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For Your Interest

Agricultural and Home Economics Experiment Station

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For Your Interest

farm buildings and equipment

Study Methods of Seeding Oat-Grass-Legume Mixtures

THERE ARE MANY different methods that can be used to seed field crops. Which method, however, can give the highest stand and the highest yield? To try to find the answer to this question, seven different ways of planting a mixture of oats, orchard-brome-grass and alfalfa were compared by agricultural engineers at the Experiment Station. The methods were:

1. Oats drilled $1\frac{1}{2}$ inches deep. Orchard-brome-grass mix dropped on the surface from fertilizer hopper. Legume on surface from legume seedbox. Followed with corrugated roller.

2. Oats drilled $\frac{3}{4}$ to 1 inch deep. Orchard-brome-grass mix in fertilizer hopper and drilled to the same depth. Legume from legume seedbox dropped on surface. Followed with corrugated roller.

3. Oats and orchard-brome-grass mix drilled $\frac{1}{4}$ - $\frac{1}{2}$ inch deep (drill "floated"). Legume on surface. Seeds in same hoppers as above. Followed with corrugated rollers.

4. Entire mix of oats, brome-grass, orchardgrass and legume seed drilled 1 inch deep. Rolled with corrugated roller.

5. Same mix drilled $\frac{1}{2}$ inch deep. Rolled with corrugated roller.

6. Same mix dropped on surface with drill. Rolled with corrugated roller.

7. Same mix dropped on surface. Not rolled.

The seeding mixture per acre was 50 pounds oats, 5 pounds brome-grass, 3 pounds orchard-grass and 8 pounds alfalfa.

Preliminary results show that stands were highest for oats and alfalfa under method 2, lowest for oats and alfalfa under method 7. Yields for oats were highest under method 4, lowest under method 7. These results are just for 1 year of trials, however, cautions D. R. Hunt who directed the study. Results may vary under different seasonal conditions.

Will Automatic Tractor Steering Beat Fatigue?

TRACTOR ROW-CROP cultivation is one of the most tedious and demanding jobs in crop production. The resulting operator's exhaustion may cause damage to the crop and unsafe machine operation—in addition, of course, to operator discomfort.

One suggested way of cutting down operator fatigue is to use an automatic tractor steering device. Agricultural engineers at Iowa State, in cooperation with the Psychology Department, tested such a steering device to see its effects on fatigue and to learn more about ways to measure fatigue.

Two operators were used; each man operated the tractor a full day on manual control and the next day on automatic control. The men kept the tractor speed constant for all tests. The final results, reports Donnell Hunt, were exactly opposite in nature for the two operators—that is, one operator seemed more fatigued at

the end of the day when using manual steering, while the other operator was more fatigued when using the automatic steering system.

This study, though preliminary, indicates that a person's attitude or emotions will affect his feelings of fatigue when he's using the automatic steering device.

Not Much Effect On Crop Moisture From Corn Topping

THERE'S NO REAL difference in the rate of field drying of corn when the corn is topped. This conclusion is based on results of a 2-year study on corn topping conducted by agricultural engineers at the Experiment Station. In general, report the engineers, there seem to be no differences in stand, losses or lodging between topped and untopped corn. The gross yield, however, tends to be low if the corn is topped too early.

In harvesting tests with topped corn, the combine had the least harvesting losses of the machines tested; the picker had the most.

Test Usefulness of One-Step Threshing-Chopping Cylinder

A CYLINDER mechanism has been developed to thresh and chop forages and small grains in one operation. This device has been tested by Donnell Hunt and co-workers at the Experiment Station. They found that it's possible to use the cylinder in a combination machine which can harvest both small grain and forages. According to Hunt, up to \$370 can be saved in yearly costs if the combination machine replaces the two individual machines.

soils

What Has Soil Type To Do With Corn Yield?

ESTIMATES of average corn yields for different soil types are necessary for any worthwhile agricultural planning program. Agronomists at the Experiment Station are trying to develop such estimates from yield information



Basin terraces are built to protect farmland against the runoff from steeper slopes above. But it's necessary to establish vegetative cover on the areas disturbed by construction. Note rilling on the unprotected area at left. Researchers at Iowa State are trying to learn more about the fertilizer requirements for establishing and maintaining cover. Notice the unfertilized area in photo at right.

provided by farmer-cooperators in 10 Iowa counties.

Preliminary results show that yields in recent years were high in most counties. The exceptions were in Harrison and Hamilton counties in 1959 where lack of fertility limited yields in many fields and in Clay County where moisture deficiency limited yields in both 1958 and 1959.

In general, yields on soils of below-average productivity were about as high as those on soils of above-average productivity. Weather conditions generally were good, and this helped reduce yield differences among various soils. Inadequate stand levels limited yields in a high percentage of the fields, particularly in western and southern Iowa where stands generally were low.

This research is under the direction of Lloyd Dumenil of the Experiment Station.

Seek To Establish Vegetation on Basin Terrace Areas

MANY BASIN terraces are being built every year in connection with watershed development projects. These terraces are constructed below areas of 20 percent or steeper slopes to keep runoff water from flowing across farmland and harming soil and crops. Vegetation must be established and kept up on areas disturbed by

construction; otherwise, terrace channels can fill with silt in one season of intense storms.

Alfalfa furnishes quick cover if it is fertilized properly. If seeded during the first 10 days of April, it will usually give enough cover to protect the soil from heavy June rains. If alfalfa is seeded later than this, it's a good idea to seed oats with it. On many areas where basin terraces are built, 200 pounds of P_2O_5 per acre are necessary to establish a vigorous stand of alfalfa.

Since these areas will be pastured, many farmers object to using alfalfa because of the bloat problem. Thus, even though it's desirable in a grass mixture for quick cover and as a source of nitrogen during the establishment period, no special effort is made to keep alfalfa in the stand after the second or third year.

So establishing and maintaining grass become very important. It's difficult to keep a sufficient grass stand to protect steep slopes from eroding. Smooth brome grass is always used for reseeding because the seed is readily available and inexpensive and the seedlings are vigorous and spread well. It requires high fertility, however, and becomes unproductive after the alfalfa disappears unless it is fertilized.

Experiments are being conducted by W. C. Moldenhauer

and co-workers of the Experiment Station to discover the fertilizer requirements for establishing vegetative cover on areas disturbed during construction of basin terraces. The researchers also hope to find the best grass species to use—something easy to establish and maintain under heavy grazing with as little fertilization as possible.

How Many Operations Does Tillage Take?

HOW MANY mechanical operations are involved in preparing a seedbed? This question is important since the number of operations adds to the cost of the tillage method used.

Research directed by W. G. Lovely and W. E. Larson of the Experiment Station and the USDA shows that the conventional method usually involved about eight operations; mulch takes six; plowed ridges, seven; unturned ridges, six; hard ground listing, four; and wheel-track, five.

But there are many other factors to consider besides the number of field operations—such as cost of equipment, power requirements and timeliness. This is pointed up by the fact that while the field operations for wheel-track are less than for some other tillage methods, the factor of timeliness may make some of the operations more expensive because

they must be done at busy times during the season. Nevertheless, wheel-track, mulch, listing and ridging are usually all cheaper than the conventional seedbed preparation method of plowing, disking, harrowing and surface planting.

What Management Practices Are Being Used on Corn?

A RECENT TEST of corn yields on 191 sites in 10 Iowa counties gave valuable information on the management practices being followed by Iowa farm operators. To predict possible corn yields for different areas it's important to know which new methods are being followed and which aren't.

The study showed that in the various counties, 14 to 16 percent of the fields were fertilized, 7 to 48 percent were manured and 48 to 70 percent were in second-year corn or more. Few operators used two methods of fertilization — though a hill or row fertilizer plus applications of N, P or K fertilizer are strongly recommended. In most cases, the fertilizer used was either broadcast or applied with a planter attachment. Little sidedressing of nitrogen was done.

Management practices for insect and weed control were also examined. Insecticides for corn rootworm were applied on 0 to 30 percent of the fields in the various counties. Borer control was rarely used, but there were less borers than usual during the period. In most counties, 2,4-D is widely used for controlling broadleaf weeds.

The effects of soil conservation and nonconservation practices on corn yields will also be studied, reports Lloyd Dumenil of the Experiment Station.

home and family

What About Marriages Involving Mixed Religions?

SOME characteristics of brides and grooms who enter into cross-religious marriages, plus other factors associated with such marriages, are under study by Lee

Burchinal of the Experiment Station in cooperation with the Iowa Division of Vital Statistics. Their findings so far show that about 80 percent of the Protestants in the study who claimed a church affiliation married church-affiliated Protestants; for Catholics marrying Catholics, the figure was 63 percent.

There were more cross-religious marriages among both brides 17 years old and younger and brides 30 years of age and older. The smallest number of cross-religious marriages involved brides aged 21 and 22. This was true in the case of both Catholics and church-affiliated Protestants. More cross-religious marriages involved grooms of low social status than of high status.

Also under study are the frequency of remarriages and the connection between cross-religious marriage and residence patterns, age differences between spouses and the country in which the marriage occurred.

Consistency of Starch Products Examined

A STUDY OF the effects of freezing on foods containing starch is underway at the Experiment Station. The way the ice crystals pierce the gel and the way the gel leaks liquid when it's thawed are being examined. An attempt is being made to learn the carbohydrate composition of the liquid which leaks out of the gel.



This photo shows the surface of a frozen corn starch pudding used in an Experiment Station study of the effects of freezing foods containing starch.

E. Madge Miller is in charge of this experiment.

Try to Predict Teaching Success

How GOOD a home economics teacher will today's college freshman make? Hester Chadderdon here at the Experiment Station hopes to be able to predict this to some extent. Such information would be helpful in counseling young people as they plan their college studies.

With the cooperation of the State Department of Public Education, a series of tests is being developed which will give a basis for forecasting a student's teaching ability.

Study Effects of Mother's Job on Children

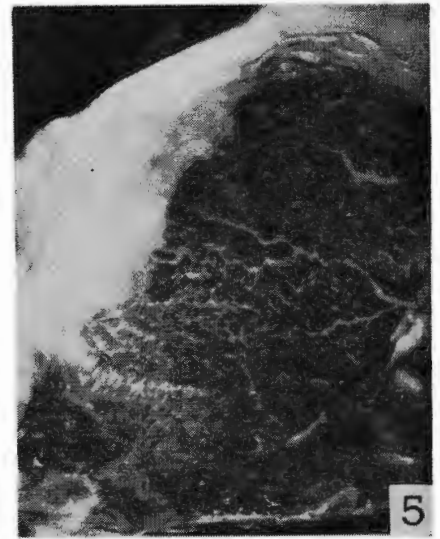
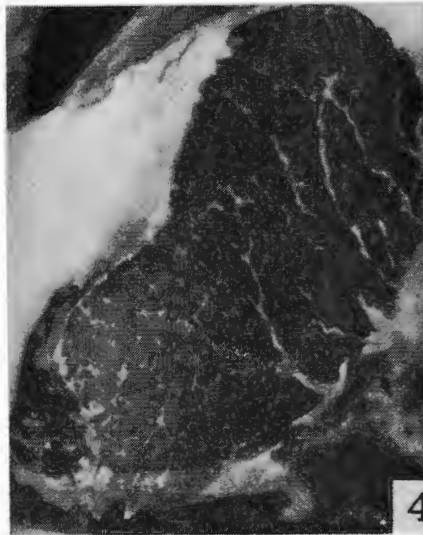
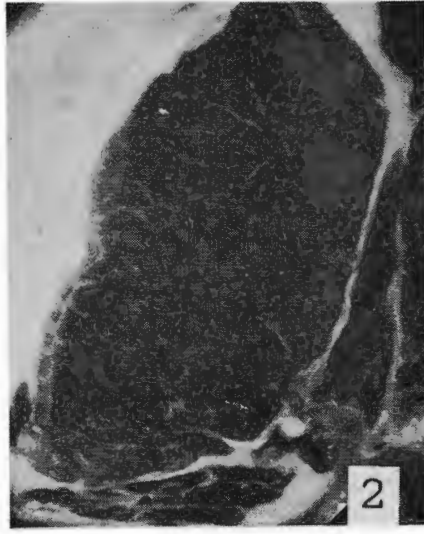
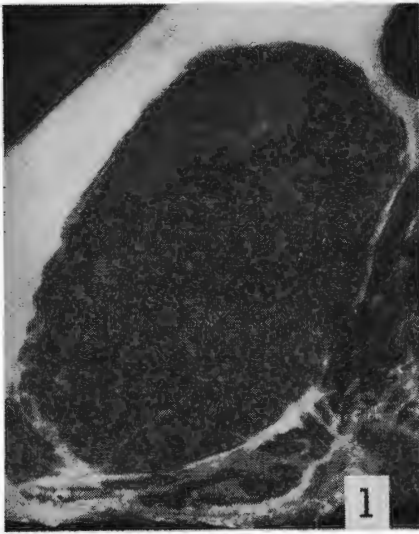
IS THERE A relationship between mothers holding outside jobs and the personality development of their children? This is the question that Lee Burchinal and Arthur Wilkie of the Experiment Station hope to answer.

Questionnaires were given to all seventh grade and eleventh grade children in the Cedar Rapids schools to measure personal and social adjustment. Additional questionnaires were sent to the children's parents.

Though much work is still to be done, the study thus far shows only a slight relationship between employment of mothers any time during the first 6 years of the children's lives and the emotional adjustment of these children.

Expanding Role for Uncooked Turkey

USING UNCOOKED turkey in making timbales for large quantity food service would give a greater number of timbales and also save labor and equipment. In an Experiment Station study directed by Grace Augustine and Dorothy Blemmer, a panel of six judges rated timbales prepared with uncooked, roasted and stewed turkey. They judged the light and dark meat separately for aroma, flavor, tenderness and juiciness.



These pictures show the standards used for assigning marbling scores in studying the relationship between backfat thickness and marbling in pork chops.

1. Slight marbling
2. Moderate-minus marbling
3. Moderate marbling
4. Moderate-plus marbling
5. Abundant marbling

Their findings indicate that the timbales made with roast turkey had a more intense aroma but were less juicy than those made with uncooked turkey. This was true of both light- and dark-meat timbales. The timbales made with stewed turkey had a more intense aroma than those made with uncooked turkey and a more intense flavor than those made with either uncooked or roasted turkey. The differences were greater for those timbales made with dark meat. Timbales made with uncooked turkey were rated highest in tenderness and in juiciness than those made with either roasted or stewed turkey.

Through these experiments and findings, it is hoped that recipes may be adjusted so that uncooked turkey will give as good results for aroma, flavor, tenderness and juiciness as does cooked turkey.

These studies were made to examine how different preparation methods affect yield, preparation time and quality. Researchers now hope to see how quality is affected when light- and dark-meat turkey rolls are roasted in aluminum foil at different oven temperatures.

Is Marbling Related To Backfat Thickness?

FINDING THE relationship between marbling in pork, backfat thickness, chemical composition and eating quality is the object of a study by Frances Carlin and co-workers of the Experiment Station.

Pork chops, roasts and hams are being studied. So far, only the results for chops are complete. They show that:

1. Total cooking losses of $\frac{1}{2}$ -

inch thick chops are not affected by backfat finish.

2. During braising of loin chops, losses from evaporation decrease and dripping losses increase with increasing finish.

3. Fat yields of raw or cooked rib or loin chops increase with increased carcass finish.

4. Lean yields in raw or cooked rib chops decrease with increased carcass finish.

5. Chops from higher finished carcasses usually have more marbling.

6. There are no differences in flavor, tenderness or juiciness of braised $\frac{1}{2}$ -inch pork chops that result from backfat thickness of pork carcasses.

It is hoped that through these studies of marbling it will be possible to tell whether marbling can be predicted from backfat thickness.