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## For Your Interest

Agricultural and Home Economics Experiment Station

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FOR

YOUR

INTEREST

## forages

### **Top Yields From Alfalfa Pasture Rotationally Grazed**

THE ACREAGE of alfalfa has doubled during the past 10 years. And experience and research evidence suggest that alfalfa should find even wider use—particularly for pasture on plowable land and under a good management system.

Pastures improved by renovation and seeded to Vernal alfalfa have produced over 2½ times as much beef as unimproved bluegrass pastures in a 3-year trial at the Pasture Improvement Farm at Albia. Renovation included the use of fertilizer and lime as indicated by soil tests, plowing, preparation of a good seedbed and the seeding of Vernal alfalfa and bromegrass.

A rotational system of grazing alfalfa has shown a consistent advantage over continuous grazing. The rotationally grazed alfalfa produced 298 pounds of beef per acre compared with 215 pounds for continuously grazed alfalfa for the 3-year period, 1956-58. Alfalfa is a potentially high-producing legume when managed to allow periods of recovery between cutting or grazing periods. A 3- to 4-week interval between grazing periods has been found to be desirable.

The effect of grazing management on the survival of the alfalfa plants is still under study. In 1958, rotationally grazed pastures had an average of 6.8 plants per square foot as compared with

5.6 plants in the continuously grazed pastures. Plants in the rotationally grazed pastures also seemed to have larger crowns. Plants will be collected in later years to make a final evaluation of plant survival and size.

J. M. Scholl, H. D. Hughes, J. T. Pesek and Walter Woods are key personnel conducting this study of methods of increasing returns from permanent pastures.

### **Seek To Improve Germination Testing**

IN ADDITION to conducting year-around seed testing services, personnel at the Iowa State University Seed Laboratory are constantly searching for ways in which the services may be improved. Part of this involves the improvement of the testing procedures themselves to provide the most rapid and accurate tests possible.

During the past year, for example, an extensive study was made of the germination of seven kinds of crop seeds in a moisture range between 25 and 100 percent saturation of the germination base. Under these conditions, the variation in germination of different lots of the same kinds of seeds was generally about 5 percent, never greater than 11 percent. The rate of germination, on the other hand, increased rapidly as the moisture availability to the seeds was increased, report Duane Isely and Michael Chilton of the seed laboratory.

### **Study Summer Blackstem Of Alfalfa, Red Clover**

IN SEEKING plant breeding sources of resistance to summer

blackstem of alfalfa and red clover, scientists at the Experiment Station are cooperating with several other state experiment stations and the Forage and Range Research Branch, USDA. Once good sources of resistance are found, breeding and selection work can proceed in attempting to combine this resistance with other desirable characteristics of the two forage crops.

In the course of this work, the researchers evaluated hybrid progenies from a number of crosses of spotted aphid-resistant alfalfa clones from Nevada with highly adapted, but aphid-suscep-



This photo shows a Stultz germinator used for germinating seed in covered petri dishes at the Seed Laboratory.

tible Iowa selections. Most of the plants in these progenies, however, as well as the aphid-resistant Lahontan variety, were found to be highly susceptible to a number of the blackstem diseases under humid midwestern conditions. About 50 plants out of 6,000 were relatively free from foliar diseases and were saved for further evaluation and breeding, report C. P. Wilsie and W. H. Bragonier.

## farm business and management

### Seek Better Methods To Forecast Livestock Market

STATISTICIANS and agricultural economists at the Experiment Station are studying different methods of forecasting the livestock market and testing their accuracy. The purpose is to find possible ways in which market forecasting services might be improved. Key personnel in this work are Wilbur R. Maki, Norman V. Strand, Francis A. Kutish and Y. I. Tu.

### "Parity Returns" Work Better Than Parity Ratio?

"PARITY RETURNS" indexes and prices based on them would provide a more accurate measure of farm economic status relative to other occupations than the parity ratios and prices now used, according to agricultural economists at the Experiment Station. For several years, they have been studying alternative parity formulas for agriculture in cooperation with economists at the Washington and Kentucky agricultural experiment stations.

They've concluded from their studies that parity returns prices would reflect changes in the costs of producing different farm products more accurately than the existing modernized parity prices.

They point out, however, that substituting parity returns prices for present parity prices would

not, in itself, prevent storage stocks from rising to excessive heights under a support and storage program. To overcome the buildup of excessive stocks, the economists suggest that measures of changes in the demand for different farm products might be developed to use along with the parity returns prices as bases for setting the levels of price supports. The use of the two measures together, they believe, would permit loan rates to be set at the right levels for price-stabilization purposes.

G. S. Shepherd, Raymond R. Beneke, Glen Purnell and Wayne Fuller have been conducting the work in Iowa in cooperation with E. J. Working and Dana Card of the Washington and Kentucky agricultural experiment stations, respectively.

### More Information Sought On U. S. Farm Exports

HOW HAS the pattern of farm exports from the United States changed over the past 25-30 years? What have been the factors behind the changes? A specific and detailed knowledge of the answers to both of these questions is being sought at the Experiment Station.

This knowledge will be useful not only in explaining past shifts and trends but also in looking to the future regarding export demand for American farm products, reports Erik Thorbecke.

### Study Future Opportunities For Farm Youth in State

THE EXPERIMENT STATION at Iowa State is cooperating with the Agricultural Law Center, State University of Iowa, and the USDA in a study of some of the present and future adjustments necessary for stability in agriculture. Special emphasis is being given to the opportunities for young farm adults.

In addition to estimating future farming opportunities in different areas of the state, the researchers also are studying the economic and legal aspects of the installment land contract and other means of financing farm real es-

tate purchases with relatively low initial investments. The findings are being published in *IOWA FARM SCIENCE* and elsewhere as the work progresses.

Of special interest also is a "case history" study of 185 farm operators who began farming for the first time in southern Iowa and northern Missouri in 1953 and of the "success" and "failure" factors encountered. About 80 percent of the 185 began farming as tenants, 11 percent as part-owners and 9 percent as full-owners. Thus far, the part-owners appear to have made the greatest gains in net worth and the full-owners the least.

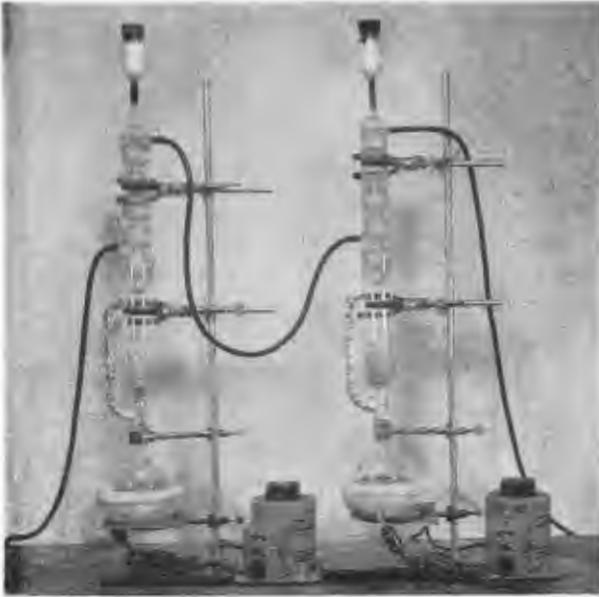
Directing this work are John F. Timmons of the Experiment Station and Marshall Harris of the Agricultural Law Center and the USDA.

## trees, woodlots

### Consumers Rate Charcoal Forms

CONSUMER PREFERENCES for lump or briquet charcoal were surveyed by Experiment Station forester N. J. Hansen and co-workers as part of a larger study on developing secondary markets for wood in Iowa. This survey showed that 26 percent of the test consumers — those who had tried both forms of charcoal — said they liked the lump better than briquets. But 36 percent thought there wasn't much difference between the two types, and 38 percent said that they preferred the briquets.

Another point brought out by the survey was that most of the consumers questioned had used charcoal for 3-4 years. Also, the average amount of charcoal used per consumer per year increased over the years. This, says Hansen, suggests that the amount of outdoor cooking is increasing. Markets for domestic charcoal should continue to expand since both the number of users and the amount consumed per user increases with time.



These two photos show some of the equipment used in studying coniferous wood quality. At left: Two Soxhlet extractors with heating mantels used in extracting resin from samples of wood. At right: A vacuum and solenoid saturation device used in other tests of samples for wood quality.

### Look for Factors Affecting Coniferous Wood Quality

PLANTATION-GROWN conifers in the Midwest have proven to be satisfactory vegetative cover on many lands of marginal fertility and low productive capacity. At the present time, however, many of the plantations which were established for this purpose are approaching merchantable age. This brings up the question of the quality of wood from these plantations.

Of primary concern in the establishment and care of plantation-grown conifers is the effect of growing conditions on the quality of wood produced. A major standard for measuring wood quality is the specific gravity of the wood, and silviculturists are interested in management practices and environmental conditions which will lead to the production of wood of high specific gravity.

During the past year, D. W. Bendsend and Glenn Cooper of the Experiment Station have been studying environmental factors and growth characteristics which influence the density of the wood of plantation-grown red pine. A new method developed by the Forest Products Laboratory was chosen to determine the specific gravity of the sample trees. Cli-

mate information on the growing site also is being compiled.

nursery work for winter wheat, winter barley, spring barley and flax.

## grains

### Test Winter Wheat Varieties for Iowa

THE EXPERIMENTAL winter wheat variety, Ia. 5373, continued its record of high yield in tests at four Iowa locations in 1958. It was the highest-yielding entry at all of the locations, and its average yield exceeded the next highest variety by 6 bushels per acre, report R. E. Atkins, J. G. Wheat, K. J. Frey and J. A. Browning of the Experiment Station.

Seed of this variety is also being grown in purification rows, and the seed from this increase will be used as breeder's seed for this selection if, pending further tests, it is named and distributed to growers.

Other work in the development and increase of superior, disease-resistant varieties of wheat at the Experiment Station is also under the direction of Atkins, Wheat, Frey and Browning. They are also responsible for Iowa's cooperation in the uniform regional

### Learn More About Corn Maturity

THE STAGE in the development of corn kernels at which the greatest dry weight is first reached is



Part of a red pine plantation. The tree marked with an arrow is one of the trees studied for wood quality.

known as physiologic maturity. The ripening process thereafter is essentially a loss of moisture from the grain.

A detailed study of the moisture content of the grain and the time to reach physiologic maturity was started in 1957 for two inbred lines of corn.

Results indicated that both lines, B14 and Oh45, reached physiologic maturity 58 days after silking. At this stage, B14 had a kernel moisture content of 39.8 percent, while Oh45 had a kernel moisture content of 35.8 percent.

The study is being continued under the direction of A. R. Hallauer and associates to see if weather conditions in different years affect either the time or moisture level at which corn reaches physiologic maturity.

#### **New Popcorn Hybrid Introduced in Iowa**

A NEW experimental yellow popcorn hybrid has been introduced by the Experiment Station. The hybrid, Iowa 4258, was developed at the Experiment Station and has been tested at a

number of locations in the state and also in other states.

The new hybrid has tended to outyield Iopop 6 in the southern half of the state, with about equal yields in the northern half. Tests indicate that both Iowa 4258 and Iopop 6 have almost the same maturity and that the new hybrid can be grown wherever Iopop 6 has been grown successfully.

Iopop 6 has already established a reputation for high eating quality, with a high popping volume and relative freedom from hull on the popped flake. Iowa 4258 has a popped flake equally free of hull and appears to have a slightly higher popping volume. Iowa 4258 also has a slightly larger kernel size.

Important to growers is that, in tests so far, the new hybrid appears to have fewer dropped ears than most other popcorn hybrids when the moisture of the grain is below 18 percent in the field.

Seed of the new hybrid should be generally available in 1960, report Walter I. Thomas and John C. Eldredge of the Experiment Station.

#### **Jonadel Apple Variety Not Alternate Bearer**

JONADEL APPLE variety is not an alternate bearer, according to the results of 1958 apple variety trials conducted by C. C. Doll of the Experiment Station. Jonadel produced some fruit in 1958 after a heavy crop in 1957. The same was true of the variety Delcon—which has little commercial value but is an excellent variety for home planting. Ames 603, one of the seedling varieties of the station's breeding program, kept exceedingly well in storage in 1957, produced again in 1958 and is again storing well, reports Doll.

#### **Two-Eared Sweetcorn Under Further Study**

THE PRODUCTION of two-eared sweetcorn hybrids for the canning industry has been under study at the Experiment Station for the past 3 years. Two sweetcorn hybrids were tested in 1958 because of their ability to produce two usable ears per plant under ideal conditions: namely, Victory Golden and an experimental hybrid, Improved Goldencross Bantam. The distance between plants in the row and the width of the row were examined to see their effect on the development of two usable ears.

Results showed that sweetcorn planted in hills either 42x42 inches or 36x36 inches will produce fewer ears and less corn per acre than when planted by drilling at 12 inches in the row or when power checked at 18x36 inches. Generally, closer spacing in the row will reduce the numbers of second ears as well as size and weight. When the row distance is less than 36 inches, the size of ears also is reduced.

During the 3 years that this experiment has been conducted, say E. S. Haber and Walter White, no hybrid (22 have been tested) has consistently produced two usable ears per stalk—even though most of those tested were reported to be two-eared hybrids.



Jonadel apples from the horticultural variety test plantings.

Progress is being made, however; yields of ears are increasing, as is the yield of cut corn per acre. But, report Haber and White, the effect of spacing and of more than one ear per stalk on the yield of cut corn needs further study. Increasing the tons per acre will benefit the farmer. But if cut corn per ton is reduced or even maintained in two-ear hybrids, the canner may suffer. He will be purchasing more cob and more husks per ton and getting less corn.

### **Iowa Station Cooperates In Flower-Grading Study**

IOWA is one of several states cooperating in testing the commercial suitability of tentative grades for cut chrysanthemums and carnations. This program is a part of a larger Experiment Station study of market grades and standards for floricultural crops.

Preliminary work with Easter lilies has indicated that bulb weight is a better means of predicting the forcing potential of the lilies than is the present grading by bulb circumference. The relative importance of weight in respect to both measurable and unmeasurable characteristics (such as infestations) affecting potential yield is also being studied, according to C. H. Sherwood, who is conducting this research.

Studies with chrysanthemums indicated that there were many variety differences in the production of finished plants from cutting. There was, however, more consistent production of flowers for the number of cuttings from unpinched than from pinched plants. The unpinched plants also remained salable longer, though they were a few days later in reaching a salable condition.

### **New Onion Inbred Released to Seedsmen**

THE ONION inbred, Iowa 736, has been outstanding in performance in many locations across the country for the past 3 years, report A. E. Kehr and J. C. Horton. It has recently been released to seedsmen for seed increase and production. This inbred combines

well with several pollinator inbreds and contributes high yields, deep color, tight scales, earliness and long storage qualities to its hybrids. A hybrid will probably be named from this breeding soon.

## **livestock**

### **No Effect on Pig Gains From Gibberellic Acid**

EXPERIMENT STATION researchers conducted two trials to study the effect of gibberellic acid on gains and feed conversion of baby pigs. Levels of 2.5, 5 and 10 grams per ton were without effect. These results, says Virgil W. Hays, are in agreement with other reports that gibberellin—though a potent stimulant for plant growth—has little or no effect on the rate of growth of animals.

### **Milk From Cows Grazed on Pure Brome May Have Off-Flavor**

A SERIOUS FLAVOR DEFECT—an “unclean” flavor—has been noted in the milk from certain cows grazing pure stands of brome-grass. Though this defect was found in the milk of only 10 percent of the cows studied, reports C. F. Foreman, the flavor was strong enough to contaminate the milk from the entire herd.

Most undesirable feed flavors in milk are removed during processing. This particular feed flavor from cows grazing pure stands of brome, however, may still give an undesirable taste and odor even after the milk is pasteurized and homogenized.

One of the problems of this “unclean” flavor, says Foreman, is that it may not appear in the milk when delivered to the plant or immediately after processing. But it may be present after storage at the time the container is opened by the homemaker. The defect is extremely variable and occurs in the milk of only some of the cows and in rather irregular fashion. In addition, the fla-

vor may occur, disappear and reoccur in the same sample over a period of several days.

This off-flavor has been found during periods when pure stands of brome are grazed, chopped and fed fresh daily as soilage or when put up as hay. The problem has been controlled in the Iowa State herd by removing the cows from the brome pasture and feeding alfalfa hay at least 4 hours before milking.

If brome-grass is being grazed in a mixture there may be no problem. But, warns Foreman, if brome is the predominant or only variety of grass being grazed, removal of the herd from pasture and feeding hay several hours before milking time is strongly recommended. The effect of this flavor on milk sales and milk consumption should not be ignored, Foreman adds. The marketing of an off-flavored milk may result in sales losses to the processor and a drop in milk consumption that affects the entire industry.

### **How Frequently Should Lambs Be Fed?**

IS THERE any value in feeding lambs frequently throughout the day? The value of frequency of feeding a fattening ration to lambs was studied in two growth tests to learn the answer to this question. The same amount of feed was divided so it could be fed two, four or six times in a 12-hour period.

Results showed little benefit from feeding more than two times daily when a low roughage (33 percent) pellet was fed. But in feeding a completely mixed ration containing 50 percent alfalfa hay, gains were increased by 0.04 pound per day when the lambs were fed four times a day. Increasing to six feeding times per day, however, didn't increase gains further. There was a corresponding increase in feed efficiency.

This research is part of a larger study on increasing the usefulness of forage crops and high-cellulose roughages by improved rumen function in beef cattle and sheep. Key personnel working on this study include Walter Woods and Robert Rhodes.