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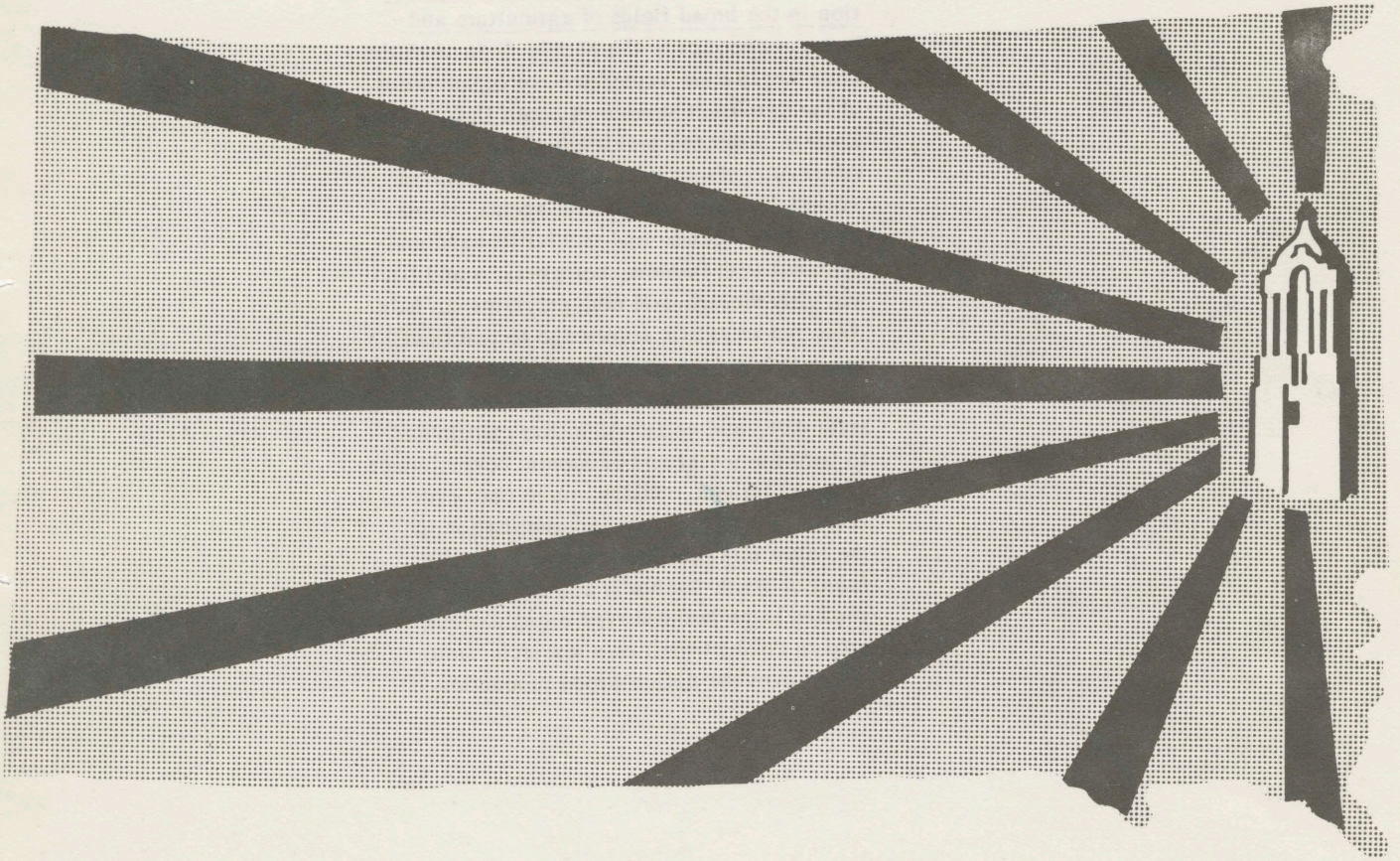
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South Dakota EXTENSION

1963



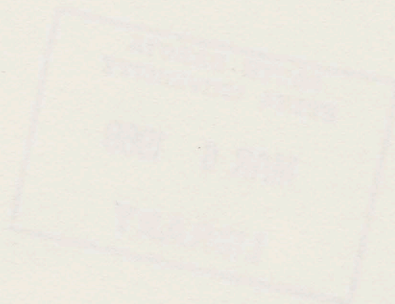
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INTRODUCTION

The year 1964 marks the 50th anniversary of the Cooperative Extension Service. In May 1914, Congress passed the Smith-Lever Act providing federal funds to be matched from state and local sources for the purpose of "disseminating useful and practical information in the broad fields of agriculture and home economics to the people." In 1915 the State Legislature authorized the organization of the Extension Service at South Dakota State College under the provisions of the Smith-Lever Act. From then until now Extension workers, county agricultural agents, Home Economics Agents, and specialists have cooperated with farmers, homemakers and boys and girls through 4-H club programs, to help them put scientific knowledge to practical use. This unique educational organization financed from Federal appropriations 43%, state 42%, and county 15%, has contributed to both the social and economic development of South Dakota. Today, more than ever before, the free access and application of the latest research findings by the family farms of South Dakota is a major factor preventing large business type organizations, able to conduct their own research, from taking over the nation's food production.



Agricultural Production, Management and Natural Resource Development Use and Conservation

Agriculture is South Dakota's basic industry and largest source of income. Total cash receipts from crop and livestock sales in 1963 are estimated at more than \$625 million (about \$148 million from crops and \$478 million from livestock). On-farm savings and increased sales, due in large part to adoption of improved practices recommended by Extension, are conservatively estimated at \$8 million during 1963. Studies just completed also indicate that farm and ranch income, even using currently unfavorable prices, can be further increased by \$40 million a year--an average of nearly \$1,000 per farm and ranch--by more general adoption of known and recommended production and marketing practices.

The Cooperative Extension Service is proud of its past contribution to the educational development of the people of South Dakota and the growth of the state's economy. Research conducted by the Agricultural Experiment Station at State College, and the Extension of these findings in 1963, showed good returns on the public investment in dollars and cents.

In addition, the increased knowledge and skill of people--which cannot be measured in monetary terms--is Extension's greatest contribution.

Education is the central objective of the Cooperative Extension Service. More than 18,000 boys and girls took part in 4-H club work, nearly 17,000 rural homemakers met regularly in organized home economics extension study groups. Home management, child care, legal aspects of inheritance, public affairs... varied were the studies of rural homemakers' clubs. Almost 300,000 farm, home and office contacts were made by Extension workers with farmers and homemakers during 1963. More than a million South Dakotans attended 15,852 educational meetings sponsored by Extension. Educational bulletins and folders distributed through county Extension offices totaled nearly 560,000. Published news articles aimed at providing people unbiased factual information totaled 10,130. A total of 3,735 radio and 326 television broadcasts were also made by Extension personnel.

Extension, geared to act fast in emergencies, continued to do just that in 1963. Examples: helping blunt a serious outbreak of western corn rootworm which saved farmers an estimated \$1 million; and recommended control practices for leaf spot which helped the new sugar beet industry survive.

The following report is an attempt to briefly highlight some of the educational objectives, accomplishments and services performed by the staff of the Cooperative

Extension Service throughout South Dakota in 1963 under six major program headings.

The educational objectives of this area of program emphasis is:

- *To improve production efficiency as one way farmer and rancher can increase income.
- *To develop understanding of improved practices and how to use them.
- *To give guidance to possible new enterprises through use of basic South Dakota raw materials.
- *To aid in understanding and making adjustments needed to compete in a fast changing technological and economic society.

CORN

Corn occupies the largest acreage of cultivated crops in South Dakota and in acreage of all crops is second only to hay and grass (including alfalfa). A total of 3,770,000 acres of corn was harvested for grain in 1963.

Nearly 75% of South Dakota's agricultural cash income is from sale of livestock and livestock products. Corn, as grain and silage for feed, is important to the livestock industry. It has made possible the increase in cattle feeding in the state of 58% in the past four years.

In most areas of eastern South Dakota and some areas of the west corn yields can be improved without greatly increasing costs of production. Extension educational programs are designed to inform and demonstrate how to increase acre yields at reduced unit costs.

Extension methods to gain objectives of obtaining higher, more stable and better quality corn production are:

- *Stress best plant-population recommendations.
- *Urge use of early-maturing hybrids.
- *Establish and keep high levels of nitrogen and phosphorus with commercial fertilizers as determined by soil tests.
- *Proper use of herbicides and cultural practices to control weeds.
- *Proper use of insecticides.

Part of Extension's educational effort to show farmers how to produce higher quality corn at a lower cost per

bushel in 1963 was through 37 field demonstrations. From the demonstrations farmers could measure and see the results of using different fertilizer, weed and insect control practices as well as new varieties.

Fertilizers

Fertilizer deficiency symptoms have increased in frequency statewide but are most acute in eastern counties. The amount of fertilizer used (about half of it on corn) has increased each year to an estimated 85,000 tons in 1963, up 27% from 1962.

Through on farm field demonstrations farmers saw how recommended rates of nitrogen combined with phosphorus increased yields materially and nitrogen with potassium to a lesser degree. Farmers were able to see and compare yields resulting from different rates of fertilizer application. Dry and liquid forms of fertilizers showed about equal results. Soil conditioners were placed in demonstrations to compare them with commercial fertilizers. Negative responses from the use of soil conditioners led to strong recommendations against their economic value saving farmers thousands of dollars.

Data from TVA Fertilizer demonstrations in nine counties were evaluated by Extension. These results showed, for the average, \$1.00 invested in corn fertilizer returned \$1.42 in increased crop value over costs. In some instances it pointed up the importance of using the proper method, rate and type of fertilizer application varying among regions of the state.

The higher returns from fertilization projected on a statewide basis indicates the 27% increase in use in 1963 alone added \$292,750 to value of the corn crop over and above cost of fertilizer.

Weeds in Corn

Recommended practices to prevent heavy losses by weeds in South Dakota's 3 3/4 million acres of corn planted in 1963 were for:

1 million acres--noxious weed control.

2 million acres--herbicides for broad-leaved weed control.

500,000 acres--pre-emergence control of annual weeds.

Quackgrass, a costly perennial weed in corn growing areas, cannot be controlled by normal pre-emergence

herbicide applications. However, quackgrass can be controlled (up to 100% in some plots) as farmers saw at several demonstrations.

Treatments of Dalapon, TCA, Atrazine, Simazine, and Amitrole T + atrazine were approved and recommended for quackgrass control. All treatments performed well on the demonstration plots with the exception of Amitrole T + atrazine. Demonstrations also indicated it is best to plant corn in the spring following fall treatment. Plots treated with Atrazine in the spring of 1963 had considerably less foxtail.

Pre-emergence herbicides were used in demonstrations to control annual weeds in corn. Atrazine gave 90% seasonal control of annual grassy and broad-leaved weeds in three demonstrations while a fourth on sandy soil gave good early control but showed poorly at mid-season. CDAA-T ("Radox-T") gave good control until mid-season. Each chemical, used in conjunction with different fertilizer treatments, increased corn yield as much as 19 bushels an acre in another demonstration.

As a result of Extension education programs more pre-emergence herbicides are being used for weed control in corn. More 2,4-D was also used in 1963.

Insects in Corn

Extension's ability to tackle a problem quickly and get help to the places needed was aptly illustrated in 1963. Extension's action--in cooperation with others--saved South Dakota corn producers an estimated \$3 million.

A serious outbreak of corn rootworm occurred in South Dakota in 1963 damaging an estimated 496,000 acres of corn, mainly in the southeastern quarter of the state. Investigations revealed that the recommended soil insecticides, Aldrin and Heptachlor, failed to provide adequate control of corn rootworm on 146,550 acres.

-----Corn rootworms have been a serious problem in South Dakota for years with the Northern species more dominant and damaging. Since 1961, however, the Western species resistant to chemical control with Aldrin and Heptachlor has increased rapidly and now is predominant in the southeastern quarter of the state.

-----Demonstration plots in Lincoln, Turner, Union, and Yankton Counties in 1963 showed that considerable control of the resistant strain of Western corn rootworm could be obtained by using the organo-phosphate insecticides Diazinon, Thimet, and 4072. These also

reduced plant lodging which interferes with mechanical harvesting.

-----Immediately upon discovery that a major corn rootworm infestation was developing in South Dakota, Extension workers suggested emergency control measures. This was use of Diazinon as a basal spray cultivated into the soil immediately after application. Farmers using this treatment reported good results. Some farmers provided checks by leaving rows untreated. Untreated rows did not recover sufficiently to produce a crop, while treated corn gave some yield--estimated to be worth \$1 million.

-----From experience gained in field and laboratory plus information in a regional conference, corn rootworm control recommendations for South Dakota were revised to combat the threat to the corn crop from the Western species. Extension's full educational impact is oriented to advise farmers that Nirvan, Diazinon, Thimet or 4072 are recommended for southeast counties applied only in granular form in a 4- to 7-inch band above the seed. In northern counties, where the non-resistant Northern species predominates, and in Lawrence County--where the Western species is not of the resistant strain--Aldrin and Heptachlor are still recommended.

An area has been mapped to be especially watched for possible damaging outbreaks in 1964. This area extends on a line west from the northern boundary of Moody county west to the west Lyman county line then almost due south through the eastern quarter of Mellette and Todd counties.

South Dakota corn yields in 1963 were the highest in history--the result of a combination of above-average rainfall, late fall, and improved management as a result of Extension teaching. Numerous yields went to 125 bushels an acre. The state average--an estimated 48 bushels an acre--was 5 1/2 bushels above the previous high and 16.2 bushels above the 1957-61 average. The estimated 152 million bushel crop was 34% above 1962 and 53% above the 1957-61 average. The 3 3/4 million acres planted in 1963 were 100,000 acres less than the five-year average.

WEEDS

Weeds cause an annual loss of \$50 million in South Dakota and use an estimated two inches of moisture a year, statewide. Each year 1 1/2 to 2 million acres are infested with noxious weeds. Some years wild oats infests 5 million acres and an equal area is in-

festated with cocklebur or sunflower. An average of 2 to 2 1/2 million acres are sprayed for weed control each year. Weed control practices were applied on 32,743 farms and on 1.6 million acres in 1963 in part as a direct result of Extension educational programs on the economic control of weeds. In this effort Extension staff members cooperated with the State Weed Commission and the County Weed Boards.

RURAL CIVIL DEFENSE

Through efforts of county and state Extension personnel, possibly one-fourth of rural South Dakotans have a fairly good understanding of Rural Civil Defense and the concept of "we can survive" is slowly but surely taking hold among the rural people. It is recognized that disseminating information and motivating people to take positive action are not done overnight. It is a continuous repetitious process.

DRYING SHELLED CORN AND GRAIN SORGHUM

Eastern South Dakota has seen rapid influx of drying bins, most of which are used to dry early harvested shelled corn and sorghum. Typical losses to the corn crop (10%) and grain sorghum (20%) can be greatly diminished by early harvesting. Bin drying systems in most cases are reasonably well designed but farm operators are not aware of air, moisture and humidity relationships involved in drying crops and operating methods needed. The two suitable methods of operating--batch drying and in-storage drying--differ considerably but are often confused. Mixing one method with the other can result in overdrying, spoiling or very slow drying.

Objectives of this project are to familiarize farm operators with:

- *Different principles involved in the two drying methods.
- *Recommended operating procedures for each method.

Use of mass media created awareness of the two different drying methods and meetings and demonstrations were used for detailed explanations. Interest shown by hundreds of farmers reveals the value they place on receiving this type of information. A continuation of this campaign is scheduled for 1964.

GRASSHOPPER PROBLEM

The 1963 grasshopper hatch started in mid-May and developed slowly. No control work was necessary until July. Severe infestations of grasshoppers developed in mid- and late-summer in soil bank land, alfalfa, field

margins and roadsides. Small grain was harvested ahead of grasshoppers and suffered little damage. Some damage occurred to corn and the second crop of alfalfa. In late fall light grasshopper damage was observed on borders of winter wheat fields.

About 400,500 acres of South Dakota cropland was sprayed for grasshopper control in 1963. Dieldrin was the main insecticide used. No spray programs were conducted on rangeland.

A survey indicated that considerable crop and rangeland in central and western South Dakota will be infested in 1964 and control programs may be necessary to prevent extensive grasshopper damage.

CONTROL OF PLANT DISEASES

Plant disease control emphasized, but was not limited to, work on Cercospora leaf spot on sugar beets, and possibilities of using chemicals against stem rust on wheat.

Leaf spot, a fungus disease, is a problem in eastern South Dakota and results in lowering both tons/acre and sugar yields. This disease constitutes a problem most years. Main sugar beet counties are Turner, Union, Clay, Yankton, Beadle, and Spink.

Until highly resistant commercial sugar beet varieties are available, best control for Cercospora leaf spot is a fungicide spray program using Dithane M-22 as a preventive measure. However, a fungicide spray program on large crop acreages is a new procedure for many growers. In 1962 Extension with cooperation of State College Plant Pathology Department and fieldmen of the U & I Sugar Company started an educational program.

Turner County serves as an example of growing awareness of value of fungicide spraying. In 1962 only Turner County growers responded to recommendations that a spray program be used. Of the total sugar beet acreage, 57% was sprayed with three applications of fungicide representing an expenditure of \$17,000. Disease control benefits were striking and growers were well satisfied. In 1963 leaf spot developed over a much wider area and 100% of Turner County growers had a spray program starting the first week in July. They made from two to five applications on the 8,553 acres involved at a cost of \$31,000. In 1962 in Turner, Union, Clay and Yankton Counties, only 27% of total beet acreage was sprayed--in 1963 the figure was 76%.

Research indicates the spray control of leaf spot boosts yield by at least three tons an acre. Figuring all costs

against returns gives a net of about \$25 more an acre where fungicide was used.

Ground equipment and airplane methods of application were compared in one demonstration. Both methods gave 43% less severity using green foliage as a measure, both gave striking ton yield and sugar increases. While differences between the two methods in this demonstration failed to materialize as expected due to several reasons, the fact that both showed the value of spraying was highly significant.

Attempts were made to set up a demonstration to show possibilities of using fungicides to control stem rust on winter wheat, a disease which caused severe losses in 1962. Dithane S-31 was used as a protectant-eradicator type of chemical which had been effective in reducing losses in experimental plots when applied at the right time. (Dithane S-31 has not been cleared for general use but is being tested in many areas on an experimental permit.) Sufficient rust development did not occur at any of the demonstration locations to provide good tests.

Wheat streak mosaic, a virus disease, developed extensively in several areas with infection levels of 20% to 40% common. Some growers got only 3- to 5-bushel an acre yields. Streak mosaic symptoms were observed on fall-sown wheat in 12 out of 19 counties surveyed. This is unusual and indicates possibility of wheat streak mosaic being a major problem on the 1964 winter wheat crop. To avoid extensive wheat streak mosaic losses importance of date of planting was emphasized at every opportunity. Wheat planted after September 10 is less likely to become infected.

HOME GROUNDS IMPROVEMENT

Observations indicate appearance of from 75% to 90% of the home grounds in South Dakota rural and urban areas could be greatly improved by following simple, planned landscaping programs. Most Extension work was through groups and organizations such as Garden Clubs and Home Demonstration Clubs. Training sessions were held for county personnel in addition to giving direct assistance to various church, civic and cooperative groups and individuals.

TIMBER AND SHELTERBELT MANAGEMENT

Timber. Stand improvement practices, chiefly thinning, are needed on most of the 1,700 small privately-owned woodlands covering 150,000 acres in the Black Hills.

Extension objectives are to:

- *Teach value of thinning.
- *Emphasize destructive effects of clear cutting.
- *Get new properties under management and certify new tree farms.

Properties under good management increased substantially during 1963 indicating the impact of Extension educational efforts which included field days and planned use of a new Fact Sheet. Ten new woodland tree farms, covering 2,759 acres, were certified to bring the Black Hills total to 53 covering 33,471 acres.

Shelterbelt. Shelterbelt objectives in 1963:

- *Renovation practices in six counties.
- *Emphasize destructiveness of grazing in shelterbelts.
- *Need for weed control.

An ACP cost-share practice for shelterbelt renovation was developed which was approved by the Great Plains Agricultural Council and adopted by ASCS on the national level.

A 1954 Forest Service survey showed 24% of Brookings County shelterbelts were damaged by grazing. Only 11% were grazed in 1963, according to a survey. Generally, indications are that a decided improvement has taken place statewide.

More than two-thirds of shelterbelts examined were adequately cultivated and a decided increase in use of chemicals for weed control was noted. This is a result of several years' educational campaign.

BEEF FEEDING CONTINUES TO GROW

Livestock production, South Dakota's number one source of income, has expanded considerably in the past five years. Through availability of feeders and feed, livestock feeding could be doubled. Total beef cattle as of January 1, 1964 on farms and ranches in the state numbered 3,350,000 head. Annual calf production averages more than a million head with less than half fed for market in South Dakota.

Extension objectives in beef cattle production emphasized for 1963:

- *Use of more silage and other high roughage rations in fattening, growing and wintering.
- *Balanced rations and knowing which feeds provide most protein and total digestible nutrients for least cost.
- *Use of feed additives.
- *Planning new or expanding existing feedlots.

Results of Extension recommendations for feeding programs based on Experiment Station research are reflected in the increased feedlot facilities and storage of high moisture grain and hay in 1963. New facilities included 315 feedlots, 643 upright silos, 542 trench and bunker silos and 633 expanded feedlots. There were 1,581 producers storing haylage and 897 using high moisture grains. Feed lot improvements alone brought an estimated \$4 million to related industries, suppliers, manufacturers and contractors.

As a part of the educational program participated in by specialists, a total of 73 special meetings on cattle was attended by 6,235 producers.

LIVESTOCK FEEDING MEETINGS

Fifteen fall livestock Extension outlook and feeding meetings were held on a county-combination basis. Some 45 counties were involved. Livestock feeding and management and marketing were discussed. One objective was to present information which producers could use to help make their own annual breeding and feeding plans. A four-page worksheet on figuring feeding prospects was explained and distributed. Nearly 2,000 persons attended the outlook meetings--the highest record over several years.

SWINE

Hogs are second to beef cattle as source of agricultural cash income in South Dakota. The state ranks ninth nationally in hog numbers with about three million head produced annually. Production is mainly east of the Missouri River where farms are ideally suited for profitable pork production. The state has good local markets as well as excellent demand from the West Coast.

The trend toward larger farms applies to swine production. Many state farmers are considering 20 to 40 sows in a twice-a-year farrowing program.

The county agent is the key man in Extension's swine production program. The county agents receive special training which is taken to producers in their counties. Intensified training meetings were held in 15 counties with 735 producers participating. Typical comments from swine-producer enrollees attest to the success of these educational efforts: some wish they had enrolled a year or so earlier, the majority want the program continued in 1964. Extension specialists conducted 47 special meetings for swine producers in addition to six Experiment Station field days attended by 627 persons.

As the educational effort expanded, so did producer interest in building and equipment needs. New or remodeled swine units for 1963 totaled: 482 farrowing houses, 230 farrow to finish units, and 339 finishing units.

BEEF PERFORMANCE TEST PROGRAM

Extension and State College assist in the beef performance test program operated by the South Dakota Livestock Production Records Association, Inc. County agents are relied on to help sustain the program and distribute and explain records to producers who take part.

SHEEP AND WOOL SCHOOL

Extension tried a full two-day sheep and wool school for Butte, Meade and Harding Counties at the Newell Field Station. The school covered all phases of sheep and wool production. County agents pre-registered 55 sheepmen who attended the first day of the school. Second day's attendance was cut to 35 because of a blizzard.

DAIRYING IMPORTANT

Dairying ranks fourth as a source of farm income (totaled \$39 million) in South Dakota. Milk production per cow averaged 5,880 pounds, down 2% from a year earlier but 13% above the five-year average. Number of milk cows on farms totals 238,000 head, down 2% from a year ago and 13% below the five-year average.

The South Dakota dairy farmer is becoming a specialist in marketing whole milk. Number of farms selling whole milk in South Dakota increased more than 70% in the past ten years while farms selling farm separated cream has decreased at least 50%. With the selling of milk, quality has improved in the manufactured products and the products are more uniform.

As dairy herds increase in size and production per cow increases, herd replacements are in heavier demand and disease control becomes an ever increasing economic factor.

Mastitis Work in South Dakota. Mastitis is the most prevalent and costly dairy cattle disease in the state. Based on current cattle and milk prices, mastitis accounted for a combined cow and milk loss of \$2.8 million in 1963. Reducing mastitis losses is a continuing Extension program to make dairymen aware that this problem can only be solved through proper management of dairy herds.

POULTRY HOUSING

During 1963 South Dakota produced 1,446 million eggs

which was about 2.29% of U. S. production. An estimated 85% of the state's total egg production is surplus and must be exported. The trend has continued to be toward flock expansion for both remodeling and building new structures.

Extension helps the producer understand steps required to maintain highly efficient units and perform farm marketing practices necessary to stay in business in a highly competitive industry. Many small and inefficient flockowners went out of business in 1963. Larger, commercial-type units that were in business when the year began are thriving. Several new and remodeled units were constructed during the year.

In 1963, 42 hatcheries cooperated under the National Plan for control of pullorum and typhoid. They account for about 75% of the chicks produced in the state. Some 40 hatcheries are not under any supervised program for pullorum and typhoid control. This presents problems and hazards to the industry on a statewide basis.

FEED GRINDING AND HANDLING

Today's farmer-feeder is faced with a bewildering array of equipment and methods for grinding and handling feeds. Extension through education and planning assists farmers determine the kind of feed grinding-handling systems suited to their individual operations. The farmer needs information to help him select the most economical and workable system for his needs, and help to design the system so it will be as reliable and safe as possible.

Use of feed metering-blending devices, as well as motorized winch (developed at the Agricultural Engineering Department, SDSC) was discussed with farmers interested in individual help on feedlot layout. Assistance was given to a local equipment supplier who wanted to design a prototype motorized silo unloader winch for test-marketing in the area.

At least nine feeding systems were planned using lower-horsepower operation and blending-metering devices. These were developed and will be used as result demonstrations for tours and other events.

IRRIGATION DEVELOPMENT

The sugar beet industry, in early stages of development in southeastern South Dakota, has created a great increase in interest in irrigation development and a need for technical help to develop available water resources. Availability of about 300,000 acres of irrigable land plus discovery of an additional 200,000 acres of basically irrigable land underlain by a substantial aquifer supports the interest and development.

Main Extension objective is to furnish individual assistance to get a group of irrigators in each county well grounded in the basic principles of good irrigation methods and management. About 100 individual farm visits by Extension, SCS and ASCS resulted in more than 3,000 newly developed irrigated acres. An irrigation tour of the Columbus, Nebraska vicinity gave local people an opportunity to evaluate the significance of irrigation to their area by observing results of extensive irrigation development in a similar area.

Preliminary findings by the South Dakota State Geological Survey indicate about 100,000 acres of land in the Clay County bluff area are underlain by substantial aquifer to support irrigation. A preliminary survey indicated that water in this aquifer is generally suitable for irrigation purposes. There are areas in Sanborn and Beadle Counties with substantial acreages underlain with suitable irrigation water.

From observation and evaluation of existing irrigation systems in eastern South Dakota, the need for improvement of timeliness of irrigation and irrigation efficiency is evident. Basic problem is inability of operators to evaluate available moisture in the specific soils. It was concluded that use of tensiometers is the most reliable and efficient method for farmer determination of soil moisture.

In 1963 about 15% of 140 wells in the southeastern quarter of the state were classified as reduced-yield irrigation wells. The problem was particularly pressing because the sugar beet industry was in the early stages of development. If potential sugar beet growers believed that a new well might become non-productive in a few years, development of irrigation and this relatively new industry was in jeopardy.

From preliminary investigations, it was assumed that reduction in water yield was due primarily to various forms of incrustation rather than corrosion. Three representative reduced-yield irrigation wells were subsequently acidized and a high percentage of the water flow restored.

ECONOMIC OPPORTUNITIES IN WATER RESOURCES

Economic opportunities in water resources development and irrigation of the Oahe area continued to receive main emphasis during 1963--from both Extension and Research viewpoints.

Landowners in the proposed Oahe irrigation area (mainly in Brown, Spink, and Sully Counties) circulated petitions

to call an election to form irrigation districts. Extension will provide information to help people in the area decide if they should contract with the Bureau of Reclamation for construction of irrigation facilities and delivery of water.

Objectives in the Oahe area are:

- *To adapt research results comparing dryland and irrigation farming to help landowners make decisions on possible changes.
- *To inform of non-farm benefits of water resource development so people may better assess total value of irrigation.

As a result of the studies the past two years considerable informational material has been developed. Comparisons of various size farms (480 to 1,280 acres) gives data which can be used to apply to individual situations. Possible returns are based on long-range estimates on type of crops and livestock, acreage involved, labor requirements, capital, and income. Also prepared is information on general problems and benefits which might be encountered in a change from dryland to irrigation.

FARM PLANNING BUDGETS

Increased use of technology and larger capital requirements have encouraged farmers and ranchers to become more specialized. This tends to increase size of farm enterprises and at the same time to produce more per acre and per livestock unit.

Management decisions are one of the real problems facing the farmer or rancher. To give assistance and guidance, Extension has prepared a system of farm budgets for planning purposes. Through use of these budgets and planning forms, a farmer or rancher can be assisted in making major decisions for his own unit and under his own resources of land, labor and capital. County agents are given special training to prepare them to help farmers and ranchers, individually or in groups, with planning and management problems.

FARM SAFETY

South Dakota ranks second nationally in number of machinery accidents on the farm which represent an economic loss estimated at more than half a million dollars alone in medical costs and property damage. The objectives of the farm safety program are to inform of the type of accidents most common and stress safety practices to prevent them.

Marketing and Utilization of Agricultural Products

Because of changing conditions in supply and demand for agricultural products many new marketing problems have been created for producers, assemblers, processors, and supply firms. The firms are constantly seeking economic and technical information to meet the structural and technological changes that are forcing many of them to adjust operations or be forced out of business. Extension marketing education provides one of the most important sources of information for agricultural production and marketing firms in the state.

Overall purpose of the marketing project is to develop the highest degree of efficiency possible in marketing, distribution and utilization of agricultural products in order that the producer may benefit from reduced marketing costs. It is also the objective to help people better understand the marketing system and the complex forces determining price.

Outlook and Market Price Information (AMA). Objective is to analyze, interpret, and apply outlook and pricing information to marketing decisions. To present outlook and market price information, Extension used mass media, economics newsletters, outlook sheets, and meetings. Fourteen of these meetings had an average attendance of 126 persons.

In addition to material prepared locally, Extension has provided the "Western Livestock Round-up" to beef and sheep industry leaders, auction markets, and other groups on a trial basis. The Round-up was placed on a subscription basis July 1, 1963. The wide acceptance on a subscription basis attested to the value of this publication.

Marketing Costs and Services. Objective was to create an understanding of marketing services (regulations, grading, standardization and inspection) performed and the cost of such services. County training sessions covered transportation costs, shrinkage and how to minimize it, and use of pools in selling feeder calves and lambs. Various aspects of pooling were presented to give a better basis upon which to determine if pooling would be desirable in a particular area.

Marketing Quality Pork Products (FES). As a means of emphasizing quality hog production, Extension cooperated with packing and marketing firms which conducted pork carcass grading and meat cutting yield data programs. Six were held with 400 producers entering more than 600 head of hogs. Carcass grade and percent of meat yield were determined on each carcass to assist swine producers determine quality and cut-out value of their market hogs. If appraisal shows that natural meatiness is lacking farmers may make neces-

sary corrections in breeding and selection programs to help in production of meat type hogs.

The Tri-State Hog Carcass Show revealed that No. 1 hogs had increased 15% during the past six years.

Dairy Produce Quality and Regulations. Many problems of small dairy marketing firms have stemmed from low quality products marketed by producers. Closing of two dairy plants during the year gave impetus for improved quality within the industry. Extension in cooperation with the State Department of Agriculture conducted a series of meetings with plant managers, quality control men, fieldmen and producers. Subject matter included regulation and grading, sanitation requirements, and methods of producing and handling quality milk. Plant managers and fieldmen indicate that quality of raw milk being received at the plants has been greatly improved.

Wheat Quality (FES). Educational programs directed at improving wheat quality show results. A quality survey indicates that new grading standards established by USDA will have little effect on amount of No. 1 wheat marketed from the state. The survey indicated that South Dakota wheat is extremely high in dockage when it arrives at elevators. Only 6% of spring wheat and 12% of winter wheat samples had less than 1% dockage. ("Dockage" is material other than wheat that may be removed readily by cleaning. It must be removed before actual grading is done and represents extra bulk, transportation and cleaning costs.) Less than 2% of the wheat samples had no dockage. The average dockage of spring wheat was 4.14% and winter wheat was 2.84%.

Samples were graded to compare old and new standards. Under the old system 25.6% of the spring wheat graded U. S. No. 1, under the new, 23.7%. Winter wheat samples graded 61.8% No. 1 under the old system, 60.9% under the new. Other grades were extremely close.

South Dakota wheat proved to be relatively free of foreign material--non-wheat (such as rye) that remains after wheat is cleaned and ready for milling. Eighty-three percent of spring wheat and 86% of winter wheat contained from 0% to 1/2%. Only seven winter wheat and one spring wheat samples contained enough rye to affect numerical grade.

CROPLAND DIVERSION PROGRAMS

Intensive Extension educational activity early in 1963 was providing information about the 1963 Feed Grain and

Wheat Programs. Diversion payments and price support payments were offered farmers by the Federal Government for reducing planted acreages of feed grains and wheat, both important crops in South Dakota. Before signing up to participate in acreage reduction programs, farmers and ranchers want to consider how their net farm incomes might be affected by participation. Many farmers look to Extension for impartial advice and counsel on how such programs may affect their farm operations.

Objectives of Extension in cropland diversion were:

- *To provide readily understood information on essential provisions and requirements of the 1963 Feed Grain and Wheat Programs.
- *To provide an analytical method or budget procedure by which farmers could apply particular program provisions to their own farms and calculate possible effects on net farm incomes at different levels of participation.

These objectives were accomplished through meetings, use of mass media, 30,000 copies of a Fact Sheet and newsletters from the College Economics Department. From information provided, a farmer could use the Fact Sheet to substitute figures for his own farm to analyze the questions, "Should I participate?" and "At what level?" and arrive at his own management decision.

Meetings were also held and publications distributed attempting to objectively analyze other proposals aimed at increasing depressed farm prices such as the use of bargaining power.

Economics in Marketing and Distribution (AMA). Objectives are:

- *To increase management proficiency through greater understanding of the function of management and execution of sound management practices.
- *To assist producer groups and marketing firms adjust to organizational and structural changes in the marketing system.

As a result of market structure education programs by Extension, working with the State Department of Agriculture, producer groups, industrial development committees, local community organizations and agricultural leaders, the shift from sour cream to whole milk

marketing has virtually been completed. About 60% of the milk produced in the state is marketed as whole milk. Extension's assistance in providing information has contributed greatly to the high degree of efficiency of South Dakota's dairy industry. Cash farm income from sale of dairy products in South Dakota was \$9.4 million or 33% greater in 1962 than in 1955. Milk production and price were nearly equal in the two periods.

Business Management for Marketing Firms. Circumstances are forcing many managers of marketing and business firms to seek assistance in the form of business management training. To provide this, Extension offers training to businesses requesting the service. Value and need were shown by the number of participants attending and by requests for continuation. At the request of dairy plant managers and as a follow-up on management schools, Extension helped prepare a system and procedure outline to be followed as a guide by dairy plant managers in establishing more complete accounting systems.

Poultry Trends and Developments. As a result of a better understanding of poultry trends and developments through Extension educational programs, several new set-in stations for quality controlled eggs were established in eastern South Dakota.

Slaughtering Plants. The trend of decentralization of the livestock slaughter industry has focused interest on feasibility of community "kill and chill" plants. In answer to requests from various groups relative to establishment of slaughtering plants, data is being collected locally and in neighboring states.

New Egg Markets Established. To further development of new markets for quality controlled eggs, Extension assisted in meetings with Chamber of Commerce and industrial development groups to explore various alternative markets. As a result a large food store established quality egg marketing outlets at six points.

Egg Producers Association Formed. Sixty-three high quality producers representing 280,000 layers within an 18-county area in South Dakota and seven counties in North Dakota were provided Extension assistance in organizing the Dakota Quality Egg Producers Association. The group organized to obtain greater bargaining power in the market place, to improve egg marketing programs, to lower production costs, and to secure adequate financing for producer members.

Extension Home Economics

The Extension Home Economics program provides opportunities for homemakers to acquire and use knowledge, skills, understanding in home economics and related areas. Organized Home Demonstration groups with over 18,000 women enrolled are the basic unit through which Extension home economics educational programs are channeled. Carefully prepared lessons were taught during the year in the following areas:

Clothing. Extension's clothing program objectives are to:

- *Furnish information for economical use of time, energy, skills and money in clothing the family.
- *Teach basic home sewing principles and improved construction methods.
- *Teach good clothing care.
- *Create awareness of good grooming practices.
- *Inform on principles of good buy-manship.
- *Point out safety and health factors in selection of clothing.
- *Stimulate thinking regarding psychological and sociological significance of clothing in lives of family members.

Results of a random sampling of club members reveal impact of 1963's major project of psychological and sociological aspects of clothing: 85% found the information helpful; 56% found lessons helpful in their own personal acceptance and development; 61% said they now understand how clothing helps express their own individuality; 86% better understand why individuals need to conform to certain patterns of dress at certain stages of development; 80% said that since the lessons they had taken a critical look at their own pattern of dressing and 52% said they had made changes; 38% said their thinking had been stimulated.

To fill requests and special needs, educational programs were conducted in these subjects: care of sewing equipment, selection and care of foundation garments, fabric selection, the psychological and sociological aspects of clothing, clothing construction, make-over clothing (especially with Indian homemakers), how to knit, and hat making.

Food and Nutrition. Objectives of food and nutrition for 1963:

The major project, "Guests at Home," attempted to point out the influence which family meal procedures might have on "creative living." Evaluation through questionnaires to homemakers revealed: 43% felt they had made progress in being more considerate at the table; 40% had more pleasant meal times; 54% had improved table manners; 37% had improved meal time conversation; 48% served food in a nicer manner; 42% had nicer table settings; and 36% had adjusted schedules for the benefit of the whole family.

Because of the large number of demonstrations requested, home agents were helped in and given special training for presenting their own demonstrations.

Home Management. Estate planning, wills, trusts, joint ownership, insurance and taxation were subjects discussed in Home Demonstration Clubs with technical aspects given by professionally-trained people. Great interest was shown in these subjects and considerable individual follow-up activity was evident within the counties. Many men as well as non-Extension club members attended the open meetings.

Family Life. Family life includes emphasis on concerns of child growth and development, parent education, and family relationships. Main program objective is to aid South Dakota families to become well-informed units better able to assess their values, to set goals and to

- *To better plan, prepare and serve meals to attain greater benefits of health, happiness and economy.
- *To encourage everyone, particularly youth, to adopt good nutrition practices.
- *To supply facts to counteract food fallacies.

achieve progress through appropriate action. Main project training was on "The Family and Free Time."

Objectives were to:

- *Teach importance of leisure time activities in individual development, in building better family relationships, and in providing enriched living experience.
- *Teach better use of free time in well-balanced ways.
- *Encourage families to try new family recreational experiences.

4-H and Other Extension Youth Programs

Roughly one-fourth of Extension staff time was devoted to development of the state's greatest single resource: its youth. Significant research findings just released on the factors influencing the economic development of nations clearly show people themselves to be more important than physical resources. This research points out that it is a special kind of people that make the difference. These are people who have a strong need and desire to achieve, to prove their worth to others to compete. Through the many 4-H club projects boys and girls learn to achieve to make the best better, to compete effectively as well as cooperate with others.

Work in 4-H club is family and community oriented, designed to not only develop the individual boy and girl through practical work experience but to strengthen the home and community. Its success cannot be measured directly in dollars but in the healthy work habits, improved skills, constructive attitudes and life long achievements of former club members.

South Dakota 4-H club enrollment increased in 1963 to 18,342 members. There were 10,463 girls and 7,879 boys enrolled.

Club work could not exist without volunteer adult leadership: 2,286 organizational leaders; 1,665 project leaders; and 2,533 junior leaders at work in 1,431 clubs throughout the state. About 80% of the enrollment is between the 9 and 14 year age groups.

4-H Club Foundation of South Dakota, Inc. In August 1963 final details of incorporation papers were signed and drawn up to establish a 4-H Club Foundation for South Dakota.

Leadership Development. A development program was initiated aimed at strengthening and expanding 4-H leadership structure, not only to lighten the load by involving more individuals, but providing more training. More better trained leaders will expand effectiveness of Extension agents by allowing them to work on other projects and activities. In non-home agent counties, county project leaders attended special sessions of training schools to gain background for working with club leaders.

State 4-H Club Week. During State Club Week, June 10-

15, a total of 563 delegates took part in "Citizenship in Action" on State College campus.

4-H Camps. Camp Lakodia and Camp Boxelder were used for the 1963 camping program in which 2,964 campers took part benefiting from an educational experience of working and playing together.

4-H Judging Program. Judging work teaches members quality and good standards; it establishes ideals toward which to work. Members enjoy friendly competition and learn to express themselves and make decisions. The state judging contests were held during the State Fair. Most county contests were held in August.

Western Junior Livestock and Home Economics Show. This event at the Pennington County Fairgrounds, Rapid City, had more than 1,000 exhibits from 20 counties. Taking part were 560 4-H members--538 participating in judging contests, 23 in demonstrations and 128 in adult events.

4-H Club Congress. Twenty-nine 4-H members from South Dakota attended the 42nd National 4-H Club Congress held in Chicago December 1-5. South Dakota had two national winners, one in Safety and one in Rural Arts and Recreation. Each received a \$500 scholarship.

National 4-H Club Conference. National 4-H Club Conference was attended by four South Dakota club members. The conference is primarily an award for outstanding 4-H club work in the areas of leadership, achievement, and citizenship.

4-H Club Awards Summary. More than \$50,000 was awarded in 1963 to South Dakota 4-H club members through the state club office and Club Foundation. This amount represents what donors and friends of 4-H have provided for trips, medals, scholarships, ribbons and various other awards.

IFYE and Peace Corps. South Dakota has participated in the International Farm Youth Exchange program for 14 years with 31 delegates from 23 countries sponsored. The Peace Corps program has had 31 participants from South Dakota with more emphasis put on the 4-H Peace Corps in South America.

Rural Development and Public Affairs

Development of Rural Area Resources of South Dakota made significant progress in several areas. As a result of these and many other efforts during the past four years some evidence appears of a slowing in outmigration of people from the state. Programs receiving top priorities include: continued development of water and related resources in the Missouri River Basin area; expanded livestock feeding; development of income producing recreation facilities; sugar beet production; local community improvement; and low rent housing projects on Indian Reservations.

Missouri Basin Development. One of the most significant economic changes taking place in the state is development of the Great Lakes of South Dakota, or Missouri River reservoirs, as a result of construction of four multipurpose dams. These great lakes have created a shoreline of more than 2,000 miles with opportunities for industrial, recreation, navigation, irrigation, and flood control development.

Zoning is important in early development stages to prevent undesirable types of growth, yet stimulate economic expansion in an orderly manner. With this in view a series of meetings was held for local leaders living in the counties bordering the reservoirs.

The dam for the last of the four Missouri River Reservoirs was closed in 1963 and the four lakes will probably stabilize at operating levels some time in 1968 if river flows are normal. The Corps of Army Engineers has built or has under construction 10 recreational areas, 51 more are planned and 24 more are in planning stages. Interest is beginning to develop in private recreational projects.

To assure local people a voice in the orderly development of the resources of the Basin the Oahe Conservancy District was organized in a 15 1/2-county area in late 1960.

During the past year the Sub-District Board has prepared a master water contract for the Bureau of Reclamation in Washington. This contract is different and unique in that the Federal Government does business directly with the Oahe Sub-District rather than several irrigation districts. The Sub-District in turn will take over operation of the supply works and sale of water to irrigation districts. The Sub-District has been instrumental in getting a study underway on potential water developments on the tributaries of the James and Missouri Rivers.

One irrigation district was formed comprising 22,000 acres of irrigable land. As the year ended three more irrigation districts were petitioning for formation. One contains 160,000 acres of irrigable land, another 75,000 and the third about 40,000.

Extension helps the Sub-District Board to carry out educational work.

Watersheds. During 1963, nine small watersheds to be organized under Public Law 566 were in some stage of development where Extension educational work was needed. Most educational work was handled by county staff personnel.

Recreation. The recreation industry in South Dakota has been growing at a steady pace in keeping with the national growths in population, family income, shorter work weeks, more leisure time and ease of travel. Recreation as an income producing industry is second only to agriculture in South Dakota. Major 1963 effort was to develop necessary educational services to support the growing awareness among people of recreation opportunities. An Extension team of three specialists in fields related to recreation development visited farm families in the Oahe Lake area who are giving serious thought to developing income producing recreation on farm lands such as golf courses, resort development, boat landings and tourist camp sites. One site was selected by the farm families as a demonstration unit for concentrated planning assistance.

Indian Reservations Resource Development. The overall economic development plans for the six major Indian Reservations in South Dakota prepared previously and re-certified have served as important guidelines. Each tribe has an active planning commission which depends on the Bureau of Indian Affairs and Extension for technical and educational assistance in resource development programs.

Primary objective on five reservations has been to organize effectively for public housing projects. Other objectives have included establishment and expansion of vocational training programs and increase job opportunities through new industries. By the end of the year all South Dakota tribes were well organized and firm construction approvals had been attained by four of them. Three of the reservations were assisted during the year in establishing training or re-training vocational courses.

Four tribes have considerable land adjoining the Missouri River lakes and are taking steps to develop recreation opportunities and irrigation to a limited degree. The Crow Creek tribe requested Extension to give planning assistance in zoning its entire reservation. This work which will commence early in 1964 should provide for orderly development around Big Bend Dam.

Extension Work on Indian Reservations. Seven agricul-

tural agents, eight home demonstration agents and one resource development agent conducted full-time Extension programs on the six major Indian Reservations of South Dakota under a contract arrangement with the Bureau of Indian Affairs.

The Public Housing Program extended to Indian Reservations is one example of intensive leadership training given to both Extension field personnel and the Indian leadership of the reservations. A three-day workshop

including representatives of local housing authorities (mainly Indian people), dealt with procedures in developing workable programs leading to contracts for the construction of low rent housing units. By the close of the year, five of the six South Dakota reservations had accomplished this objective.

Preliminary enrollments at the close of the year indicated a substantial gain in membership and active leaders in 4-H club work.

Use of a trade name does not imply endorsement of that brand over another.

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Special Report 3

Organization of the Cooperative Extension Service in South Dakota

