Cooperative Extension
Colorado State University, Fort Collins, Colorado 80523

Colorado State University

AGRON-  -GRAM

JUNE, 1990

TABLE OF CONTENTS

DRY BEAN PRODUCTION ACREAGE UP IN 1990

The USDA planting intention for dry beans for 1990 in the U.S. is up 11% from 1989 and 39% above 1988. They predict that North Dakota will plant 80,000 more acres than last year, with acreage up by 36,000 in Kansas, 20,000 in Nebraska, 42,000 in Minnesota and 40,000 in Michigan. In Colorado, acreage is projected to be up also. Weather patterns have favored a good production year. Most areas in the midwest now have good soil moisture with a few exceptions. Many areas have been too wet to plant corn as of June 1, so dry beans may be an alternative. Short seed supplies may limit production beyond the present intentions. Given these circumstances, dry bean production should be close to a record high. These factors may cause prices to drop if the moisture situation remains positive. The strong domestic and international market for dry beans may keep prices at a reasonable level (one in which growers can profit). (Brick)

CERTIFIED SEED NEWS

The seed certification office has been getting calls the last few days from growers and county offices about field inspection application beyond the past due date. Having a due date helps our office process requests on a timely basis, but is not a cut-off for applications. Any farmer having eligible fields may apply for inspection up to the day of normal inspection. There is a $10 per field late fee assessed, but due to printing timetables, late fields may not be included in the 1990 Fall Seed Directory. Field inspections may be delayed if application is made right before inspection time.

It will benefit any seedgrower to apply as soon as possible. Inspection fees paid are refundable if the field is cancelled before inspection time.

Any agents having meetings this summer or fall may be interested in the new slide/audio presentation produced by the Colorado Seed Growers and Cooperative Extension. This presentation "Seeds of Promise," tells the story of Colorado Certified Seed and is intended to present the difference between certified and non-certified "bin-run" seed. The Colorado Seed Growers Association will have copies for distribution later this month. Plans are also made to have the presentation copied to video tape for use with smaller groups. This is an excellent method to help farmers in your area understand what quality seed means.

Call Jim at the Colorado Seed Growers Association Office, (303) 491-6202 for more details. (Stanelle)

WATER SAMPLING PROCEDURES

The Colorado State University Soil Testing Laboratory has had inquiries concerning procedures to send water samples to the lab for analysis and are as follows:

▸Sample containers should be plastic with a cap that can be securely fastened. Glass containers with metal tops should have a piece of plastic wrap placed between the container and the top. The lab can supply containers.

▸Containers should be clean and rinsed with the sample itself prior to taking the sample.

▸Containers should be filled with sample. A pint of water is sufficient for analysis.

▸Label the sample directly with a permanent marker or place a piece of masking tape on the bottle and mark it instead.

▸Place the information sheet in a plastic bag with the sample.

▸Bring or send the sample to the CSU Soil Testing Lab (see address below). If the sample is being mailed, refrigerate it prior to sending. Then pack it securely with newspapers or styrofoam in a box for mailing. Be sure the cap is tight.

▸Send the samples on Monday, Tuesday, Wednesday morning, or Friday. Samples sent late Wednesday or Thursday may not get to the lab by Friday and could sit in Central Receiving over the weekend. Mail to: CSU Soil Testing Lab., Room 6 Vocational Education Bldg., Ft. Collins, CO 80523.

▸The lab can be reached at (303) 491-5061 if there are further questions. (Self)

WHAT HAS EXCESSIVE RAINFALL DONE TO NITROGEN?

Has the recent heavy rainfall caused losses of previously applied fertilizer nitrogen? This question is being asked in certain areas. Whether or not significant preplant N loss has occurred may depend on: (1) when it was applied; (2) the chemical form of the N; and (3) potential of the soil for leaching or denitrification losses.

Considering this spring, some assumptions need to be stated and conditions defined. It is assumed most of the spring N was applied between early April and mid-May, and that soil temperatures at four inches were less than the low fifties during most of April, then rising slowly into the upper fifties during May. Soils have been saturated at times, providing conditions for both leaching and denitrification losses.

Keep in mind that several factors influence potential N losses, and that losses cannot be precisely determined. The following discussion will help evaluate and make decisions easier when applying supplemental N. The choice involves the risk of yield loss if needed N is not applied, compared to the risk of unnecessary expense if unneeded N is applied.

<u>How much nitrogen is present as nitrate?</u>

First, nitrate nitrogen will leach. <u>Ammonium nitrogen is safe from significant losses in this situation and will not leach or denitrify.</u> The following Table shows the form fertilizer N is in or quickly converts to when placed in soil:

Table 1. The percent of ammonium (NH_4^+) or nitrate (NO_3^-) found in N fertilizer.

Fertilizer Source	% of N in each form: Ammonium NH_4^+	Nitrate NO_3^-
Anhydrous Ammonia	100	0
Urea	100	0
Nitrogen Solution	75	25
Ammonium Nitrate	50	50

Since we know that nitrification of ammonium nitrogen converts to nitrate in soils, we must consider this conversion. The nitrification rate is governed by soil temperature, being essentially zero in frozen soil, slow in the 32°F to 50°F range, moderate in the 50°F to 70°F range, and very rapid at 70°F to 90°F. Nitrification rate for fertilizers is slowest for anhydrous ammonia, slightly faster for urea, somewhat faster for nitrogen solution, and fastest for ammonium nitrate. Therefore, the length of time between application and occurrence of excess water, the soil temperature during that time, and the source of N fertilizer all influence degree of conversion to nitrate. The following table provides general estimates of degree of nitrification of ammonium to nitrate:

Table 2. An estimate of the degree of nitrification of ammonium (NH_4^+) to nitrates (NO_3^-).

Fertilizer	Weeks after application: 0 to 2	2 to 4	4 or more
	-estimated % in nitrate form*-		
Anhydrous Ammonia	0-25	25-50	50-75
Urea	0-40	40-60	60-85
Nitrogen solution	25-50	50-70	70-95
Ammonium nitrate	50-65	65-80	80-100

*These percentages are approximations over a wide range of conditions and assumes a soil temperature range of 55-65 degrees F. Applications made to soils where temperatures have remained in the 40 to 50's will have less nitrification.

Two points should be kept in mind after estimating degree of nitrification: (1) once the soil becomes saturated, nitrification slows markedly, and (2) just because N is converted to nitrate does not necessarily mean it is lost.

Leaching - In many medium to heavy-textured soils, leaching of large amounts of nitrate-nitrogen beyond normal midsummer rooting depth for crops seems unlikely. One inch of rain moves about 5-6 inches but excess rainfall does not "flush" through such soils, and the water infiltration rate is slow after saturation. Most excess water merely runs off into low spots or drainage ways. Some of the nitrate can be moved downward in these soils. Later in the season when the soil is dry, there can be some upward movement of nitrate as water evaporates at the soil surface. Nitrate losses from leaching could run as high as 10-20 percent. In some well-structured soils with large pores, water may move deeper.

On sandy soils, leaching of nitrates can be severe if more than 5-6 inches of rainfall have occurred since each inch of ran can penetrate about one foot. Remember that most row crop root systems can penetrate 5-6 feet to pick up nitrate nitrogen later in the season.

Denitrification - On medium to heavy-textured soils, denitrification loss of nitrate can be the main loss mechanism. The amount of denitrification depends on the time the soil is saturated (completely waterlogged) and the soil temperature. If the soil is in the 55-65 degree F range and has been saturated intermittently for a period of 4-10 days, nitrate loss could amount to 25 percent or more.

SUMMARY

Possible loss of N due to excess rainfall cannot be precisely

determined. If anhydrous ammonia or urea was applied or urea was applied to medium or heavier soils only a few days prior to the wet period, losses are probably negligible. In other cases, as discussed above, losses may be great enough to require some supplemental N fertilizer

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NOTE: This information was adapted from an article by Gary Colliver, Agronomy Update Newsletter, Farmland Industries, Inc., Kansas City, MO. (Follett)

GUIDELINES FOR MAKING CORN REPLANTING DECISIONS

Unexpected factors such as late frost, hailstorms, insects, floods and other things may cause severe stand reductions and force the producer to make a replant decision.

There is no formula to aid the replanting decision. It depends on the facts surrounding each situation, but there are some guidelines to follow that may help.

First, do not make a final assessment on extent of damage too quickly. The corn plant's growing point remains below the soil surface until six or seven leaves have emerged. At this point, over 90 percent of the leaf tissue has not yet emerged. Thus early damage to the plant does not necessarily kill the plant. Generally 3 or 4 days at 70 degrees temperature or more will stimulate new leaf growth.

If crop damage assessment indicates that a replant decision is called for, specific information will be needed to include:

- Initial plant stand (approximately 90 percent of the seeding rate).
- Plant stand after damage.
- Uniformity of plant stand after damage.
- Original planting date.
- Possible replanting date.
- Likely replanting, pest control and seed costs.

To estimate after-damage plant population per acre, count the number of live plants in a length of row equal to 1/1000 acre (for 30-inch rows, count plants in 17.4 feet).

If within-row gaps are large, yield losses will be greater than uniform stand losses. For example, gaps 1 to 3 feet long will reduce yield about 2 percent while gaps in excess of 4 to 6 feet will reduce yield about 5 percent assuming the same plant population per acre.

Whether to replant or not boils down to recovering the extra planting and associated costs above the estimated potential yield without replanting. Rules of thumb may indicate a loss of 1 bushel of grain or more per acre per day delay in planting past the 25th of May. Part of this loss must be attributed to planting earlier maturing varieties late in the season. For each 5 days delay in planting, a corn hybrid will be only one day later reaching physiological maturity in the fall. Other values to keep in mind when planning a replant corn program is that corn takes:

	Stage of Growth		
	Vegetative	Grain fill	Dry-Down
Early Hybrid	60 days	60 days	25 days
Medium Hybrid	65 days	60 days	30 days
Late Hybrid	70 days	60 days	40 days

Additional days that must be accounted for are:

- Five to 10 days for plant emergence.
- Three to five days pollination.

Replanted fields maturing later in the cool fall take longer in the dry-down phase than when planted earlier.

If markets exist for silage production rather than grain, then later plantings may be acceptable. Corn is ready to be harvested for silage 12 to 15 days after physiological maturity (black layer formation).

You may also need to review herbicide and insecticide programs under late planted conditions. For instance, it may be necessary to reapply herbicides if additional tillage is used. Some materials provide the flexibility of replanting using other crops and others do not. If insecticides were placed in the row at replanting time, consider reapplication at replanting time. Replanting in the row without destroying existing plants will allow maximum effectiveness of previously applied chemicals but will cause extreme unevenness in plant size and maturity at harvest.

Replanting does not guarantee the expected harvest population. If after considering all the factors of replanting there is still doubt, then perhaps its best to leave the field like it is. (Croissant)

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SOMETHING TO THINK ABOUT

In 1896 William Jennings Bryan said it best, "Burn down your cities and leave our farms, and your cities will spring up again as if by magic, but destroy our farms and the grass will grow in the streets of every city in the country."

As long as the North American Farmer can supply our food at a price that allows us to spend the greatest part of our income for our cars and TV's and recreational items, our high standard of living can continue. But, when our farmers can no longer produce our low-cost food, or when they have no economic incentive or ability to produce this food--truly, again "the grass will grow in the streets of every city in the country." (Follett)

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Sincerely,

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