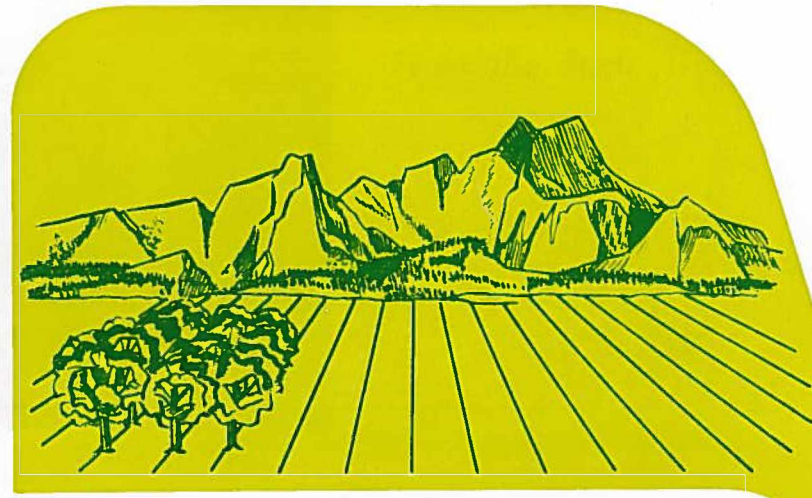
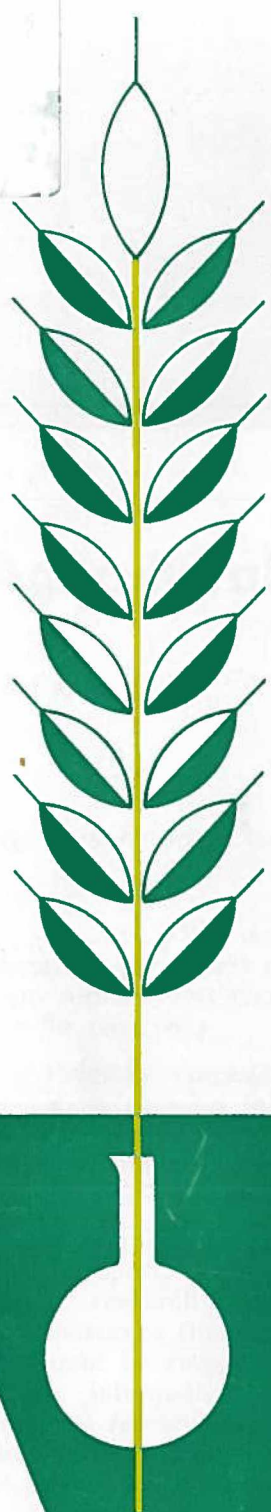


S41
.E6
72nd
1958-59



agricultural research serves colorado

AGRICULTURAL EXPERIMENT STATION
Colorado State University, Fort Collins



72nd

ANNUAL
REPORT
1958-59

**Letter of Transmittal
Seventy-Second Annual Report
Colorado Agricultural Experiment Station**

Honorable Stephen L. R. McNichols
Governor of Colorado
Denver, Colorado

Sir:

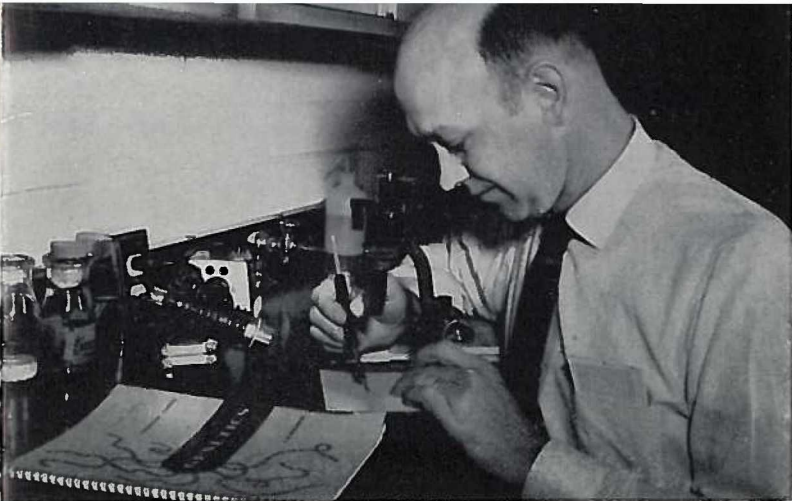
In compliance with the act of Congress, approved March 2, 1887, entitled, "An act to establish Agricultural Experiment Stations, in connection with the colleges established in several states under the provisions of an act approved July 2, 1862, and under the acts supplementary thereto," I herewith present the Seventy-second Annual Report of the Colorado Agricultural Experiment Station for the fiscal year of July 1, 1958 to June 30, 1959.

Fort Collins, Colorado
July 1, 1959



S. S. Wheeler
Director

From the Basic



Agricultural Research Serves Colorado

72nd Annual Report

Colorado Agricultural Experiment Station

In This Report

. are presented representative examples of research conducted by the Colorado Agricultural Experiment Station during the past year.

Primary emphasis in this report is placed on projects falling generally within the category of "applied" or "practical" research. Findings from this type of research usually have reasonably direct application.

Although given little detailed attention in this report, results of "fundamental" or "basic" research equal and perhaps exceed in importance findings of applied research. It should be recognized that much of the usable information derived from today's practical research stems from basic or fundamental studies which only yesterday had no immediate practical application.

As surely as today's most spectacular agricultural advances are an outgrowth of yesterday's basic studies, so will the progress we make tomorrow depend on the fundamental investigations now under way. Practical research is easy to report and commands widespread interest. Basic research, because of its highly technical and complex nature, is a story difficult to tell and too frequently is not fully appreciated.

LIBRARIES
AUG 23 2005
COLORADO STATE UNIVERSITY

. Comes the Applied



Contents

Crops and Soils.....	3
Livestock	4
Insect Control	5
Horticulture	5
Poultry.....	6
Agricultural Engineering	7
Engineering Research.....	8
Forestry and Range Management.....	8
Home Economics	9
Botany and Plant Pathology.....	9
Seed Laboratory	10
Chemistry and Endocrine Research.....	10
Economics and Sociology.....	10
Animal Diseases	11
Information and Publications	12
Administrative Officers and Staff.....	15
Financial Report for Year Ending June 30, 1959.....	17

Crops and Soils

Winter wheat, spring wheat, barley, and oats were grown in field plots for yield determinations and comparisons. Nursery variety tests of winter and spring wheat, winter and spring barley, and oats were grown to determine value of potential new varieties developed by cooperating experiment stations in the Great Plains area. Additional small-grain studies were aimed at obtaining resistance to loose smut and to stripe mosaic.

A long-time rotation experiment involving crops under irrigation has been very valuable as a basis for recommendations to farmers. The role of alfalfa in benefitting other crop yields is clear and the necessity of supplementing with fertilizer of specific types is evident. Effects of cropping system on soil properties is now becoming apparent. The moisture-fertility-stand work with corn is accumulating results that can be used as a basis for recommendations for maximum yield and economy in the use of irrigation water. Studies on nutrition of sugar beets may provide the basis for improving quality of this crop through proper use and placement of nitrogen and through use of improved varieties.

Sorghum improvement tests were conducted under both irrigated and dryland conditions. At Rocky Ford, irrigated grain sorghum tests included 24 hybrids. Hybrids yielded 103.7 bushels an acre in the period of 1956-58 compared with 88.7 bushels for open-pollinated varieties.

Several hybrids showed promise in a dryland test at Akron. Average yield of 26 hybrids at Springfield was 22.9 bushels an acre, compared with 19.9 bushels on four open-pollinated check varieties.

Corn improvement work consisted of hybrid corn performance test and corn breeding studies.

At Fort Collins, yield of experimental hybrids was surprisingly high, with 16 of 36 entries exceeding the yield of the check, Colorado 152.

In bean tests, some progress has been made in selecting advanced generations for resistance to a race of rust which has appeared on Scout Pinto. Progress also is being made in the development of a true bush-type pinto bean. Such varieties would be valuable if they could be harvested directly without pulling and windrowing.

The cooperative soils laboratory, maintained and operated by the Experiment Station, Extension Service and the Soil Conservation Service, processed 5,593 soil samples involving 41,215 separate analytical determinations.

Soil survey and land classification work was in progress in 23 Colorado counties, in cooperation with the state soil scientist of the Soil Conservation Service.

Improvement work on high-altitude irrigated meadows showed that a combination of fertilization and good water management gave substantial increases in forage production and crude protein content of that forage.

Studies on reclamation and management of salt-affected soils were continued at the experimental areas near Grand Junction and Mosca-Hooper. In general, results of these studies have shown leaching will minimize yield-depressing effects of the soil salts. The tests also pointed up yield advantages to be gained from crop rotation, and proper fertilization.

Operation of a drainage well near Grand Junction during the irrigation season was effective in lowering the water table enough to permit good crop growth.

Variety trials involve many different crops and many different locations in the state.



Livestock

A winter feeding test near Hayden showed that weaner grade Hereford heifer calves fed non-fertilized hay gained 1.24 pounds per day, compared with 1.03 pounds for those fed nitrogen-fertilized hay. However, increased forage yields from the fertilized hay more than offset the lower gains and resulted in more beef per acre.

Feeding stilbestrol to weaner heifers under normal winter feeding methods did not increase the size of heifers for yearling breeding. At the same time, it did not interfere with conception or normal calving.

Feeding stilbestrol and aureomycin to steer calves on a high-roughage winter ration plus protein supplement showed an overall advantage, particularly when followed with stilbestrol feeding in the fattening ration.

A study of selection, inbreeding and the crossing of inbred lines within the Hereford breed indicated that:

1. Differences among groups of cows in calf crop raised appear to be associated with the breeding of those cows.
2. While rate of gain is widely used as a selection criterion for improving feed efficiency, present analyses indicate that increased mature size may be more a result than increased efficiency.
3. Much progress is being made in field testing of Fort Lewis strains in Mississippi, California and Oklahoma.

A feeding experiment showed corn silage pellets to be inferior to either green corn pellets or corn silage as a feed for cattle. When daily intake of green corn pellets was regulated at 15 pounds per animal per day, equal to the dry feed in 45 pounds of corn silage fed to other animals, daily gain and feed efficiency were lower than that of corn silage-fed cattle. Further research is needed to determine supplements required to improve nutritional value of green corn pellets for cattle.

Comprehensive studies were made on pelleted rations for lambs. The largest gains were made on pelleted rations consisting of 30 percent grain and 70 percent roughage and 40 percent grain and 60 percent roughage. However, surprisingly good gains also were made on 100 percent dehydrated alfalfa and 100 percent sun-cured alfalfa. Adding stil-

bestrol to the rations increased gains from 10 to 19 percent on 8 to 12 percent less feed without influencing carcass grade.

Intermediate wheat grass and intermediate wheat grass-alfalfa pastures used in 1957 and 1958 have shown a 2-year average of 35.6 and 58.1 pounds of beef per acre; 203.6 and 251.7 pounds seasonal gain per animal; and 1.68 and 2.03 pounds per head daily gain, respectively. No bloating was encountered on the wheat grass-alfalfa mixture.

Alfalfa in swine rations was tested, with ground alfalfa included at the rates of 10, 30 and 50 percent of the entire ration and the 30 and 50 percent mixes being fed also as a completely pelleted ration. The ration containing 10 percent ground alfalfa was the basic ration.

The ration containing 30 percent ground alfalfa required 7 to 20 days longer to finish hogs to market weight. Daily gain was reduced by 10 to 20 percent and 14 to 30 percent more feed was required per 100 pounds gain. But because the 30 percent ration was cheaper, feed cost per 100 pounds of gain was the same as the basic ration and a meatier hog was produced.

Hormone implants for replacement dairy cattle were studied. Heifers ranging in age from five to 11 months were implanted with 20 mg. of estradiol and 200 mg. of progesterone. Control animals of the same breed and same approximate age and weight were fed and handled in the same way as the treated animals.

At the end of 100 days, treated and control animals had average daily gains respectively of 2.00 and 1.72 pounds per day and at the end of 150 days, 1.74 and 1.56 pounds per day.

Treated animals had excessive udder development but no other differences were apparent. There were no differences in genital development as determined by rectal palpation. Breeding efficiency of implanted heifers has been poor, but only four treated and five control animals have been bred at this time.

Other tests have indicated that (1) more attention should be paid to roughage quality since it can mean either greater production or lower cost of production, and (2) Holstein bull calves can be marketed profitably as beef.



Performance testing is emphasized in livestock research work conducted at the San Juan Basin branch station at Fort Lewis. Here a field day crowd hears results.

Insect Control

In cooperation with various state and federal agencies, development of the principal economic insect populations was followed during the growing season. Technical data on the various species of insects and related forms affecting the crops, livestock, processing industries, and public health were accumulated and summarized. Weekly reports helped growers determine whether control methods were necessary.

An investigation of insect damage affecting marketability of canning tomatoes was carried out in the Arkansas Valley. Tests of five different insecticides for control of tomato fruitworm were

made at Rocky Ford. However, fruit worm infestations were so light that evaluating the insecticides was extremely difficult.

Observations were made on the cooperative grasshopper control program in Yuma county. Spraying was conducted from June 28, 1958, to July 5, 1958, and observations were made from June 27 to July 12. The observations indicated that 2 ounces actual Aldrin per acre applied by aircraft in the early morning is highly effective in controlling a rangeland grasshopper infestation, and does not seriously affect honey bees in the same area.

Horticulture

A new potato variety, "Navajo," was introduced this year for Colorado growers. It is white skinned, scab resistant, has high tolerance to the early blight disease and is adapted to all areas of the state. It is expected to partially meet requirements of the chipping industry.

Another white potato variety, soon to be named and introduced, is highly resistant to scab and is slightly russeted. It is also a high quality baker and can be used for chipping.

Seed production of new hybrid onions has been delayed by difficulties of commercial seed companies in producing seed in quantity. Seed of a late hybrid from the Rocky Ford area is being produced in both Idaho and Colorado for distribution to growers in 1960. This is a better storage type and has resistance to purple blotch disease. The final field test on an early hybrid for the Arkansas Valley is being made this year before release.

A new tomato variety, "Kenosha," went into extensive production trials this year in all canning districts of the state. This variety should be well adapted to all canning districts. A new hybrid, resistant to verticillium wilt, is also being widely tested for release as soon as possible. All new varieties and hybrids developed under the project were higher in yield and quality than the standard canning varieties now used.

The new carnation variety, "Moonlighter," a crimson-striped novelty type carnation, was awarded the silver medal in national competition by the American Carnation Society in February 1959.

Irrigation tests with two fescues and two blue grasses were conducted at the horticulture farm northeast of Fort Collins. An inch per week irrigation in addition to rainfall kept all four varieties in good shape. One inch every other week was inadequate except for short, cool periods; an inch every

third week resulted in brown and dry bluegrasses most of the summer. Fescues suffered least but they are coarse and bunchy, hence not suitable for

good turf. Merion bluegrass showed lack of water as soon as Kentucky bluegrass. Rust was also evident on Merion after mid-summer.

Poultry

A study on market grades of dressed turkeys showed a definite relationship between floor space and market grade for male turkeys. Male birds allowed five square feet of floor space per bird had a finish score of 4.03 and graded about 85 percent A and 15 percent B. Those allowed four square feet had a finish score of 3.98, graded about 79 percent A, 17.4 percent B, and 3.6 percent C. Males allowed three square feet had a finish score of 3.89, graded 66 percent A, 30.3 percent B, and 3.7 percent C.

Floor space allotments had little influence on market grades of female birds.

This study also compared various strains with regard to market yield and grade of carcass. Also considered were rearing conditions and feeding programs. In general, carcasses which produced the highest yields also produced the highest percent grade A. The strain which had the highest percent grade A carcasses among the females also had the highest percent grade A carcasses among the males and was the second-high yielding strain in dressing percentage.

Rearing toms and hens separately on range gave more grade A carcasses than where both sexes were raised on range together.

During the past year a study concerning protein level as it affects egg production was terminated. Levels of protein employed were 17 percent, 15 percent, 13 percent, and 11 percent. There was little difference in egg production among the three higher protein levels but the 11 percent protein level was noticeably inadequate.



What types of range shelters give the best and coolest shade for turkeys is one of many questions which experiment station poultry scientists are exploring.

Agricultural Engineering

A three-year program using commercial and experimental equipment for planting grass has been completed in cooperation with the USDA Agricultural Research Service. Development of experimental planters attracted attention of equipment manufacturers and at least two are in the process of producing grass seeding machines suitable for use by eastern Colorado farmers and ranchers.

Tests continued, in cooperation with the Great Western Sugar Company, on sugar beet planting equipment.

A pressing need in future irrigation development is an improved way to predict extent of drainage problems to be expected after water is available to the land. Measures which can alleviate an existing drainage problem, or prevent such a problem from becoming serious, are essential to future irrigation development.

Significant progress has been made toward meet-

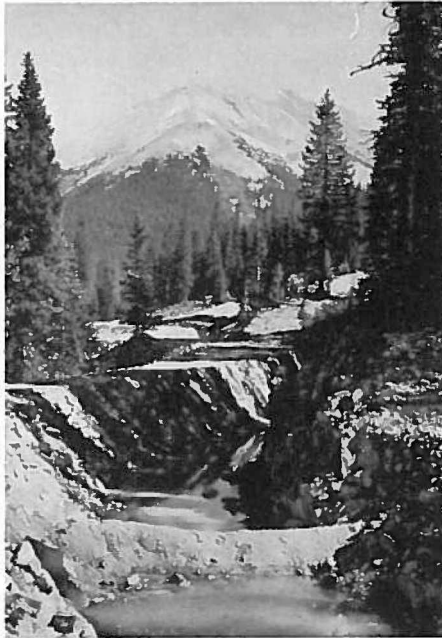
ing these needs. The necessity of investigating the entire mantle above parent rock has been demonstrated. Detailed knowledge of this entire zone is essential to a complete understanding of the groundwater occurrence and movement. This is in turn the foundation for any prediction of drainage problems or the application of remedial measures to existing drainage problems.

Procedures and equipment have been developed which will permit the intensive investigations as outlined above to be made economically. Noteworthy is the development of simple and cheap electrical resistivity equipment for obtaining deep stratification data. The Soil Conservation Service in Colorado has used it with good success and several Agricultural Experiment Stations have built and used equipment following plans furnished from this project. Agricultural Research Service engineers have borrowed this equipment for use in North Dakota.

An experimental planter tested by the agricultural engineering section to determine what type of planter does the best job of spacing sugar beets.



Engineering Research



Engineering studies have shown that bentonite and sawdust can be mixed and utilized to help seal leaky irrigation canals in mountain areas.

Semi-annual measurements of water table levels were again taken in the South Platte and Arkansas River Valleys and their major tributaries, continuing the work begun by the Experiment Station in 1929. Water levels in general are back to elevations common before the 1950-56 drouth period. Exceptions occur in tributary valleys which have no surface water for irrigation, such as Kiowa, Bijou, and Beaver creeks in which water table levels are still on the decline.

Work on development and calibration of trapezoidal measuring flumes has been done. Preliminary tests have shown that they may be superior to those with rectangular cross-sections.

Research and development work involving sealing irrigation canals by bentonite sedimenting has resulted in two methods for sealing canals: (1) for fractured rock, a multiple dam system involving use of both bentonite and saw-dust, and (2) for sand and loessial soils, the Wyoming method involving use of a bentonite-water mixture with harrowing of canal bottom and sides during the ponding and sealing procedure.

Forestry and Range Management

Northwest Colorado grazing tests showed average beef gains per acre on various pastures as follows:

On untreated sagebrush range, 9.2 pounds; sagebrush burned and pasture reseeded, 22.2 pounds; sagebrush burned, 13.7 pounds; and sagebrush treated with herbicides, 11.7 pounds. All gains were slightly less than the average of the past five years on all pastures. It appears that the weight-gains from the seeded pastures are leveling off after decreasing from an early peak of 39.9 pounds per acre in 1953.

In a season-of-grazing test, the season-long use of crested wheat-grass produced 22.7 pounds of beef per acre and the early season use produced 21.8 pounds. This is the third consecutive year that the two systems have resulted in about the same beef gains. Likewise, similar gains were obtained on unimproved sagebrush range grazed both season-long and the last half of the summer. Thus, to date, there has been no advantage to the early season use of crested wheatgrass, and to deferred grazing of native range over season-long use.

Additional data on effects of 2,4-D on pocket gophers were obtained by the Experiment Station and the Denver Wildlife Research Laboratory. About 85 to 95 percent of the gopher population dies off within one year following treatment, and there has been no increase in numbers two years after treatment. Thus it appears that spraying range with 2,4-D reduces gopher numbers and also appears to interfere with successful reproduction and survival of young.

First steps were taken to develop a machine which may aid gopher control. The machine was built by the CSU Hydraulics Laboratory to specifications of the Cooperative Gopher Control Project. The machine builds an artificial pocket gopher burrow and deposits poisoned bait in one operation. In initial tests this machine looks promising.

In the field of wood utilization, preservation and seasoning, major effort was development of new and expanded instructional and research facilities. The new wood utilization laboratory will permit a much improved research effort in this area.

Home Economics



Among home economics research projects are some dealing with the use of the electronic oven.

A basic cookie mix containing non-fat dry milk powder was developed at 5,000 feet and adjusted for use at altitudes of 7,500 and 10,000 feet. Recipes are being developed for various kinds of cookies made from the mix. To date, recipes for seven different drop cookies and one bar cookie have been tested.

Recipes for several baked products made with flours other than wheat flour are being adjusted for high-altitude baking.

A study is in progress to determine palatability of fresh and frozen vegetables cooked by microwave energy.

Computation of space requirements for storage of reserve supplies of food in western farmhouses has been completed. The data have been tabulated and the analysis nearly completed to establish recommended dimensions of storage facilities.

Pueblo county was selected as one of five areas to be included in a regional consumer study to determine preference for two fruits (peaches and strawberries) and two vegetables (green beans and broccoli) in both fresh and processed forms. This was part of a regional project and findings are being analyzed at the California station.

Botany and Plant Pathology

At least a dozen different chemicals were tested for ability to control dwarf bunt of winter wheat. None of the seed treatments gave effective control.

Determining the distribution and economic significance of weeds and poisonous plants of the state was continued. Patches and infestations of weeds with creeping rootstocks were located and noted on county maps, following procedures of former years. Several weeds new to the state were located in 1958, bringing the total of these creeping-rooted invaders to about 30.

Mapping distribution of major poisonous plants in Colorado was also continued. Testing of two dry (granular) herbicides and of four applied

in liquid form was started on plots in tall larkspur areas on Black Mesa.

Soil fumigation tests involving sugar beet diseases were conducted in two locations. Various soil fumigants were tested for effect on nematodes in sugar beets.

Two of the best treatments were D-D and Telone. In both test areas, beet stand was increased and root tonnage was double that of untreated plots. E.D.B. increased root tonnage significantly but roots from each of the 13 plots treated with this material were severely "sprangled." Close examination of all roots from E.D.B.-treated plots seemed to indicate a killing of the main or tap root at a 5- or 6-inch depth, precisely the depth of application. Consequently, numerous lateral roots were formed.

Seed Laboratory

The seed laboratory operates primarily as a service agency on a limited state appropriation and fees received for its testing services. The appropriation has remained constant for nine years. This has necessitated an increase in fees from time to time and another increase soon is inevitable.

Service work is divided into two areas: (1) for our constituents, and (2) for the State Department of Agriculture in connection with enforcement of the State Seed Law.

In weed control work, most of the effort continues to be directed toward control of creeping perennial weeds through soil and foliage treatments.

Soil sterilant tests, conducted in 60 separate projects, involved 17 chemical formulations and 16 weed species.

Sodium chlorate and heavy rates of 2,4-D, or formulations containing either of these materials, continue to be the most generally effective and practical herbicides against deep-rooted perennials.

Chemistry and Endocrine Research

For several years quality characteristics of peaches have been measured by station chemists. Data are now being assembled and analyzed. In all, 82 varieties and strains have been tested. The fruit was processed by canning and freezing to evaluate suitability of each variety for these types of use. Various chemical analyses also were conducted. Most varieties rated high for freezing also ranked high for canning.

The commercial formula for frozen peach topping was modified to apply to home use and provision was made to get this information to home owners in the form of an illustrated pamphlet showing how to make and use the topping.

More than 60,000 feedlot steers and heifers have been treated with various paste hormone combina-

tions containing long-acting, esterfied steroids for improvement in rate of gain and fattening. Results were highly satisfactory and resulted in clearance by Food and Drug Administration, as well as commercial release of a triple combination of hormone esters under the name of "Rapigain."

A single injection of this combination results in an increase in average daily gain of 0.35 pound over that of the control and in a total of 0.5 pound additional gain when 10 mg. of stilbestrol per head per day is fed simultaneously. Of particular interest is the response of beef heifers to this treatment, with or without additional oral DES since the daily gain approaches that usually seen with beef steers. All edible tissues of cattle have been found to be devoid of any hormonal residue.

Economics and Sociology

Financing farm housing was part of a broader study conducted jointly by Colorado State University, the University of Missouri, and Alabama Polytechnic Institute. About 100 heads of households were interviewed in eastern Colorado to determine their experiences in financing farm home construction and improvement. This study was financed from a Housing and Home Finance Agency grant. The work is nearing completion. The second phase, securing data from lending agencies

active in the area, will be completed during the summer of 1959.

Major work on a project involving alternatives to wheat in eastern Colorado was reported in a bulletin entitled "Economic Possibilities of Seeding Wheat Land to Grass in Eastern Colorado." This project will be terminated at the close of the current fiscal year.

Data on range improvement work in sagebrush areas of Colorado are being analyzed and prepared

for publication. The project will be terminated at the end of this fiscal year.

A study of packing and shipping operations of flower wholesalers is being completed. An objective is to develop an efficient method of selecting and packing cut flowers, mainly carnations, at the wholesale level. A cost analysis of the operations is included in the study. Concurrently, related work

is under way on treatment of flowers in preparation for shipping and innovations in packing methods and in storage.

Also under study by this section are problems associated with ground water law and ground water use in Colorado, factors affecting increases in sale of dairy products and factors that influence consumer acceptance of beef.

Animal Diseases

An experimental bacterin significantly reduced incidence of shipping fever in cattle on one ranch. In another herd, the reduction was less significant. Further evaluation of this bacterin is indicated.

A test dealing with brisket disease, also known as high mountain disease, involved 20 yearling Hereford steers of homogenous breeding and origin. They were divided into two equal groups. One group was placed at 10,000 feet, the other at 5,000. Both groups were kept in corrals and were fed identical rations for the duration of the experiment. The test lasted 224 days.

A few outstanding changes were noted for animals at 10,000 feet:

1. Four developed severe pulmonary hypertension and the remaining six developed pulmonary hypertension to a more moderate but statistically significant degree.

2. One of the animals in the severely hypertensive group developed clinical congestive right heart failure during the week of the 155th day. A second animal of the severely hypertensive group showed lesions of moderate congestive heart failure at the end of the experiment.

3. Hearts from animals in the high altitude group showed measurable right ventricular hypertrophy with the severely hypertensive group having the greatest increase.

Information and Publications

Fulfilling the obligation to bring research results to the public was the responsibility of the Information Service. Educational news releases and feature stories and radio and television programs were utilized to help discharge that responsibility.

In addition, a quarterly Experiment Station publication with a circulation of about 3,500 was utilized to report research.

Much of the detailed information on research results is published in progress reports known as general series papers, in scientific series papers and in other publications such as bulletins, pamphlets and circulars. The Information Service was responsible for processing for publication the following such publications:

General Series Papers

<i>GSP Number</i>	<i>Title</i>
690	Progress Report, San Luis Valley Branch Station
691	North Park Country Market Report
692	Insect Control Recommendations for Colorado Section 1, General Information
693	Insect Control Recommendations for Colorado Section 2, Cereal Crop, Field Crop, 4-H Crop Insects
694	Insect Control Recommendations for Colorado Section 3, Stored Grain Insects
695	Insect Control Recommendations for Colorado Section 4, Vegetable Crop Insects
696	Insect Control Recommendations for Colorado Section 5, Livestock Insects
697	Insect Control Recommendations for Colorado Section 6, Fruit Insects
698	Insect Control Recommendations for Colorado Section 7, Experiment Station Report
699	Performance Tests of Hybrid Corn Varieties Grown in Various Regions of Colorado in 1958
700	Progress Report—Arkansas Valley Branch Station
701	Snow Survey, February
702	Snow Survey, March
703	Snow Survey, April
704	Snow Survey, May
705	Feeders' Day
706	Report on Herbicides
707	Progress Report—Southeastern Colorado Branch Station
708	1958 Report . . . Small Grain and Forage Crops Work at the San Juan Basin Branch Station
709	Beef Cattle Improvement Day and Auction

Scientific Series Papers

- Alexander, A. F. and Jensen, Rue. "Gross Cardiac Changes in Cattle with High Mountain (Brisket) Disease and in Experimental Cattle Resident at High Altitude." *Amer. Journal of Vet. Research. Sci. Series 587.*
- Brown, W. W. and Chow, T. L. "Field Trials of Infectious Bovine Rhinotracheitis Vaccine." *Journal Amer. Vet. Med. Assn. Sci. Series 566.*
- Carlson, W. D. "Pneumoretroperitoneum in the Dog." *Journal Amer. Vet. Med. Assn. Sci. Series 580.*

- Charkey, Lowell W. and Thornton, Paul A. "A Simple Method For Estimating Oxygen Consumption of Small Animals." *Proc. of Soc. for Experimental Biology and Medicine. Sci. Series 577.*
- Charkey, L. "Methionine, Iodocasein, and O₂ Consumption of Chicks." *Jour. of Nutrition. Sci. Series 605.*
- Clark, F. E.; Beard, W. E.; Smith, D. H. "Dissimilar Nitrifying Capacities of Soils in Relation to Losses of Applied Nitrogen." *Soil Sci. Soc. Proc. Sci. Series 606.*
- Clark, F. E. "Influence of the Microbial Population of the Rhizosphere Upon Plant Development." *Pro. 9th Int'l. Botanical Congress. Sci. Series 614.*
- Collier, J. and Chow, T. L. "The Combined Effect of Infectious Bovine Rhinotracheitis Virus and Pasteurella Hemolytica On Cattle." *Amer. Jour. Vet. Research. Sci. Series 618.*
- Corey, A. and Kemper, W. "Concept of Total Potential and Its Limitations." *Soil Sci. Soc. of Amer. Proc. Sci. Series 615.*
- Dotzenko, A. D. and Dean, J. G. "Germination of Six Alfalfa Varieties at Three Levels of Osmotic Tension." *Agron. Journal. Sci. Series 569.*
- Dotzenko, A. D. and Stegmeier, W. D. "Pollen Shedding in Russian Wild-Rye Grass." *Agron. Journal. Sci. Series 591.*
- Dudley, J. W. "Effects of a Selective Gametocide on Sugar Beets." *Jour. Amer. Soc. Sugar Beet Tech. Sci. Series 597.*
- Dudley, J. W. and Powers, L. "Population Genetic Studies on Sodium and Potassium in Sugar Beets." *Jour. Amer. Soc. Sugar Beet Tech. Sci. Series 589.*
- Durrell, L. W. and Norton, C. "Phytoplankton of Lakes of Grand Mesa, Colo." *Transactions of Amer. Microscopica Soc. Sci. Series 594.*
- Durrell, L. and Schaal, L. "The Nuclear Material in Streptomyces." *Mycopathologia et Mycologia Applicata Tebor Benedix. Sci. Series 612.*
- Frandsen, R. D.; Belling, T. H.; Molello, J. "Racing Greyhound Temperatures." *Jour. Amer. Vet. Med. Assn. Sci. Series 578.*
- Hanan, J. J. "Influence of Day Temperatures on Carnations." *Amer. Soc. Hort. Sci. Proc. Sci. Series 599.*

- Hanan, J. J. and Holley, W. D. "A Temperature House for Plant Research." Proc. of Amer. Soc. for Hort. Sci. Sci. Series 609.
- Hansen, Richard. "Age and Reproductive Characteristics of Mountain Pocket Gophers." Jour. Amer. Vet. Med. Assn. Sci. Series 593.
- Harrill, I. K. and Dyar, E. G. "Some Effects of Dietary Fat and Supplemental Riboflavin Upon Cholesterol Concentration in the Serum and Liver of the Rat." Jour. of Nutrition. Sci. Series 581.
- Harrill, I. K.; Kylen, A. M.; Weis, A.; Dyar, E. G. "Relation of Dietary Fat and Supplemental Riboflavin to the Concentration of Riboflavin Containing Coenzymes and Total Lipids in Tissue of the Rat." Jour. of Nutrition. Sci. Series 582.
- Harris, L. A.; Faulkner, L. C.; Stonaker, H. H. "The Effect of Inbreeding on the Estimated Breeding Soundness of Yearling Hereford Bulls." Jour. of Amer. Sci. Sci. Series 590.
- Hervey, D. F. "Preference for Native Forage Species and Related Grazing Habits at the Eastern Colo. Range Station." Jour. of Range Management. Sci. Series 602.
- Hill, H. J.; Faulkner, L. C.; Carroll, E. J. "The Evaluation of Bulls for Breeding Soundness." Jour. AVMA. Sci. Series 600.
- Hinders, R. and Ward, G. "The Influence of Various Feeds on *in vivo* and *in vitro* Production of Volatile Fatty Acids." Jour. of Dairy Sci. Sci. Series 586.
- Kemper, W. D.; Robinson, C. W.; Golus, H. M. "Growth Rates of Barley and Corn as Affected by Changes in Moisture Stress." Soil Sci. Sci. Series 607.
- Kemper, W. D. "Water and Ion Movement in Thin Films as Influenced by the Electrostatic Charge and the Diffuse Layer of Cations Associated with Clay." Soil Sci. Soc. Amer. Proc. Sci. Series 608.
- Krouch, E. D. "Inexpensive Sugar Beet Cuttings." Jour. Amer. Soc. S. B. Tech. Sci. Series 603.
- Miller; Jensen; Gilroy. "Bacteremia in Pregnant Sheep Following Oral Administration of *Vibrio* Fetus." Jour. AVMA. Sci. Series 596.
- Miller, R. and Bond, H. "Burrowing Activity as an Index of Pocket Gopher Abundance." Jour. of Wildlife Management. Sci. Series 613.
- Olsen, S. R. and Watanabe, F. S. "Solubility of Calcium Carbonate in Calcareous Soils." Soil Sci. Sci. Series 570.
- Olsen, S. R. and Watanabe, F. S. "Behavior of P32 in Tracer Studies." Soil Sci. Sci. Series 584.
- Patterson, Stuart, M.D. "Radiation Hazards to the Practicing Doctor of Veterinary Medicine." Jour. AVMA. Sci. Series 583.
- Payne, M.; Powers, L.; Maag, G. "Population Genetic Studies on the Total Nitrogen in Sugar Beets." Jour. Amer. Soc. of Sugar Beet Tech. Sci. Series 585.
- Petersen, L. J. "Studies of the Relationship of Inoculum Density and Infection of Wheat Unedospores of *Puccinia Graminis*." Phytopathology. Sci. Series 572.
- Petersen, L. J.; Baker, Ralph; Skiver, R. E. "Control of Fusarium Stem Rot of Carnations, I. Application of Fungicides to Mother Blocks." Plant Disease Reporter. Sci. Series 611.
- Pierson, R. E. and Aanes, W. A. "Urea Poisoning in Feeder Lambs—A Case Report." Jour. AVMA. Sci. Series 592.
- Powers, L. "Genetic Improvement of Processing Quality in Sugar Beets." Jour. Amer. Soc. of Sugar Beet Tech. Sci. Series 574.
- Robertson, D. W.; Haus, T. E.; Hoff, J. G. "Frost Injury to Malting Barley." Agron. Jour. Sci. Series 598.
- Rubin, Robert. "The Effect of Bephenium Embonate ("Franten") on Nematodirus Helvetinaus and other Gastro-intestinal Nematodes In Cattle." Jour. AVMA. Sci. Series 617.
- Rumbaugh, M. D. "Test Weight and Maturity of Corn." Agron. Jour. Sci. Series 568.
- Rumbaugh, M. D. "The Correlation of Corn, Grain and Forage Yields in Two Environments." Agron. Jour. Sci. Series 595.
- Salisbury, F. "Growth Regulators & Flowering II. The Cobaltous Ion." Plant Physiology. Sci. Series 588.
- Smith, D.; Nakayama, F. S.; Clark, F. E. "Gas-Solid Chromatographic Determination of Nitrogen Dioxide in the Presence of Oxygen." Analytical Chemistry. Sci. Series 604.
- Smith, D. H. and Clark, F. E. "Some Useful Techniques and Accessories for Adaptation of the Gas Chromatograph to Soil Nitrogen Studies." Soil Sci. Soc. of Amer. Proc. Sci. Series 610.
- Stevens, J. G. and Chow, T. L. "Effects of Some Fixatives on the Inclusion Bodies of Infectious Bovine Rhinotracheitis—A Preliminary Report." Proc. Soc. Exp. Bio. & Med. Sci. Series 601.
- Thornton, P. A. and Moreng, R. E. "Further Evidence on the Value of Ascorbic Acid for Maintenance of Shell Quality in Warm Environmental Temperature." Poultry Science. Sci. Series 571.
- Thornton, P. A. and Moreng, R. E. "The Effect of Ascorbic Acid in the Diet of Adult Chickens on Calcium Utilization by the Progeny." Jour. of Nutrition. Sci. Series 575.
- Udall, R. H. "Studies on Urolithiasis, III and IV." Jour. Amer. Vet. Research. Sci. Series 567.
- Ward, G. M. and Vair, C. "A Calcium Lactate—Aluminum Hydroxide Preparation as a Prophylaxis for Parturient Paresis." Amer. Jour. Vet. Research. Sci. Series 579.
- Ward, G. M.; Story, C. D.; Johnson, R. M. "Thiamine Requirement of Growing Chicks as Influenced by Breed Differences." Poultry Science. Sci. Series 619.
- Will, D. H. and Udall, R. H. "Calcium and Phosphorus Absorption and Its Relation to Growth in the Dog." Am. J. Vet. Res. Sci. Series 573.
- Willhite, F. M. "Some Places to Increase Efficiency in Forage and Livestock Production." Western Range and Fertilizer Conference Proc. Sci. Series 576.

Technical Bulletins

<i>Number</i>	<i>Title</i>	<i>Author</i>
63	Sugar Beet Labor in Northern Colorado	Davis and Metzler
64	Foliar Analysis of Elberta Peach Leaves in Relation to Potassium Fertilization	A. M. Binkley
65	Movement of Colorado Cattle	Terry Norman and Don Jones
67	Stratum Survey Techniques for Drainage Investigation on Irrigated Land	Norman Evans

Popular Bulletins and Pamphlets

<i>Number</i>	<i>Title</i>	<i>Author</i>
499-S	Venison on the Menu	Dyar and Wagar
500-S	Water Table Fluctuations in Eastern Colorado	W. E. Code
501-S	Breeding for Beef	H. H. Stonaker
502-S	Turkey Breeding Practices	Moreng and Hartung
503-S	Nectar and Pollen Plants of Colorado	Wilson, Moffett, Harrington
504-S	Colorado's Ground Water Problems: Ground Water in Colorado	Morton Bittinger
4-S	Frozen Peach Topping	Gestur Johnson

Administrative Officers and Staff

State Board of Agriculture

George McClave	McClave	John H. Brownell	Hooper
Warren H. Monfort	Greeley	Walter B. Cooper	Fort Collins
Walter G. Lehrer	Denver	Amer Lehman	Idalia
Chester K. Enstrom	Grand Junction	David E. McGraw	Durango

Experiment Station Officers

W. E. Morgan, LL.D.	President	G. W. Hamilton, B.S.	Administrative Assistant
S. S. Wheeler, Ph.D.	Director	Joseph M. Whalley, M.S.	Treasurer

Experiment Station Staff

Alexander, A. F., D.V.M.	Assistant Veterinary Pathologist	Everson, A. C., M.S.	Assistant Range Conservationist
Altman, Jack, Ph.D.	Assistant Plant Pathologist	Fauber, Herman, M.S.	Assistant Horticulturist
Baker, R. R., Ph.D.	Assistant Plant Pathologist	Faulkner, L. D., D.V.M.	Assistant Veterinary Pathologist
Barrington, R. D., B.S.	Associate Agricultural Engineer	Flint, Jean, D.V.M., Ph.D.	Pathologist and Bacteriologist
Bartz, Elisabeth, M.S.	Junior Home Economist	Foskett, R. L., Ph.D.	Associate Horticulturist
Beach, G. A., M.S.	Horticulturist	Franklin, W. T., M.S.	Assistant Agronomist (Soils)
Benjamin, Maxine, D.V.M., M.S.	Associate Bacteriologist	Fults, J. L., Ph.D.	Chief Botanist and Plant Pathologist
Bevard, G. E., B.A.	Station Editor	Gassner, F. X., D.V.M., M.S.	Endocrinologist
Binkley, A. M., M.S.	Chief Horticulturist	Gilroy, J. M., Ph.D.	Assistant Veterinary Pathologist
Bittinger, Morton W., M.S.	Assistant Civil Engineer	Green, F. M., B.S.	Superintendent, Western Slope Branch Station (Austin)
Blackburn, T. R., M.S.	Assistant Animal Husbandman	Griner, L. A., D.V.M., M.S.	Associate Veterinary Pathologist
Blood, Dwight M., M.S.	Assistant Agricultural Economist	Guard, Ada May, A.B.	Junior Chemist
Bowman, Ferne, Ph.D.	Home Economist	Hacker, Robert G., M.S.	Assistant Botanist
Bregle, K. G., M.S.	Assistant Agronomist	Hansen, R. M., Ph.D.	Assistant Biologist
Bulla, A. D., B.S.	Junior Entomologist (Gr. Jct.)	Harrill, I. K., Ph.D.	Assistant Home Economist
Capener, W. N., Ph.D.	Assistant Agricultural Economist	Harrington, H. D., Ph.D.	Botanist
Carlson, R. E., Ph.D.	Associate Chemist	Haus, T. E., Ph.D.	Associate Agronomist (Crops)
Chamberlain, A. R., Ph.D.	Chief Civil Engineer	Hazaleus, M. H., M.S.	Associate Animal Husbandman
Chapman, H. W., Ph.D.	Associate Horticulturist	Hedrick, E. T., B.S.	Field Supervisor, Artificial Breeding—Bull Testing Service
Charkey, L. W., Ph.D.	Chemist	Hervey, D. F., Ph.D.	Chief Range Conservationist
Chow, Fu Ho, Ph.D.	Temporary Assistant Chemist	Hoerner, J. L., M.S.	Entomologist
Chow, T. L., Ph.D.	Associate Virologist	Holley, W. D., M.S.	Horticulturist
Collier, J. R., D.V.M., Ph.D.	Associate Bacteriologist	Homan, Norman, B.S.	Assistant Dairy Husbandman, Artificial Breeding—Bull Testing Service
Combs, May, M.S.	Associate Home Economist	Hopkins, L. L., B.S.	Junior Animal Husbandman
Connell, W. E., M.S.	Animal Husbandman	Hudek, Henry, Ph.D.	Associate Agricultural Economist
Cooper, Verne, Jr., B.S.	Superintendent, San Luis Valley Branch Experiment Station (Center)	Huey, B. M., Ph.D.	Associate Forester
Corey, A. T., Ph.D.	Civil Engineer	Jenkins, Leonard E., M.S.	Junior Entomologist
Creek, C. R., M.S.	Associate Agricultural Economist	Jensen, Rue, D.V.M., Ph.D.	Chief, Animal Disease Section and Veterinary Pathologist
Dahl, B. E., M.S.	Assistant Range Conservationist	Jones, D. F., M.S.	Junior Agricultural Economist
Daniels, L. B., Ph.D.	Chief Entomologist	Johnson, D. D., Ph.D.	Associate Agronomist (Soils)
Danielson, R. E., Ph.D.	Associate Agronomist (Soils)	Johnson, Duane, M.S.	Junior Chemist
Daugherty, Ford C., M.S.	Associate Animal Husbandman	Johnson, Gestur, M.S.	Assistant Chemist
Davis, Edwin N., M.S.	Assistant Agricultural Engineer	Kamal, Adel S., Ph.D.	Associate Entomologist
Davis, I. F., Jr., Ph.D.	Assistant Agricultural Economist	Kano, Adeline, B.S.	Junior Chemist
Deem, A. W., D.V.M., M.S.	Veterinary Pathologist	Keiss, R. E., M.S.	Junior Bacteriologist
Denham, Alfred, B.S.	Superintendent, Eastern Colorado Range Branch Station (Akron)	Kemper, W. D., Ph.D.	Assistant Agronomist
Dickens, L. E., Ph.D.	Assistant Plant Pathologist	King, W. B., M.S.	Assistant Chemist
Dirmeyer, Richard D., Jr., B.S.	Temporary Assistant Geological Engineer	Klinger, Bruno, M.A.	Associate Botanist
Dotzenko, A. D., Ph.D.	Assistant Agronomist (Crops)	Lane, G. H., M.S.	Associate Plant Pathologist
Durham, H. A., M.A.	Assistant Chemist	Leonard, W. H., Ph.D.	Agronomist (Field Crops)
Dyar, Elizabeth, Ph.D.	Chief Home Economist	Lindholm, H. B., M.S.	Junior Animal Husbandman
Eckard, Melvin, B.S.	TV and Radio Specialist	Livingston, C. H., M.S.	Assistant Plant Pathologist
Enos, Howard, B.S.	Assistant Poultry Husbandman	Lorenzen, R. T.	Assistant Agricultural Engineer
Esplin, A. L., Ph.D.	Associate Animal Husbandman	Maag, Dale D., Ph.D.	Associate Chemist
Evans, N. A., M.S.	Chief Agricultural Engineer and Associate Irrigation Engineer	Maag, Grace, B.S.	Junior Chemist

Mann, H. O., M.S. Superintendent, Southeastern Colorado Branch Station (Springfield)

Marion, J. H., B.S. Assistant Agronomist

Martin, John L., Ph.D. Assistant Chemist

Martin, Robert P., Ph.D. Associate Chemist

McKellar, E. K., M.S. Acting Chief Dairy Husbandman

Miller, Richard D., M.S. Junior Agronomist

Miller, Roy V., B.S. Junior Range Conservationist

Miller, Victor A., D.V.M. Assistant Veterinary Pathologist

Molello, Joseph A., D.V.M. Junior Veterinary Pathologist

Moreng, R. E., Ph.D. Chief Poultry Husbandman

Orsborn, J. S., D.V.M. Junior Veterinary Pathologist

Page, Edna, Ph.D. Associate Home Economist

Parke, R. V., M.S. Assistant Botanist

Parshall, Maxwell, B.S. Meteorologist

Patton, A. R., Ph.D. Chemist

Paulson, W. H., B.S. Assistant Agronomist, San Juan Basin Branch Station (Hesperus)

Payne, Merle G., M.S. Associate Chemist

Pugh, Wm. J., B.S. Assistant Engineering Aide (Gr. Jct.)

Pyke, W. E., Ph.D. Chief Chemist

Quist, J. A., Ph.D. Assistant Entomologist (Austin)

Rehnberg, R. D., Ph.D. Chief Economist

Remmenga, E. E., Ph.D. Research Statistician

Riddell, Kent, B.S. Assistant Animal Husbandman, San Juan Branch Station (Hesperus)

Robertson, D. W., Ph.D. Chief Agronomist

Robinson, A. R., M.S. Assistant Irrigation Engineer

Robinson, C. W., B.S. Assistant Agronomist (Gr. Jct.)

Rogers, E. A., M.S. Assistant Horticulturist, Western Slope Branch Station (Austin)

Romine, D. S. M.S. Associate Agronomist (Soils)

Romsdal, S. D., B.S. Assistant Agronomist

Rubin, Robert, M.S. Associate Veterinary Pathologist

Sallsbury, F. B., Ph.D. Assistant Botanist

Schleusener, Richard A., Ph.D. Assistant Civil Engineer

Schmehl, W. R., Ph.D. Agronomist (Soils)

Schulz, Edmund, M.S. Associate Civil Engineer

Siemer, Eugene, B.S. Junior Agronomist

Snyder, W. E., Ph.D. Associate Dairy Husbandman

Sonneman, W. K., B.S. Field Editor

Stevens, Jack, D.V.M. Junior Veterinary Pathologist

Stonaker, H. H., Ph.D. Acting Chief Animal Husbandman

Story, C. D., Ph.D. Associate Animal Husbandman

Sutherland, Thos. M., Ph.D. Assistant Animal Husbandman

Swanson, V. B., M.S. Assistant Animal Husbandman

Swink, Jerre F., B.S. Superintendent, Arkansas Valley Branch Station (Rocky Ford)

Terwilliger, Chas., Jr., M.F. Assistant Range Conservationist

Thatcher, T. O., Ph.D. Entomologist

Thomas, Lewis B., M.S. Director, Information Service

Thornton, B. J., M.S. Head of Seed Laboratory, Associate Botanist

Thornton, P. A., Ph.D. Assistant Poultry Husbandman

Troxell, H. E., M.F. Associate Forester

Trump, Doris, M.S. Junior Home Economist

Twomey, J. A., M.S. Assistant Plant Pathologist (Center)

Udall, R. H., D.V.M. Associate Veterinary Physiologist

Vaughan, Terry A., Ph.D. Assistant Biologist

Ward, G. M., Ph.D. Associate Dairy Husbandman

Washburn, L. E., Ph.D. Animal Husbandman

Weigle, Jack, Ph.D. Assistant Horticulturist

Weis, Adelia E., Ph.D. Associate Home Economist

Whitney, R. S., Ph.D. Agronomist (Soils)

Willhite, Forrest M., M.S. Associate Agronomist (Soils) (Grand Junction)

Wood, D. R., Ph.D. Associate Agronomist (Crops)

Wooding, Marian, M.S. Junior Home Economist

Federal Employees Cooperating

Alexander, R. R., B.S. Forester (USDA)

Bement, R. E., M.F. Forester (USDA)

Brown, H. E., M.F. Forester (USDA)

Cline, A. J., B.S. Soil Scientist (USDA)

Cole, C. V., Ph.D. Soil Scientist (USDA)

Cox, Maurice B., M.S. Agricultural Engineer (USDA)

Dean, J. G., M.S. Agronomist (USDA)

Gaskill, J. O., M.S. Plant Pathologist (USDA)

Gill, L. S., Ph.D. Plant Pathologist (USDA)

Goodell, B. C., M.F. Forester (USDA)

Greb, B. W., M.S. Soil Scientist (USDA)

Haise, H. R., Ph.D. Technical Staff Specialist (USDA)

Hawksworth, F. G., Ph.D. Plant Pathologist (USDA)

Hayes, G. Lloyd, B.S. Forester (USDA)

Heede, B. H., M.F. Forester (USDA)

Herman, F. R., M.F. Technician (USDA)

Hinds, Thomas E., B.S. Plant Pathologist (USDA)

Hoover, Marvin D., B.S.F. Forester (USDA)

Hunter, E. C., Ph.D. Agricultural Economist (USDA)

Hughes, Jay M., M.S. Research Forester (USDA)

Johnson, C. E., B.S. Superintendent, U.S. Central Great Plains Field Station, Akron (USDA)

Kemper, Wm. D., Ph.D. Soil Scientist (USDA)

Klippel, G. E., M.S. Range Conservationist (USDA)

Knight, Fred B., Ph.D. Entomologist (USDA)

Kovner, Jacob L., Ph.D. Statistician (USDA)

Landgraf, A. E., Jr., M.F. Entomologist (USDA)

Lindenmuth, A. W., Jr., B.S. Forester (USDA)

Little, Samuel N., Ph.D. Soil Scientist (USDA) (Grand Junction)

Lloyd, G. B., Jr., M.S. Forester (USDA)

Love, L. Dudley, Ph.D. Forester (USDA)

Lungren, E. A., M.S. Associate Plant Pathologist (USDA)

McLean, John, Ph.D. Senior Horticulturist (USDA)

Martinelli, Mario, Jr., Ph.D. Forester (USDA)

Miller, Robert L., B.S. Research Forester (USDA)

Mueller, Lincoln A., B.S. Technologist (USDA)

Nagel, Roy H., M.S. Entomologist (USDA)

Nelson, R. Williams, B.S. Agricultural Engineer (USDA)

Olsen, S. R., Ph.D. Senior Soil Scientist (USDA)

Paulson, H. A., M.F. Range Conservationist (USDA)

Payne, E. M., B.S. Soil Scientist (USDA)

Peterson, Geraldine P., B.S. Statistician (USDA)

Peterson, Roger, M.A. Plant Pathologist (USDA)

Powers, Le Roy, Ph.D. Principal Geneticist (USDA)

Price, Raymond, M.S. Director, Rocky Mountain Forest and Range Experiment Station (USDA)

Reid, Elbert H., B.S. Range Conservationist (USDA)

Reid, Vincent H., B.S. Biologist (USDA)

Richardson, E. V., B.S. Hydraulic Engineer (USGS)

Robecker, Melvin, B.S. Soil Scientist (USDA)

Robins, John S., Ph.D. Technical Staff Specialist (USDA)

Robinson, A. R., M.S. Agricultural Engineer (USDA)

Ronco, Frank, Jr., B.S. Forester (USDA)

Rouse, H. K., B.S. Irrigation Engineer, Gunnison (USDA)

Schaal, Lawrence, Ph.D. Associate Plant Pathologist (USDA)

Simons, Daryl B., Ph.D. Hydraulic Engineer (USGS)

Sitler, Harry, M.S. Agricultural Economist (USDA)

Smith, D. R., B.S. Range Conservationist (USDA)

Stockwell, H. J., B.S. Irrigation Engineer (USDA)

Townsend, Charles, Ph.D. Research Geneticist (USDA)

Viets, F. G., Ph.D. Technical Staff Specialist (USDA)

Washichek, J. N., B.S. Hydraulic Engineer (USDA)

Watanabe, F. S., M.S. Soil Scientist (USDA)

Whitfield, C. J., Ph.D. USDA Liaison Representative

Wilford, B. H., Ph.D. Entomologist (USDA)

Willhite, F. M., M.S. Soil Scientist (USDA) (Grand Junction)

Wygant, Noel D., Ph.D. Entomologist (USDA)

Yeager, Lee E., Ph.D. Game Management (USDI)

Financial Report for Year Ending June 30, 1959

RECEIPTS 1958-1959					DISBURSEMENTS OF FUNDS BY CLASSIFICATION FOR THE FISCAL YEAR ENDED JUNE 30, 1959													
FUNDS	Balance 7/1/58	Receipts from U. S. Treasurer	Receipts Other Sources	Total Income	Personal Services	Travel	Transporta- tion of Things	Communi- cation Service	Rents and Utility Service	Printing and Binding	Other Contractual Services	Supplies and Materials	Equipment	Miscellaneous and Other	Contributions to Retirement	Total Expenditures	Balance 6/30/59	Grand Total
Hatch	- - -	312,306.00	- - -	312,306.00	229,441.71	10,734.74	1,297.77	1,321.19	6,414.73	1,131.12	10,776.87	30,584.04	19,006.34	1,597.49	- - -	312,306.00	- - -	312,306.00
RRF	- - -	151,345.00	- - -	151,345.00	102,826.11	2,045.71	461.74	974.16	2,785.14	266.60	6,236.82	18,587.96	16,723.50	437.26	- - -	151,345.00	- - -	151,345.00
RRF Trust	- - -	22,250.00	- - -	22,250.00	10,477.61	6,589.86	126.53	1,462.34	116.64	828.34	1,011.51	926.57	710.60	- - -	- - -	22,250.00	- - -	22,250.00
General Appropriation	- - -	- - -	503,445.00	503,445.00	376,730.23	10,363.98	1,054.90	3,139.95	15,267.21	5,968.06	14,387.14	29,913.93	15,058.09	823.27	30,738.24	503,445.00	- - -	503,445.00
Mill Levy Tax	15,423.57	- - -	166,978.54	182,402.11	109,391.17	2,729.47	1,334.69	3,367.58	6,089.21	5,134.01	7,774.63	19,309.68	8,979.96	3,311.36	5,058.42	172,480.18	9,921.93	182,402.11
Vibrio Tax Fund	503.84	- - -	16,328.90	16,832.74	9,827.76	408.82	69.82	151.06	150.91	- - -	1,352.85	6,060.61	1,478.14	736.43	508.00	20,744.40	(3,911.66)	16,832.74
Station Special	5,495.47	- - -	293,367.65	298,863.12	53,813.33	7,923.35	7,923.35	1,786.84	31,807.26	2,047.20	24,094.36	77,373.64	79,463.06	18,970.89	36.00	298,865.76	(2.64)	298,863.12
Hybrid Corn	9,350.99	- - -	4,246.72	13,597.71	1,627.47	283.02	37.20	9.25	205.43	200.25	235.96	573.22	- - -	- - -	26.50	3,198.30	10,399.41	13,597.71
ARS Contracts	2,128.97	- - -	31,526.26	33,655.23	23,801.50	947.28	41.66	198.72	684.58	73.81	5,021.79	6,349.78	593.13	- - -	1,341.62	39,053.87	(5,398.64)	33,655.23
CSURF	102,843.06	- - -	132,982.33	235,825.39	71,962.34	4,073.33	678.88	1,357.77	5,431.11	2,036.67	4,887.97	23,353.64	12,084.15	3,122.87	6,789.06	135,777.79	100,047.60	235,825.39
TOTAL	135,745.90	485,901.00	1,148,875.40	1,770,522.30	989,899.23	46,099.56	6,890.03	13,531.85	68,952.22	17,686.06	75,779.90	213,033.07	154,096.97	28,999.57	44,497.84	1,659,466.30	111,056.00	1,770,522.30