieties will perform in this manner, it does suggest that one should not evaluate varieties for quality just on the presence or absence of the multileaf trait. Instead, one should use actual measurements of crude protein, acid detergent fiber, and other traditional indicators of forage quality. □Shanahan

STATE SEED LAW

Recently, Colorado has become a dumping ground for low quality seed originating from other states. This is possible because our vaguely worded state seed law is deemed unenforceable by the State Department of Agriculture. To correct this problem, individuals representing the seed industry prepared a draft for a new seed law. The draft would define necessary changes to improve Colorado seed law and prevent our "dumping ground" reputation.

The new draft is based on the "Recommended Uniform State Seed Law" (RUSSEL), written by the National Association of Seed Control Officials. The advantages of using RUSSEL as a model in writing this law are to simplify assembling necessary guidelines and to improve uniformity with laws from other states.

In addition, the proposed law will address stricter enforcement of the Plant Variety Protection Act (PVP), provide greater protection for certified seed and institute civil penalties for infringement and initiate a method of arbitrating disputes before a problem is taken to a court of law.

Provisions to enforce this law dictate self funding. Licensing of seed dealers, labelers and conditioners will be granted, enabling the generation of funds used for enforcement. Each business consisting of growers, processor and retailers selling seed will have to purchase a license. There will be several licensing categories with proposed maximum license fees of \$200.

Recently the Colorado Seed Growers Association, the Colorado Seedsmens Association and the Colorado Association of Wheat Growers combined their efforts by hiring a lobbyist to initiate and promote the adoption of this bill. Don Ament is the legislative sponsor. There will be hearings on the proposed law during the legislative session. Groups or individuals who have an interest should be encouraged to review the law before the hearings. We would like to have a law that is strong, but still acceptable to all interested parties. Copies of the proposed law are available from the Colorado Seed Growers Association office or the State Department of Agriculture. There will be a discussion of the law during the CSGA Annual Meeting in Estes Park in December. □Stanelle

A METHOD OF ESTIMATING FIELD RESIDUE COVER

Your conservation compliance plan for highly erodible cropland probably specifies the amount of residue cover you'll need to retain at planting time - probably 30%. So you'll know how much cover you have now, and how much tillage you can perform between now and planting next spring, you may want to make an estimate.

The Soil Conservation Service says the line-transect method is a practical, statistically reliable field method you can use. Stretch a 100-foot tape diagonally (45 degree angle) across the crop rows in the field. Both ends should be anchored in a row. At every foot mark, see if a piece of crop residue (must be

a least 0.1 inch in diameter to count) is lying under the mark. Look straight down the tape, and make all readings on the same side of the tape. If there is any doubt whether a reading is a "hit" or "miss," count it as a miss. The number of hits on a 100-foot tape represents the percent of ground cover along that transect. To make an accurate estimate, make counts in at least three transects at sites where cover appears to be typical for the field.

Use the information in the table to select tillage operations that leave the appropriate amount of residue at planting next spring. Also, allow for weathering of the residue over winter.

Percent of Ground Cover Remaining After Each Operation

Operation	Percent ground cover remaining
Harvest	
Corn (100 bu)	85
Dry beans, Soybeans (40 bu)	70
Wheat (50 bu)	90
Moldboard plow	3-5
Disc-3" deep	40-70*
Disc-6" deep	30-60*
Field cultivator	50-80*
Field cultivator (sweeps)	40-70*
Chisel plow	
Straight shovel points	50-70*
Twisted shovel points	30-60*
No-till (slot planter)	90-95
Planters w/ripple coulter	85-90
Planters w/fluted coulter	80-85
Till planters w/sweeps	60-80
Drills w/disk openers	90-95
Drills w/hoe openers	50-80
Anhydrous applicator	60-80
Winter weathering	70-90

*Use lower percent for dry beans, soybeans, higher percent for corn and wheat

(Adapted from Doane's Agricultural Report)

□Follett

STORED GRAIN SHRINKAGE

There are three major expenses involved with stored grain on the farm as opposed to direct fall marketing or terminal storage. Storage building construction costs occasionally exceed \$100 per bushel depending on the farm system. Operating costs include fuel, electricity and labor associated with conditioning costs and the shrinkage costs. Shrinkage is the total weight loss occurring from the time of storage until the grain is marketed. Some shrinkage is unavoidable while excessive shrinkage is very costly.

Most corn stored on the farm is usually field dried until the moisture content is below 18%. Corn grain stored in the cool fall at 18% moisture or less is usually safe. Periodic fan aeration is required to keep grain cool and to prevent moisture migration. Some drying will occur during this time.

Corn may be sold at various moisture levels but payment is calculated at 15.5% moisture. Any grain sold at moisture levels higher than 15.5% is usually docked at 2.0% or more per point in excess of 15.5%. Corn grain sold at moisture levels below 15.5% is sold "as is" without moisture correction. Corn in storage for several years may have moisture levels as low as 8-10%. This obviously will cost the farmer dollars by loss of total weight. It is easy to calculate significant losses when grain is sold very dry.

Actual shrink values can be calculated by knowing the total weight of stored grain, the initial grain moisture and the expected moisture at the time of market. For example:

$$\text{Shrink} = 100\% - \frac{100 - PM}{100 - DM} \times 100 + 0.5\%$$

In the formula, 100 - Present moisture (PM) equals dry matter while 100 - Desired moisture (DM) equals dry matter at the target grain moisture level. The handling

shrink of .5% is added representing dry

matter losses.

If your corn was stored at 18% moisture in the fall and was sold the following fall at 13% moisture, then $(100 - 82/87 \times 100) + 0.5\%$ handling shrink = 6.25% total shrink. Assuming corn sells for \$2.80 per bushel, then 2.80 times 6.25 equals a shrinkage value of 17.5 cents per bushel. Shrinkage from a 10,000 bushel bin would cost \$1750.00. Corn held at 15% moisture would shrink 4.03% after that period for a total of 11.3 cents per bushel or \$1130.00. Maintaining 15% moisture in this case would save \$620.00. To keep moisture levels this close to the standard, you must monitor moisture migration problems, grain temperature, insect problems, presence of mold, high humidity and moisture condensation within the bin. If management is not willing to do the above, then maybe drying to 13-14% is the best alternative. Croissant

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

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Sincerely,



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