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THE KANSAS AGRICULTURAL STUDENT

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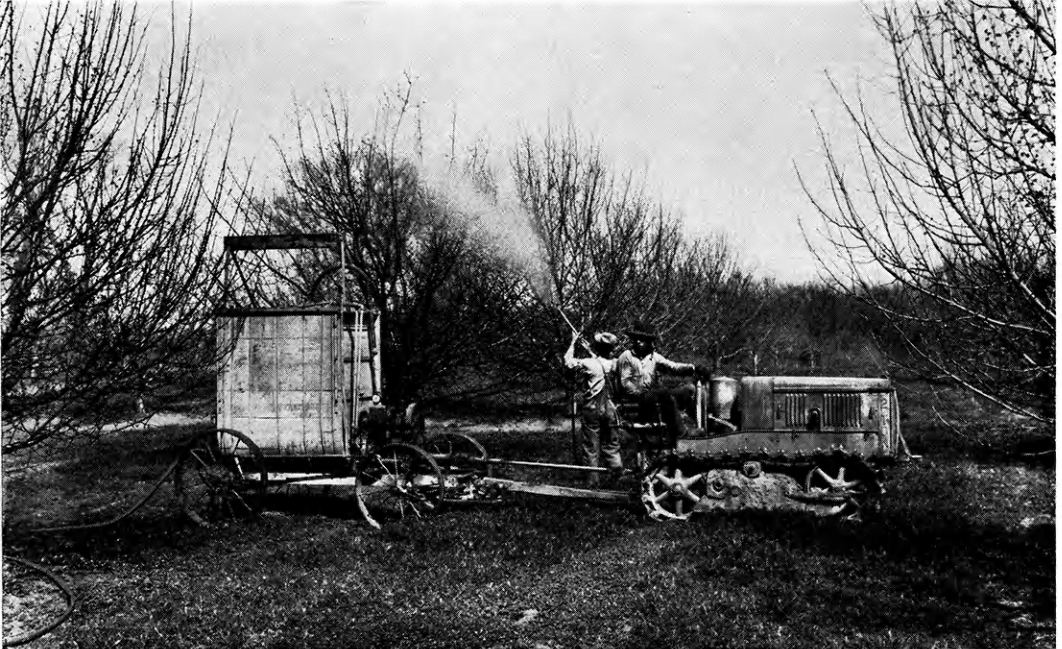
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The Kansas Agricultural Student

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No. 3



APPLYING THE DORMANT SPRAY ON THE FARM OF DOCTOR SNYDER
NEAR ARKANSAS CITY, KANSAS (1931)

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Pasture Crops for Land Taken Out of Cash Crops by the Allotment Program¹

Donald R. Cornelius, '35

The recent reduction in acreage of wheat and corn has thrown approximately three million acres of Kansas land out of cash crop production. Much of this land should not be allowed to lie idle, but should be planted to a crop which will control erosion and in some cases add to the fertility of the soil. Pasture crops will very satisfactorily meet these requirements.

It is permissible to plant this contracted corn and wheat acreage with such pasture crops as brome grass, bluegrass, orchard grass, redtop, meadow fescue, crested wheat grass, alfalfa, lespedeza, red clover, etc. Contracted corn land used for pasture may be grazed the first year provided a nurse crop is not used or crops of a temporary nature as sweet clover and Sudan grass are not planted. The second year this pasture or meadow can be grazed or cut for hay and an additional area taken out of wheat or corn for the contracted acreage that year.

Land in proper condition and of sufficient moisture can be planted to permanent pasture crops in the early spring. If the soil is not in good condition or the moisture supply is low it is preferable to fallow during the summer, thus permitting the storage of moisture and giving more time to prepare a good seedbed. Lespedeza should be seeded in the spring. If it is to be planted with a grass mixture the grass can be planted in the fall and the lespedeza seeded on the land during the late winter. Alternate freezing and thawing will permit germination of the seed without other cultural treatment.

Sod land that has produced a crop of corn during the past five years may be used for contracted corn acreage provided it is not pastured or the grass

harvested for hay. During such a period this sod land can be improved by controlling weeds, reseeding to grasses, and improving the stand by protecting the area from grazing.

Crested wheat grass is a perennial tame pasture grass which produces satisfactory yields in the arid regions of the United States. Although it has scarcely been grown in Kansas it will probably prove valuable for the dry regions of western Kansas. This is a perennial bunch grass, therefore, it does not become sodbound as brome and other sod-forming grasses. Crested wheat grass stands low temperatures very well, permitting a long growing season from early spring to late fall. The palatability and yield of this grass compare favorably with that of brome grass and since it is adapted to the more arid regions it will no doubt prove valuable for western Kansas. It should be planted at the rate of 10 to 12 pounds per acre in the spring or early September, depending on soil and climatic conditions.

Eastern Kansas is favored with sufficient rainfall to permit the growing of several good perennial grasses. Brome grass is a very palatable high-yielding grass adapted to the north-eastern section. A tendency for this grass to become sodbound makes it advisable to plant a bunch grass such as orchard grass with the brome. Orchard grass yields very well but is not so palatable as brome. A legume such as alfalfa or sweet clover should be added to the mixture to increase the yield and improve soil fertility. Meadow fescue may be added if more growth is desired the first year but it is such a short-lived grass that the productiveness of the mixture will not be increased by its addition. Other good grasses are Kentucky bluegrass, redtop, timothy, per-

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1. Much of the information used in this article was obtained from Prof. A. E. Aldous of the Department of Agronomy.

Obtaining Early Turkey Eggs

H. M. Scott

Professor of Poultry Husbandry

The laying period of our present-day domestic fowl extends over a period of 12 months. Years ago she produced only during the breeding season which was limited to the more favorable months of spring. Man by providing favorable housing quarters and adequate feed, by constant selection, and by increasing the length of her working day has made it possible for her to produce throughout the year.

Our present-day turkey, however, still retains the ancient custom of laying only during the spring months. She has not received the attention of the breeder nor has she been housed to protect her from the severe elements of winter or lighted to lengthen her working day. In Kansas at least, few turkeys are trapnested and few are even housed adequately. Thus Kansas breeding flocks start to lay in March although an occasional female may start to lay in February.

May 1 then is the earliest date that turkeys can, under Kansas farm conditions, be hatched. The majority are hatched after June 1. It requires from 24 to 28 weeks to mature fully a turkey from a market standpoint. This of course varies with the breed and care given the growing stock. If May 1 marks the date of the first hatch, there is just sufficient time to grow this hatch out for the Thanksgiving market. The second, third, and fourth hatches can never hope to reach this market as prime birds, and if they are marketed they are a decided drag because of inferior quality. From this standpoint alone it would be very desirable if the Kansas grower could encourage his breeding flock to reach sexual maturity at an earlier date.

Early production would be desirable for still another reason in that better prices could be obtained for the turkey. Take for instance the New York outside quotation on "western fresh-killed

young turkeys." From 1925 to 1930, inclusive, without exception the peak in the price curve was reached in September and then declined rapidly. From 1931 to 1933, inclusive, the average daily quotation in August marked the high price peak. In other words, for the past three years the peak has been moved up one month. In 1928 the low point in the price curve occurred in July. The old breeding stock is sold at this period. The average daily quotation for the month of July was 25 cents per pound. The price rose slightly in



A PEN OF BREEDING TURKEYS

These Narraganset turkeys are shown inside their house—their permanent home for the breeding season. The lights are turned on in this pen at 4:30 each morning.

August to 27 cents, then sharply to 60 cents in September, and then declined to 56 cents in October, 47 cents in November, and finally to 36 cents in December. How desirable it would have been to have been in a position to sell at least part of the flock at 60 cents. While these prices were not received the past season, the same relationship held true.

On December 1, 1932, for the first time, the breeding flock of turkeys at the Kansas Agricultural Experiment Station was housed and given morning lights starting at 4:30 a. m. The first egg was produced January 15, 1933, whereas March 4 was the earliest date that eggs had been produced in former

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JUNIOR LIVESTOCK JUDGING TEAM WINS IN FORT WORTH CONTEST

The Aggie junior livestock judging team made an enviable record in the intercollegiate judging contest of the Southwestern Exposition and Fat Stock Show, Fort Worth, March 10, 1934. Six teams, 30 contestants, from the colleges of agriculture of Texas, Louisiana, Oklahoma, and Kansas, competed. It was our team's first competition in this annual contest in the Southwest and did they set a mark for future Kansas teams?

Of twelve trophies and medals offered our boys won eight. First, second, and third individual placings in the entire contest went to Walter M. Lewis, Larned; Clifford L. Harding, Wakefield; and Charlie B. Team, Wichita, respectively. Did they "crack down"? Lewis was high man on horses and mules; Harding, high on cattle; and Team, high on sheep.

We congratulate the team and their coach, Prof. F. W. Bell, and hope many of our teams in the future can do as well.

ALPHA ZETA

The selection of new members is a most important function in a student honorary fraternity such as Alpha Zeta. Fair, broad-minded, impartial consideration on such points as personality, character, and leadership give the chapter standing at home and in the fraternity at large. To the extent that membership is positively a matter of merit, it becomes a coveted honor.

The local chapter has done some commendable work in its elections this year. The 20 new members are a diversified group of outstanding students in the Division of Agriculture. They will certainly carry on and endeavor to improve the good work of the local chapter. John R. Latta, chancellor, is to be congratulated on his leadership during the year.

That six sophomores were elected to membership this year is worthy of special commendation. The selection of several safe and outstanding sophomores (fourth-semester students) each year will increase the possibilities and efficiency of the local chapter.

Activities of Alpha Zeta

Alpha Zeta, student honorary agricultural fraternity, was organized to stimulate interest in agriculture. At the present time there are 44 chapters in the United States. Alpha Zeta carries on in local chapters through the election of new members on the basis of scholarship, leadership, personality, and character. Local chapters report to the national officers who give suggestions to help solve local problems. The chapters keep in touch with each other by sending in articles which are published in the Alpha Zeta Quarterly. In this way the chapters become mutually acquainted. The biennial conclave of Alpha Zeta, to which all the chapters may send delegates, is another important means of uniting the interests of Alpha Zeta.

The chapter of Alpha Zeta in K. S. C. holds a banquet each fall for the newly elected members and another each spring for the new members elected during the second semester. Each year the chapter gives a medal to the sophomore in the Division of Agriculture, who during his freshman year ranked the highest in scholarship. During the spring semester a smoker is given to which all students in the Division of Agriculture who are in the upper two-fifths of their class in scholarship and have completed three semesters of college work are invited. The purpose of the smoker is to allow the members of Alpha Zeta, faculty members, and students of high scholarship to become better acquainted.

In the fall election, or the first semester this year, 10 men were elected to membership in Alpha Zeta—four seniors, four juniors, and two sophomores. These men were initiated in the Alpha Zeta room Monday afternoon, November 13. In the evening the annual fall banquet was held in the Masonic Temple. The following are the fall initiates:

SENIORS

John O. Miller, Meriden; major in farm

crops in the Department of Agronomy. Member of both poultry judging and grain judging teams; president of Klod and Kernel Klub.

J. Warren Mather, Grinnell; Agricultural Administration. Member of both dairy and live-stock judging teams and of the staff of The Kansas Agricultural Student.

Clarence L. Gish, Abilene; major in the Department of Poultry Husbandry. Member of the poultry judging team and a member of the staff of The Kansas Agricultural Student. Has shown marked ability to accept responsibility and make good.

Kenneth S. Davis, Manhattan; student in agriculture with special major in agricultural journalism. Winner of Alpha Zeta freshman medal, assistant editor of the Kansas State Collegian, and member of the staff of The Kansas Agricultural Student.

JUNIORS

Donald R. Cornelius, Wheaton; major in Department of Agronomy. Member of Klod and Kernel Klub and the Collegiate 4-H Club.

J. Willett Taylor, Lawrence; Agricultural Administration, preparing to teach vocational agriculture. Member of dairy judging team, editor of Who's Who published by the Collegiate 4-H Club.

Edwin R. Lamb, Mendon, Mo.; Agricultural Administration. Keenly interested in agricultural problems and a member of the Kansas State wrestling team.

George A. Rogler, Matfield Green; major in the Department of Agronomy. Noted for his cooperative spirit, member of Klod and Kernel Klub, the Collegiate 4-H Club, and associate editor of The Kansas Agricultural Student.

SOPHOMORES

Howard A. Moreen, Salina; major in the Department of Animal Husbandry. President of Block and Bridle Club, business manager of The Kansas Agricultural Student, and member of Collegiate 4-H Club.

Karl G. Shoemaker, Pomona; Agricultural Administration, preparing to teach vocational agriculture. Faithful and efficient in classes and activities and a member of the Collegiate 4-H Club.

For the second semester another 10 men were elected and initiated—two seniors, four juniors, and four sophomores. They were initiated Friday afternoon, March 16, and the annual spring dinner dance in their honor was held that evening in the college cafeteria. The following are the spring initiates:

SENIORS

W. Harley Chilson, Oberlin; major in dairy manufacturing. Alternate on the dairy products team the fall of 1932 and a member of



that team last fall. He was third high individual in the national contest, winning a 600-dollar fellowship. He plans to use the fellowship at Cornell University. Vice-president of Dairy Club and member of Collegiate 4-H Club.

William H. Juzi, Florence; major in dairy manufacturing. President of Dairy Club and member of Cosmopolitan Club. Has unusual ability for doing a large amount of work well; made 72 points in one semester. He came to America from Switzerland ten years ago.

JUNIORS

Richard H. Campbell, Grenola; Agricultural Administration. Member of Agricultural Economics Club and the varsity wrestling team.

Lewis S. Evans, Washington; major in Department of Animal Husbandry. Has taken an active part in Future Farmers of America. High individual in the junior division of the students' livestock judging contest in the spring of 1932. Member of the Block and Bridle Club.

Charles E. Murphey, Leoti; major in Department of Animal Husbandry. Member of the meats judging team last fall and of the junior livestock judging team this spring. Member of Block and Bridle Club.

Robert E. Phillips, Jr., Joplin, Mo.; major in Department of Poultry Husbandry. Member of the poultry judging team in fall of 1929. Assistant in zoology.

SOPHOMORES

David W. Gregory, Cheney; major in Department of Poultry Husbandry. Formerly lived in the Panama Canal Zone. Member of Cosmopolitan Club. Generally recognized as a wide-awake and capable student.

J. Edwin McColm, Emporia; major in the Department of Agricultural Economics. Winner of Alpha Zeta medal for highest scholarship record during his freshman year, 1932-'33. Has an enviable record in 4-H Club work. Awarded the first two-week Shelby Camp trip ever given by Danforth fellowship men; selected from a group of 20 outstanding agricultural freshmen recommended by as many states.

Royse P. Murphy, Norton; major in Department of Agronomy. An all-round student and athlete; member of varsity football team.

David A. Reid, Manhattan; major in Department of Agronomy. A keen and capable student whose leadership is quickly recognized.

J. B. Roberts, '33, has been appointed assistant in the Department of Agricultural Economics. Before January 1, Mr. Roberts was director of vocational agriculture at Macksville High School.

Little American Royal

The eleventh annual Little American Royal was held Thursday evening, February 8, in the livestock pavilion. Since 1924 the Little American Royal has been the climaxing feature of Farm and Home Week. The attendance this year was large. The weather was favorable and, with unusually good classes of livestock, the show was highly successful. Animals were shown as follows: Horses, 6; sheep, 10; beef cattle, 15; and hogs, 14.

The first-place winners competed for the grand championship silver trophy which was donated by the American Royal Livestock Show and the Kansas City Stockyards Company. Maurice I. Wyckoff, Luray, showing a Shropshire ewe lamb, won. Boyd R. Cathcart of Winchester won the grand championship last year showing a Percheron mare.

The first five placings in the four classes of the contest were as follows:

Sheep

- First.....Maurice I. Wyckoff, Luray
- Second.....Earl P. Anderson, Waynesville, Mo.
- Third.....Joe L. Wetta, Colwich
- Fourth.....J. Howard Watson, Shawnee
- Fifth.....Robert J. Danford, Hutchinson

Cattle

- First.....Wilton B. Thomas, Clay Center
- Second.....Oren J. Reusser, Wellington
- Third.....W. Philip Ljungdahl, Menlo
- Fourth.....E. Oran Talbot, Manhattan
- Fifth.....Kenneth E. Johnson, Norton

Horses

- First.....Robert R. Teagarden, LaCygne
- Second.....W. L. Braun, Carlton, Nebr.
- Third.....George B. Maichel, Overbrook
- Fourth.....Charlie B. Team, Wichita
- Fifth.....Lloyd J. Sconce, Halstead

Swine

- First.....L. Claude Bell, McDonald
- Second.....Harold P. Walker, Bucklin
- Third.....Lee J. Brewer, Hartford
- Fourth.....Carrol L. Wahl, Wheaton
- Fifth.....J. Clayton Buster, Larned

Medals were given to first-place winners in each class, and ribbons to the remaining placings. Acting Dean W. E. Grimes of the Division of Agricul-

FITTING AND SHOWING CONTESTS



ture presented the medals and awards.

A. M. Paterson, assistant secretary of the American Royal Livestock Show, was the judge of the contest. Assistant judges were Carl Channon, horses; Tom Dean, sheep; Tom Greer, cattle; and W. W. Bales, swine.

The master of ceremonies was Howard A. Moreen, Salina. He is president of the Block and Bridle Club, the club which sponsors the annual Little American Royal. The heads of committees were: Walter M. Lewis, in charge of entries; Albert A. Thornbrough, director of publicity; J. Warren Mather, chairman of committee on decorations; and Charles E. Murphey, chairman of committee on eats.

A feature of the show was the announcement of classes and winners over a public address system with James R. Ketchersid, Hope, as the announcer.—W. M. L., '35, and A. A. T., '35.

Aggie Dairy Show

The eighth annual dairy fitting and showing contest was held February 7 and 8, 1934, in connection with the Little American Royal during Farm and Home Week. The weather was ideal for the show, more contestants were entered than usual, and the fitting and showing were exceptionally good.

The preliminary contest for the selection of breed champions was held Wednesday afternoon, February 7. Eight classes were open for competition—a junior class and a senior class for each breed. The winner in the senior class for a breed then competed with the winner in the junior class for the breed championship. The winners of the eight classes and the breed champions (1) are as follows:

Class	Holstein
Senior.....	Howard O. Meyer, Basehor (1)
Junior.....	J. Willett Taylor, Lawrence
	Ayrshire
Junior.....	Kenneth E. Johnson, Norton (1)
Senior.....	Ralph R. Dent, Bavaria

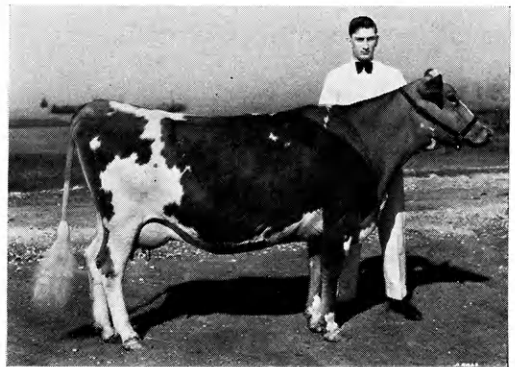
Jersey

Senior.....Forrest R. Fansher, Hutchinson (1)
Junior.....Gus C. Overley, Belle Plaine

Guernsey

Senior.....Carl H. Beyer, Fairview (1)
Junior.....Emory L. Morgan, Ottawa

The winners of the breed championships competed Thursday evening at the Little American Royal for grand and reserve grand championships. Carl H. Beyer won the grand championship and was awarded a silver trophy. How-



THE WINNERS

Above—Maurice I. Wyckoff, the silver cup he won, and the lamb he showed in the Little American Royal. Below—Carl H. Beyer and the Guernsey cow with which he won the Dairy Show.

ard O. Meyer was named reserve grand champion and was presented a muffler. Prof. J. W. Linn, extension dairyman, and Prof. H. W. Cave of the Department of Dairy Husbandry acted as judges.—W. W. J., '34.

Creep Feeding

T. I. Mullins, farmer living near Junction City, won first place in the sixth annual beef production contest of Kansas. He won the honor on 27 head of creep-fed Angus calves. The conclusion of the competition came as a part of the program of Livestock Day of the annual Farm and Home Week.

The contest, sponsored by the extension service of the Kansas State College, was under the supervision of J. J. Moxley, extension livestock specialist, and included 235 beef cattle men who were conducting demonstrations in beef herd management in Kansas. The awards were made on the basis of average daily gain, feed costs, quality, and herd management

Mr. Mullins had a 100 per cent calf crop; his calves had a market weight of 693 pounds when 307 days old; sold for \$6.70 a hundredweight; and dressed 61.8 per cent. After paying for 31 bushels of corn fed, figured at a standard price of 45 cents a bushel, 70 pounds of protein supplement, and necessary roughage these calves returned \$30.58 each to pay for the cost of keeping the cow and incidental expenses.

Roger Blanchard, Bennington, won second place; Fred Morgan, Alta Vista, third; R. H. McCallum, Elmdale, fourth; and T. I. Mudd, Gorham, fifth. Mr. Blanchard's 148 head of creep-fed Hereford calves weighed 726 pounds when 290 days old and sold for an average price of \$6.20 per hundredweight. He had a 99 per cent calf crop. His calves consumed an average of 30 bushels of corn per head and returned \$29.36 each above feed cost to pay the cost of keeping the cow. The 31 head of creep-fed Hereford calves that won third place for Fred Morgan averaged 701 pounds at market when 271 days of age, and sold for \$6.50 a hundredweight. Mr. Morgan had a 94 per cent calf crop. His calves consumed 40 bushels of corn per head and returned \$25.06 per head above feed costs to pay the cost of keeping the cow. Mr. Mc-

Callum creep-fed the 80 head of Hereford calves that won fourth place for him. His calves weighed 685 pounds at 303 days of age and sold for an average price of \$5.97 a hundredweight. The 50 creep-fed Herefords that won fifth place for T. I. Mudd had an average market weight of 692 pounds and sold for an average of \$6.03 per hundredweight when 331 days old.—W. S. Coblenz, '34.

Potato Experiments Yield Valuable Results

Russell Reitz, '27

Results at the Newman potato experiment field during 1932 and 1933 have shown that size of seed-piece, depth of planting, previous crop, and straw mulch influence the yield of potatoes.

A potato seed-piece weighing one ounce has given the greatest return above seed cost the past two years. The relation between size of seed-piece, yield in bushels per acre, and average annual return above cost of seed for the two years is shown in the following tabulation:

Wt. of seed-piece Ozs.	Yield per acre Bus.	Cost of seed per acre	Return above cost of seed
½	91	\$ 7.20	\$40.26
1	141	14.40	61.94
2	144	28.80	45.00
3	154	43.40	35.44

It will be noted that each increase in size of seed-piece increased the yield of potatoes. The increases from the larger-sized pieces, however, were not profitable to the producer. If the price of potato seed was low and the selling price of the crop high, then seed-pieces larger than one ounce might be profitable. Such a situation in the potato market is not common.

The yield of potatoes has been greatest when the seed-piece has been planted 4 inches deep as compared with 2 and 6 inches. The two years covered by these studies have been dry years.

It may be that in years of greater rainfall potatoes planted 2 inches deep will yield as much as those planted 4 inches deep. The average yields per acre for potatoes planted 2, 4, and 6 inches deep were: 105, 124, and 113 bushels, respectively.

Certain field crops are grown in rotation with potatoes. Only one year's results at Newman, those for 1933, can be cited to show the effect of the previous crop on the yield of potatoes. The following figures show the yield per acre in 1933 of U. S. No. 1 potatoes on land cropped the previous year as indicated: Alfalfa, 92 bushels; potatoes, 108; corn, 83; Hubam clover, 113; rye, 103; fallow, 104; and vetch, 128 bushels.

Some people in Kansas make a practice of applying a mulch of straw to potatoes soon after planting. This mulch is usually heavy enough to prevent weed growth and permit the producer to grow potatoes without cultivation. At the Newman potato experiment field three plots were used to determine the effect of a straw mulch on the yield of potatoes. All plots were planted at the same time. Two plots were mulched and one cultivated. One of the mulched plots received a heavy application of ammonium sulfate fertilizer broadcast on the straw. The results were:

Plot	BUSHELS PER ACRE		
	1932	1933	Av.
Cultivated	206	131	169
Straw mulch	102	94	98
Straw mulch and ammonium sulfate	195	100	148

Straw decreased the yield of potatoes nearly one-half. The application of ammonium sulfate fertilizer increased the yield under straw but did not increase the yield above the cultivated potatoes. This may be of interest to the home gardener.

These results are only a few of those being accumulated at the Newman field. The testing of new varieties and the utilizing of junior potato seed are important studies. Many problems in disease control are being studied by the plant pathologists of the Agricultural

Experiment Station. Particular attention is being given to potato scab and *Rhizoctonia* studies.

Any of these data may be changed as more yearly records are accumulated.

Results of Garden City Lamb-feeding Experiment

Although lamb feeding is comparatively new in western and central Kansas, results of a recent feeding experiment at the Garden City branch of the Kansas Agricultural Experiment Station indicate a promising future for it in that section of the state. The three major comparisons made in the experiment were:

1. Alfalfa hay versus cane stover as the roughage portion of a lamb-fattening ration.

2. A basal ration consisting of ground milo heads, cottonseed meal, and ground limestone with and without molasses.

3. Hand feeding versus self feeding.

A summary of the results follows:

1. Alfalfa hay as the roughage gave slightly larger but more expensive gains than cane stover roughage. Thus the western Kansas feeder by the use of ground limestone and a cheap protein supplement can have just about as effective and probably a cheaper ration than the corn-belt feeder with his corn and alfalfa hay.

2. Equal parts of alfalfa and ground cane stover as a roughage produced larger and cheaper gains than alfalfa alone as a roughage.

3. The molasses-fed lot made a trifle larger and cheaper gain than the check lot not fed molasses. Molasses feeding is practical, however, only when a cheap supply is available.

4. Self feeding is more expensive but produces slightly larger gains than hand feeding. There is also usually more digestive trouble and a higher death loss from self feeding than from hand feeding.—Paul W. Griffith, '34.

Cutworms—a Crop Menace

Usually one of the first insects to cause damage to crops in the spring is the cutworm. In this region it presents a continual annoyance from spring until early summer.

The most common cutworm in this locality is the variegated cutworm. It is said to have the widest range of food plants of any of the cutworms. It damages field and garden crops, greenhouse plants, many flowering plants, and a number of trees and shrubs.

A field of young corn, or other crop, may appear perfectly normal at dusk and by the following morning show numerous plants drooping, wilted, or entirely cut off. This is because the larvae are nocturnal. Injury to corn is greatest during a cold backward spring when soil and weather conditions are unfavorable for plant growth. Injured stalks do not recover.

The adults of cutworm larvae are moths or "millers," and most species lay their eggs on the stems of grasses and weeds or behind the leaf sheaf of such plants. The eggs hatch in the fall into small larvae which pass the winter only partly grown in cells in the soil, under trash, or in clumps of grass. They are unnoticed in the fall because they are so small and feed underground upon the roots of grasses. They start feeding in the spring and continue growth until early summer, when they change in the soil to a brown pupal stage and later to the adult or moth stage. There is commonly but one generation a year.

Damage by cutworms can be best avoided by rotating the crops in such a manner that corn is not planted on sod ground unless the sod was broken in the fall or during late summer. Summer plowing prevents the moths from depositing eggs on grassy land. After a field has become infested the only way of killing the larvae is by spreading poison bran mash. This should be done on a sultry evening if possible.

In garden plots or other small areas

larvae may be collected and killed by allowing them to collect under boards during the day. The boards should be placed at intervals throughout the plot. Protective collars of cardboard or tin may be placed around individual plants or bran mash scattered around each plant. A small number of larvae may cause considerable damage to small areas if the gardener is not alert.—Fred S. Kruger, '32.

Northeastern Kansas Experiment Orchards

The two experiment orchards located in northeastern Kansas, one in Doniphan and the other in Atchison county, are maintained for the purpose of conducting various investigations in soil management and pruning, and in the control of apple pests. They are under the direct supervision of Russell Reitz, '27.

Approximately two-thirds of the trees in the Blair (Doniphan county) orchard are Winesap and Jonathan. The other one-third are York Imperial and Delicious. During the past two years this orchard has produced a crop of about seven hundred bushels each year. In 1932 a heavy crop of Winesap and a light crop of Jonathan and Delicious were harvested. The York Imperial crop was a complete failure. In 1933 a heavy crop of York Imperial and a light crop of Jonathan and Delicious were produced. The Winesap crop was a total failure due to poor weather for pollination during the blooming period.

One-half of the orchard is in bluegrass sod and on the other half is grown a cover crop of vetch, which is disked under early in July and the ground clean cultivated until the latter part of August when vetch is again sown. The trees in the cover crop and cultivated area have been more vigorous and productive than the trees in the sod. Their leaves have been larger

and more free from disease than the foliage of the trees in sod.

Among several fungicides tested for their efficiency in controlling black-rot of Jonathan foliage, Bordeaux mixture, 1½ pounds of copper sulphate and 4 pounds of lime to 50 gallons of water, was found to give the most satisfactory control. Keeping the primary leaves well covered with lime sulphur at a strength of 1½ gallons of concentrate to 50 gallons of water before the buds open and following the petal fall is absolutely necessary in the control of scab. Of the various forms of sulphur used, lime sulphur gave the highest control of scab, also the greatest amount of leaf injury from burning. Calcium arsenate used instead of lead arsenate after the second codling moth spray failed to give satisfactory control of codling moth. Very little foliage injury resulted from the use of calcium arsenate.

The Atchison experiment orchard located on the Atchison-Leavenworth highway, 12 miles south of Atchison, consists of twelve acres of cherry and apple trees planted in the spring of 1932. The orchard is divided into four quarters. One quarter is intercropped to corn; one to red clover; one mulched with wheat straw; and the fourth under a clean-cultivation cover-crop system of management using cowpeas or winter vetch. The purpose is to determine the most efficient soil management program for growing an orchard.

Different methods of pruning involving two, three, and four scaffold branches to produce a modified leader type of tree are being carried out. All these are proving successful for young trees but may vary in value after the trees come into bearing.

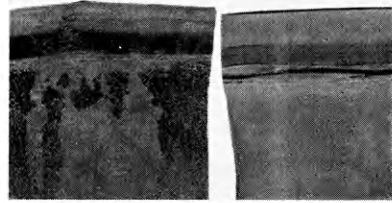
Soil moisture determinations made in this orchard at two-week intervals during the spring, summer, and fall showed the moisture content of the plots to rank as follows: Straw mulch, vetch, cowpeas, corn, and red clover.

The soil management program has not extended over a sufficient period of

time to show outstanding differences in growth response. The trees which have received a mulch of straw four inches deep four feet around the trunk have, however, made a greater trunk circumference and terminal growth than the trees under any other system of soil management.—W. M. L., '35.

Using Lye in Milking-Machine Tubes

A definite routine of cleaning must be carried out each day in order to keep milking machines in a sanitary condition. The daily cleaning and disinfecting of the milker tubes cannot be over-emphasized. Taking the machines apart once a week and thoroughly



THE INNER SURFACE OF USED RUBBER TUBES

A chlorine solution was used in sterilizing the rubber on the left. Notice the granular deposits. The rubber on the right was sterilized with lye.

cleaning the rubber parts which come in contact with the milk is sufficient, when the daily cleaning routine is as follows:

Immediately after milking subject machines to a cold water rinse by drawing not less than three gallons of clean cold water through each unit. This will remove most of the milk from the rubber parts and the majority of the bacteria present will be washed out. Next, subject the machines to a hot water rinse, which will remove the butter fat and destroy many of the remaining bacteria. Draw not less than a gallon of water at a minimum temperature of 165 degrees F., through each unit; that is, the water must not

be less than this temperature after it has passed through the machines.

After the teat cups and rubber parts have been washed as described, it is essential that they be adequately sterilized. Chlorine and lye solutions are commonly used for this purpose. An experiment recently carried out at the college dairy has proved that a dilute lye solution is superior to a chlorine solution for the following reasons:

1. The teat cup liners and the tubes are easier cleaned at the end of each week.
2. The life of the tubes is almost twice as long.
3. Lye is easily prepared and does not lose its strength.
4. Its long contact affords thorough sterilization.

Chlorine solution causes the formation on the inner surface of the rubber tubes of fine granular deposits which interfere with effective cleaning. These deposits also result in rapid deterioration of the rubber. The average life of teat cup liners treated with chlorine is about five months (that is where two sets are kept on hand and changed alternately each week), whereas teat cup liners treated with lye will last from seven to nine months.

This lye solution is prepared by dissolving the content of a 13-ounce can of lye in one gallon of water. Seven ounces (slightly less than half a pint) of this concentrated lye solution when added to one gallon of water will make a gallon of disinfectant solution of the proper strength. This solution can be used only to sterilize the rubber tubes of the milking machine as its disinfecting power requires long contact with the linings, but by keeping the teat cups filled with lye of the proper strength from one milking to the next, thorough sterilization will be accomplished.—E. L. B., '35.

Phares Decker, '34, has a fellowship in plant pathology in Texas A. & M. College, College Station.

Feeding Baby Chicks

The satisfactory chick ration contains the nutrients necessary for rapid growth and proper development. There should be sufficient fat and carbohydrate for heat and energy, protein for muscle and feather growth, suitable minerals for bone development, and vitamins that aid in growth and assimilation of minerals.

Yellow corn supplies heat and energy and large quantities of vitamin A. Nearly half of the ration should be composed of yellow corn. Wheat and oats or their by-products are used to supply proteins, carbohydrates, vitamin B, and a few minerals. Milk and meat scraps are the major sources of protein for muscle building. Bone meal and salt provide certain necessary minerals. Alfalfa supplies vitamins A and B while vitamin D is obtained from cod-liver oil or sardine oil.

The Department of Poultry Husbandry of the Kansas Agricultural Experiment Station recommends the following chick rations:

	Starting 1-4 wks. Lbs.	Growing 5-24 wks. Lbs.
Ground yellow corn.....	40	44
Wheat bran, shorts, or ground wheat	24	20
Oat meal or oat groats.....	14	0
Ground oats	0	14
Meat and bone scraps.....	10	10
Dried buttermilk	5	5
Alfalfa leaf meal.....	5	5
Salt	1	1
Cod-liver or sardine oil.....	1	1
Totals.....	100	100

The starting ration is fed in open hoppers after the chicks are 24 to 36 hours old. There should be at least one 4-foot hopper accessible on both sides for every 100 chicks. With the growing ration, or beginning the fifth week, scratch grain composed of 75 pounds of cracked yellow corn and 25 pounds of wheat is hopper fed. If the chicks have access to green feed and direct sunlight, the alfalfa meal and cod-liver oil may be omitted from the ration and an equal amount of yellow corn meal substituted for them.

Liquid buttermilk or skimmilk may

be fed in place of water up to the fly season, at which time the powdered forms of milk are much more desirable. When feeding the liquid milk, the dried milk and 5 pounds of corn are omitted from the ration. If liquid milk is not used, plenty of clean water should be provided at all times. Grit should be supplied in open hoppers from the start.

These rations will grow and fatten the broilers for the market and put the pullets in good condition for heavy winter laying.—Clarence L. Gish, '34.

PASTURE CROPS

(Continued from page 52)

ennial rye, Italian rye, and Reed's canary grass. A good mixture for northeastern Kansas is brome, 10 pounds; orchard grass, 6 pounds; meadow fescue, 4 pounds; and lespedeza or alfalfa, 4 pounds.

The same grasses can be grown in southeastern Kansas except brome which is distinctly a northern grass. The northeastern Kansas mixture may be used with the brome replaced by an equal amount of half redtop and half Kentucky bluegrass. Two or three pounds of Korean lespedeza would be a valuable addition to the mixture for acid soils of southeastern Kansas.

Two things which will limit the extent of planting pasture crops are the high cost of seed and the risk of not getting a stand. Although grass seed is usually quite expensive it is best to buy high-grade seed of high purity and germination. A few simple rules should be followed to insure a satisfactory stand. The modern wheat farmer realizes the importance of sufficient soil moisture for wheat at seeding time. It is even more important that sufficient

moisture be present at the time of planting grasses. In the drier regions the land will probably have to be fallowed previous to planting.

The ground should be plowed before the seed is to be planted. Then it should be disked, harrowed, and packed by a roller. A grass drill should be used if possible in planting the seed although it can be broadcast. The drill gives a more even distribution and depth of planting. After the seed has been planted the ground should be packed with a cultipacker. Success of securing a stand will depend on how well the seed bed is prepared and the moisture content of the soil when growth starts.

OBTAINING EARLY TURKEY EGGS

(Continued from page 53)

years. The latter part of January the flock produced at the rate of 60 per cent. The first hatch came off March 7 and were grown out and sold the first week of September. The New York quotation at that time was 29 cents while Thanksgiving turkeys were quoted at 19 cents. The males averaged 15.6 pounds and the females 10.4 pounds dressed, when sold. Never have the turkeys at this station made such splendid growth and so, as is true with chickens, the early-hatched bird makes the most rapid growth.

There is little doubt but what the female turkey, like its kin the hen, will respond nobly to adequate protection and artificial illumination. It is not possible at this time to state how much of the stimulation can be attributed to adequate protection and how much to artificial lighting.

The 1934 breeding flock, however, has been divided into three groups. The

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first is on range without protection or artificial lights; the second group is housed without lights; and the third group is housed and lighted. (A scene in the pen of this third group is shown in the accompanying illustration.) It is hoped to obtain some interesting figures on this 1934 breeding flock on the extent to which housing alone influences sexual maturity as well as additional figures on the extent to which both housing and artificial illumination influence this character.

At this writing (March 13) certain definite conclusions can be drawn from the experiment. The group subjected to artificial illumination started to lay January 3, the second lot (housed but no lights) reached sexual maturity March 8, while the range breeders laid their first eggs one day later, March 9. Apparently protection (housing) exerts little or no influence on the time required by turkey breeding stock to reach sexual maturity.

These results are not unlike those obtained by others working with different species of birds (dove and starling). The response can be attributed

to the stimulating effect of artificial illumination (lengthened day) alone. Most workers agree that it is the effect of the light on the anterior lobe of the pituitary that hastens sexual maturity rather than increased feed consumption. Increased feed consumption is the result of egg production rather than the cause.

Penn Thompson, '33, is now county agricultural agent in Cloud county with headquarters at Concordia.

W. J. Conover, '32, has recently been appointed county agricultural agent in Ellis county.

F. R. Brandenburg, '33, is director of vocational agriculture in Fairview Rural High School.

W. H. Atzenweiler, '26, who has been in the employ of the Bartlett Mortgage Company, is now engaged in farm management work for the Northwestern Mutual Life Insurance Company. His headquarters is Topeka.