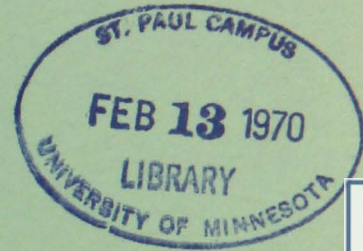


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NORTHEAST DISTRICT
Minnesota, January 1970

MFK



PROJECT III
AGRICULTURAL PRODUCTION AND TECHNOLOGY

Situation - Priority problems or educational needs and recommendations for program direction.

State specialists and groups of state specialists representing their departments or area of concern developed situation statements and program recommendations in November 1969 for their disciplines by supervisory districts.

County Extension staff members also prepared situation statements and program recommendations in November 1969 for their county. The county summaries were presented to the Project III specialist staff and department heads by the district supervisors at an all day meeting on December 22, 1969.

The situation statements and program recommendations by the county Extension staff will be reflected in the programs of work for 1970-71 being developed by the state specialists staff.

The attached situation statements and program recommendations by the Project III specialist staff should be helpful to county Extension staff members in developing their 1970-71 county plans of work.

AGRICULTURAL EXTENSION SERVICE 2
INSTITUTE OF AGRICULTURE
UNIVERSITY OF MINNESOTA)
ST. PAUL, MINNESOTA 55101

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NORTHEAST DISTRICT
AGRICULTURAL ECONOMICS - FARM MANAGEMENT

Situation

Due to climate and soil factors northeast Minnesota is predominantly a forage and forest producing area. In the past the dairy enterprise was predominate in using this forage supply. Due to distance from dairy markets and the inability, in general, to compete with dairy in other areas, this enterprise is not growing and in fact, fading out of the area. At the same time beef cow numbers are increasing. Beef cow operations are known to produce less than full opportunity return for all resources. This problem is compounded by the generally small size of farms in this area and the dairy orientation of many operators. The area continues to be one of low income farming and thus to attain adequate living levels many farmers are employed off the farm or are looking for such opportunities.

Priority Problems or Educational Needs

With the above situation major educational needs for the area center around the economics of marketing forage crops through beef. High priority should be given to improving the decision making ability of farmers in planning this transition. Special attention should go to dairy herd management for older producers who wish to "coast out" their farming years. Those who wish to shift to beef need help in the financial and production planning for beef operations. A third area of concern is that of fitting farm production around full-time employment off the farm.

Recommendations for Program Direction and Method

The following programs and methods are suggested for meeting the priority needs in the northeast district:

<u>For:</u>	<u>Program</u>
All Farmers	Beginning Farm Management
Part-time farmers	Part-time Farming School
Beef Producers	Interdisciplinary Beef Schools
Dairy Producers	Farm Planning - Dairy

Situation - Program Recommendations -- STATE STAFF

Agricultural Engineering - Buildings and Equipment

Northeast District

Situation

Concepts of livestock housing are changing rapidly. Older farm buildings in many instances do not meet present needs. Changes in farm building design are evolving from the need for larger operating units, greater labor efficiency and economy in construction. Acceptance of the fact that buildings must be designed to provide suitable environmental conditions for the animals housed is beginning to be recognized.

In general, farmers are slow in adopting new building ideas. This stems from a natural desire to make use of present buildings and also from lack of working capital to make changes. Many have not gone through the management process that would clearly indicate the direction to move in making changes. This situation is further complicated by the fact that contractors and dealers, who have the most direct contact with the farmers, have not always kept up with modern developments.

The Extension Engineers will need to become increasingly concerned with wholesaling information and knowledge through commercial concerns and professional people who work with producers. Particular efforts should be expended with dealers and manufacturers of farm buildings and equipment, farm managers, technical school personnel and agricultural instructors.

Northeast District

This district is not predominately a livestock district. The enterprise buildings needed are spread over the three categories of dairy, feeder pigs, and beef cow herds.

Northeast District

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Swine Enterprise

Most pigs are farrowed in old barns in small groups. Maybe a producer will farrow only a couple of sows. Very little labor-saving equipment can be incorporated into the system. However, plans for farrowing crates or free-stall pen farrowing systems are available.

Beef Enterprises

The beef cow herds in most cases require a shelter but some just run in the woods. A stacker mover for long hay is the main piece of equipment.

Dairy Enterprise

Some dairymen with small herds and little or no potential for expansion because of limited capital are producing milk in cans and are "holding on" until retirement. Educational programs are likely to have little impact on this group.

The general trend is to increase the size of the dairy unit. Operators severely limited by lack of capital are expanding using housing and milking facilities, often with the old barn as a basic unit for milking in combination with cold outside housing. Operators who are somewhat more favorably situated economically may build a modern milking parlor in combination with cold housing for the animals.

Dairymen who have sizeable herds of good to excellent production may build completely new facilities. Of current interest is slat floor free-stall housing because of reduced labor requirements in manure handling and the provision for several months manure storage. The cost of these units is high.

Stall barns represent a high percentage of new construction for small to moderate size dairy operations. This will continue.

Northeast District

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The control of pollution from livestock wastes must be considered in all expansion programs. At present guidelines in this area are minimal, but implementation of stricter regulations seems imminent.

Program Direction or Methods

Demonstration Layouts. When dealing with various building enterprises that may cost up to \$75,000 we would like to discuss the layout at the construction site with the producer, county agent and any contractor or dealer who may participate at a later date in the actual construction.

We feel that this type of activity will spread more good building practices than any other method we may employ.

Professional Improvement Schools

Since we are concerned with wholesaling information and knowledge through commercial concerns and professional people who work with producers, we would like to encourage supervisors to push this type of educational activity.

Intensified Schools, County Meetings or Tours

Each one of these activities has its place in the educational scheme.

The method selected will depend on type of livestock enterprise, the clientele we hope to reach and the objectives we wish to accomplish.

Submitted By

D. W. Bates and D. M. Ryan

Situation - Program Recommendations --- STATE STAFF

Agricultural Engineering: Irrigation, Water and Sewage Systems

Northeast District

Situation

Some interest in sprinkler irrigation is evidenced in Hubbard, Cass, Morrison, Kanabec and Pine Counties. Portions of Morrison County are in a ground water survey currently being conducted by the U.S. Geological Survey. Irrigation interest will likely be greatest where ground water is available, where soils are of a droughty nature, and where climatic conditions are suitable.

Increased populations in recreational areas may increase the likelihood of shallow groundwater contamination. In many areas shallow aquifers are used for domestic water supplies. Increased use of indoor plumbing and water-using appliances have placed a burden on the water supply system as well as the sewage disposal system.

Winter recreational opportunities are bringing more people to this district during that time. Both private residences and commercial facilities are used more extensively throughout the year. A sewage disposal system which was adequate for seasonal operation may fail under year round use.

Many resorts, which had previously been open from May to October, are considering winterizing to meet the increased demand for facilities.

Priority Problems or Educational Needs

Irrigation educational needs will likely have a relatively minor role in the total effort in this district. Information on specific subject matter such as the results of a ground water survey, Minnesota Sprinkler Irrigation Guide, irrigation equipment, and irrigation practices can be presented as needs become apparent.

Northeast District

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It would seem that top priority should be given to sewage disposal systems, both for private dwellings and for commercial operations. The winterization of a resort means more than just adding insulation and heat to a cabin. It also means increased demand on the waste disposal system. Failure of the system will not only cause inconvenience to the guests, but since many resorts are located on bodies of water, the overflow of the effluent or sewage will contribute to eutrophication.

Another item of high priority is the testing of domestic water supplies for possible contamination. Sources of contamination, their effects and the procedure for water testing should be explained to the people involved.

The Shoreland Management Program, part of the Crystal Waters Program, should be explained to the local governments. The Department of Conservation will draft guidelines for local governments, then hold public hearings around the state and after considering public comments, adopt the guidelines. This process will be completed by July, 1970. Counties will then have two years to adopt these standards, otherwise the Commissioner of Conservation will impose the state regulations.

Recommendations for Program Direction or Method

The requests for information on irrigation can be met by county meetings on specific subject matter most pertinent to the situation. Consultations with irrigators and prospective irrigators who are leaders will be helpful to establish proper equipment, operation, and practices.

It may be difficult to present an educational program on water supply to people who are only weekend residents of the area. Weekend programs on local radio stations might be considered as a possibility. If one can assume that the majority of the weekend population is from urban centers, perhaps the news media in those centers should be used. The water testing program of the Department of Health should be explained.

Northeast District

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The resort industry could be informed through trade publications, multi-county meetings or individual consultations. At some of the larger resorts, the design of the water supply and sewage disposal system should be done by consulting engineers. The policies and regulations of the Minnesota Pollution Control Agency and the Minnesota Department of Health must be followed.

Local government officials should be advised of the Shoreland Management Program in cooperation with the Minnesota Department of Conservation. Newsletters, publications and/or multi-county meetings might be used.

Submitted by

Roger E. Machmeier
Roger E. Machmeier
Extension Agricultural Engineer

Situation - Program Recommendations -- STATE STAFF

Agricultural Engineering - Machinery

Northeast District

Situation

The situation is that this specialist has had little involvement with the Northeast District and my knowledge of its problems is limited. I expect that forage is one of the main crops and handling methods and equipment are of concern to these producers. Minimum tillage methods to raise a low-cost corn crop and promote erosion control may apply in part of the district. Priority would seem to be with educating the specialist to your problems in this case. Help us help you on this one.

Submitted by

John A. True

Situation - Program Recommendations

Agronomy Department

Northeast District

Situation

The important field crops of the northeast district are hay, pasture and oats. The hay and pasture are used for dairy and beef animals. The number of beef cows has increased considerably during recent years.

Yields of hay and pasture have not increased significantly in recent years. More effective extension work in forage production and management is needed.

Grass and legume seed production contributes considerably to farm income in the northwestern part of the district.

Wild rice acreage has expanded in the district. It is a high value crop that could be grown on much otherwise unusable land in this district.

Priority Problems and Educational Methods

Quality forage production, including pasture, hay crops, and corn silage needs to be stressed in this area. There is a larger potential in this area to increase yields of forage crops by effective use of fertilizer and an opportunity to greatly increase forage quality by attention to proper time of cutting of alfalfa and other hay crops. Information on productive legume-grass mixtures for pasture needs further emphasis. Although primary emphasis should be on the production of a balanced forage feed program for livestock, there is also a need in this area for information on alfalfa as a cash crop marketed through

local alfalfa dehydration plants.

More effective demonstrations on forage production should be developed. These should include weed and brush control, species and variety adaptation, seedling establishment, fertilizer and lime, etc.

Forage production information should be included in the over-all livestock program including the dairy and beef schools. This has been available, but rarely requested.

Weed control in pastures and in forage crops will continue to be important in this area of the state. Special emphasis should be given to identification and control of several problem weeds such as Canada thistle and sowthistle, leafy spurge, tansy, yarrow, buttercup species, wormwood species, hoary alyssum, yellow rocket, and white cockle. County information and sprayer demonstration meetings arranged by extension agents and local county and township weed enforcement personnel seem to be a good possibility in this area. Demonstrations established by extension agents and specialists could be used effectively at these meetings, preferably during the growing season when weed problems are evident. Cooperative programs with Soils are needed to stress other needed phases of pasture improvement such as soil fertility.

Weed control educational programs should continue to provide information on proper and safe use of herbicides. There is a need to reach the general public with objective informational programs on the role of chemicals in food production and the precautions taken to assure safe use.

Farmers need information on the potential of the crops such as sunflowers, wild rice, canarygrass in their area of the state. In

addition they need information on the adaptation, economics, production practices, marketing and utilization of specialty crops.

We need to utilize specialty crops schools offered in "Open Doors to Learning." Meetings should also be held with other state organizations such as the Soil Conservation Service since they often work with new crops and could contribute significantly to our knowledge on some of the new crops. This is particularly true with wild rice.

SOIL FERTILITY SITUATION STATEMENT

Southeast, Southwest, Central, Northwest and Northeast Supervisory Districts

In general, the technique of computerized recommendations has been very successful. Further refinements, however, are necessary to handle unique problems. Part of the dynamics of computer programming is the opportunity to update and improve the computerized recommendations in solving these problems. This also necessitates the continuous educational activities in updating people. Included are farmers, dealers, as well as county Extension personnel. It is important that county Extension people maintain a close relationship in this updating, since the computer cannot handle all refinements in local situations. The agent plays an important role here.

NORTHEAST DISTRICT

Frequently the effect of climatic factors and soil physical factors (including soil water, soil temperature, soil aeration, and soil strength) on crop yield is of predominate importance. This is especially true when the nutrient and genetic limitations on yield have been raised to higher yield levels. The most feasible ways of modifying the soil physical environment include tillage, drainage, irrigation and residue management.

Educational programs are needed to assist the farmer in matching the soil environment required by the crop with that created by tillage or other means. Differences in soils, climatic conditions and crops present a diversity of conditions which need to be created by tillage. Irrigation in sandy areas of Minnesota require additional soils information, including the available water holding capacity and amounts and timing of irrigation and methods of applying N to minimize danger of pollution of subsurface water resources.

PROJECT III

Situational Trends in Forestry
and Their Implication for Areas of Concern

1. SCOPE OF INDUSTRY

Minnesota's forest resources provide full or part-time employment to about 50,000 people in the harvesting and processing of timber products. Another 58,000 are employed full or part-time in the timber-based activities of transportation, construction, marketing, and primary and secondary manufacturing, etc. The resource is especially important in the 16 northeastern counties which contain about 80 percent of the total forest areas and contribute 90 percent of the value of its forest products.

In 1968 the estimated value of forest products harvested in the state was \$342 million. Lumber's importance as the primary product of our forests has given way to pulpwood and an array of other products. Presently lumber accounts for only \$18 million and pulpwood for \$300 million out of the total value of products harvested.

According to the Forest Industries Information Committee, timber-based activities in Minnesota added over a half billion dollars to the GNP in 1968.

In 1968, 1287 plants located throughout the state were processing logs and bolts. Below is a breakdown of these:

Sawmills			
Large (5MM)	1		
Medium (1MM to 5MM)	25		
Small (less than 1MM)	1200	/	1226
Pulp and Paper Manufacturing	11		
Veneer plants	4		
Charcoal plants	3		
Cooperage mills	3		
Miscellaneous plants	40		
	<u>1287</u>		

LUMBER

One problem for the future is a rather unpromising outlook for lumber. In 1899, U.S. lumber production was 35 billion board feet; in 1968, the nation produced 37.1 billion board feet. This, in spite of the fact that population more than doubled in this 64 year period. Of the 1968 production of 37.1 billion board feet, less than one percent was from Minnesota. Lumber production in Minnesota and the Lake States generally hit its peak in the 1890-1910 period. It has since declined fairly steadily; in Minnesota stabilizing over the past decade at approximately 160 million board feet. Minnesota's lumber cut in 1968 was 166 million board feet.

One reason for the declining production of lumber is stiffer competition from the West and South. A second is increased use of substitutes in building, such as plywood, pressed wood, and metals. Another reason is a shortage of growing stock large enough to yield sawlogs, and a fourth reason is increased technology that gets the job done with fewer workers. A fifth and more recent reason is the reduction of housing starts with a decline in lumber production.

PULP & PAPER

The pulp and paper industry, on the other hand, is growing in Minnesota and is maintaining a rate of growth about equal to the national average of 3 percent annually.

In terms of trends in pulpwood harvest in the Lake States, it is noted that Minnesota's pulpwood output in recent years has not followed the strong upward trend so evident in Michigan and Wisconsin. In Minnesota the 1968 harvest was 1,086,500 cords, about the same as in 1965. However, the industry in Minnesota has expanded plant facilities, and as a result more of the pulpwood cut in the state has been delivered to Minnesota mills.

Paper and board products consumption nationally has jumped from 403 pounds per person in 1958 to 530 pounds in 1968. An important question is whether industry growth in Minnesota will match the demand increase. The most rapid growth, completely out-distancing that of Minnesota and neighboring states, has been in the South and West.

OTHER FOREST PRODUCTS

The combined estimated value of Minnesota's minor forest products was 24 million dollars in 1968. Minnesota's Christmas tree industry, our maple syrup industry, the use of poles, posts, and piling, our matchwood and veneer wood markets will remain stable or may experience growth. There are opportunities for development and expansion in one or more of these commodities which would contribute to the economic welfare of the people and the local communities. But markets for fuelwood, cooperage, railroad ties, and mining timbers are steadily declining.

2. KEY TRENDS AND DEVELOPMENTS OVER A PERIOD OF TIME

- a. Undoubtedly the most significant trend in the forest industry within the past few years has been the merger of several large local companies with nationally oriented industrial complexes (ex. M and O Paper Company with Boise-Cascade; Northwest Paper Company with Potlatch). This alliance to integrated organizations with national and international markets, diversified forest product lines, corporate financing and interlocking administration has many implications for the future of the forest industry in Minnesota.
- b. Minnesota's primary forest industries will continue to be located in northern Minnesota. This is where the bulk of the resource is found. As future demands for wood and fiber increase there likely will be demands for that forest resource now in young coniferous

plantations in east central Minnesota and the natural hardwood stands of southeastern Minnesota. There are presently few large production units in operation in central or southern Minnesota.

- c. At the present time, Minnesota is growing more wood on commercial forest land than is being harvested. However, there are questions as to the amount of excess wood which is economically available to the industry. Statements that we are growing 2-1/2 times as much wood as we are cutting do not consider this economic availability. Studies are underway to determine where economically available wood may sustain plant expansions and/or the establishment of new processing facilities.
- d. Forest land ownership patterns are generally static at the present time. Farm woodland ownership in acres is declining but this appears to drop into the category of "other small private ownership" and the wood is as available as in farmer ownership. In 1960 forest land ownership and total wood harvested from each ownership category were as follows:

<u>Ownership</u>	<u>Acres (million)</u>	<u>Wood Harvested</u>
Farm & Misc. Private	6.8 (40%)	44%
National Forest	2.1 (12%)	16%
Other Public	7.4 (44%)	31%
Forest Industry	<u>0.7 (4%)</u>	<u>9%</u>
	17.0	100%

This would indicate a fair balance in cut from ownership categories. In previous years the trend has been for the farm and small private ownership to be larger proportionately than all other categories. This has allowed for greater growth over drain in these segments. We apparently are reaching somewhat of a balance, which is to be desired.

Considerable concern has been expressed nationally and in Minnesota as to the restrictions placed on forest land use. These range from the withdrawal of forest land for other incompatible uses, such as highways, transmission lines, urban development, etc., to the single use, without withdrawal, of forest land for recreation, wilderness areas, etc. If restrictions or withdrawals continue, Minnesota may no longer have to concern itself with excess wood growth.

Of significance to this is the long-standing philosophy of foresters that maximum wood production per acre of high site forest soil should be encouraged of all woodland owners. This is proper forest management. This trend is in evidence in the management of our industrial, national, and forest lands. The trend is not evident on our farm and small woodland ownerships except where individuals have shown initiative, and the trend is quite the reverse on our county tax-forfeiture lands.

- e. The forest industries are experiencing some aggravating problems in labor supply. There are a number of factors:
1. Less inclination on the part of young men to tolerate adverse working conditions without commensurate wage increases.
 2. More competition from industries with higher wage scales (ex. construction, taconite).

3. With increased education and skills, an ability to operate more sophisticated machinery, thus to have more versatility in employment.

The forest industries are moving to correct this situation, primarily through labor-saving equipment and systems. How effective these will be remains to be seen. Technology in logging operations has not progressed at a pace with that in other industrial operations due to a complexity of reasons.

- f. The number of sawmills in Minnesota has not declined significantly but there has been a considerable change in sawmill ownership. This is reflected only in the small sawmills. With the potential of chip production for sale to pulp mills, we may expect some increased growth in sawmill production. Larger sawmills are now realizing sales of chips thus increased utilization of the sawlog and higher revenue per purchased unit. Increased technology will be the trend in our larger mills. Diversification of milled products may also be expected.
- g. Minor forest products have growth potentials, but expertise in marketing and management are restricting factors. Minnesota is the nation's largest Christmas tree producer. We harvest about one-eighth of the nation's Christmas trees. Yet only a few producers have implemented this seasonal activity to make it a year-round operation. Minnesota has a tremendous potential in maple syrup production. In spite of a year-round demand and market, not one of our state producers has expanded to capitalize on this situation. Obviously there are complexities and unknowns in the two examples cited here which have not been examined. Entrepreneurship is the main element lacking, however, and the continuing absence of this is part of this trend.
- h. Minnesota's predominately small diameter forest resource requires efficient processing equipment and adequate chip markets for best results. New machines and processes are continually being developed to process small diameter logs. Minnesota mills will be installing more of this type of equipment in future years, but chip markets must be developed simultaneously in order to make these operations successful.
- i. Minnesota's under-utilized forest resources are attracting increasing attention on the part of development groups and the forest industry. As forest resources in other parts of the nation become increasingly scarce, Minnesota's tallest crop will play a significant role in meeting future wood requirements in the upper Midwest. There is a need for putting together information packages on specific regional areas within Minnesota, to inform our county agents and area staffs how to go about conducting feasibility studies in forest products, and in general, provide more information on forest products manufacturing and marketing opportunities in Minnesota.

3. IMPLICATIONS FOR EXTENSION

The point should be made that within the framework of forestry and forest products extension we have the complexity of situations and problems which in the total of Agricultural Extension are divided into the following categories:

- * Production, Management, and Technology
- * Utilization and Marketing
- * Resource Development

The implications cited below are in the context of production, management, and technology:

- a. There is a continuing need for program development in proper forest management in all categories of woodland ownership, especially with the small woodland owner and county government.
- b. Quality of wood continues to be almost as significant a criteria as quantity in most of our forest industries. Increased emphasis on planting programs of high quality growing stock is needed; the proper selection of planting stock to planting site must be insisted upon; grading and harvesting techniques to derive quality production are essential in our education programs.
- c. Increased liaison with forestry research personnel at the University and other research centers is of utmost importance in the rapid extension of this research to the citizen-user and the needs for research from the woods to the laboratory.
- d. Close cooperation is essential between Extension, industry and other public agencies in identifying major problems and needs of the timber industry. Increased efficiency and safety in wood production is a need already recognized and further programming among timber producers would be a logical step.
- e. Continued responsibilities to specific programs for the small woodland owner must be recognized and planned for in our extension programs. Windbreak plantings, reforestation for aesthetics, the everyday problems of forest maintenance and protection must all be Extension's concern in the future as they have been in the past.
- f. Expanded assistance in educational efforts to the producers of minor forest products is essential. Quite frequently these people have no one else to turn to but the Extension Service for assistance. In the aggregate this segment of our forest industries is the second largest income producer in Minnesota, ranking only behind pulp and paper.
- g. It is imperative that we develop far-sighted programs to assist in the transfer of technology to the tasks of forest management and timber production. Labor saving machinery and systems is a prerequisite for our industries, large and small. Extension has the framework to assist industry and the forestry agencies in establishing these programs.
- h. Closer orientation and communication with state, area, and county extension personnel is mandatory if we are to effectively discharge our responsibilities. This same coordination should be further extended with resource personnel in utilization, marketing, and resource development.

The following are implications for Extension which relate to programs in utilization and marketing of forest products.

- a. Extension must continue to develop programs of educational assistance to the forest products industry. In the past two years, courses in hardwood lumber grading and kiln drying have been added to the extension program, but courses in softwood grading and saw filing should be considered.

- b. Minnesota's producers of forest products need additional assistance in marketing. They urgently need a revised directory of Minnesota wood processors and users. An improved price reporting system should also be considered, and an extension specialist position in forest products marketing should be funded.
- c. Additional programs in forest products marketing and utilization need to be created for the small processor, not only in terms of improving production efficiency but also in terms of business practices and management techniques.
- d. Extension should more thoroughly support the "team" approach to solving problems in the forest products industry. We need a coordinated effort on the part of all agencies involved when new plant facilities are being investigated and information is being sought by an interested firm or development group.

EDUCATIONAL PROGRAMS AVAILABLE IN
EXTENSION FORESTRY

Districts*

<u>Southeast</u>	<u>Southwest</u>	<u>Central</u>	<u>Northwest</u>	<u>Northeast</u>
Wood use on the farm	Wood use on the farm	Wood use on the farm	Wood use on the farm	Wood use on the farm
Dutch elm disease	Dutch elm disease	Dutch elm disease	Dutch elm disease	Dutch elm disease
Conservation education	Conservation education	Conservation education	Conservation education	Conservation education
Maple syrup production	- - - - -	Maple syrup production	Maple syrup production	Maple syrup production
- - - - -	Shelterbelts	Shelterbelts	Shelterbelts	- - - - -
Public affairs--forestry	Public affairs--forestry	Public affairs--forestry	Public affairs--forestry	Public affairs--forestry
- - - - -	- - - - -	- - - - -	Loggers' Workshop	Loggers' Workshop
Sawmill operators	Sawmill operators	Sawmill operators	Sawmill operators	Sawmill operators
Christmas trees	- - - - -	Christmas trees	Christmas trees	Christmas trees
Tree planting	Tree planting	Tree planting	Tree planting	Tree planting
For. landowner conf.	- - - - -	For. landowner conf.	- - - - -	For. landowner conf.
Forestry field days	- - - - -	Forestry field days	Forestry field days	Forestry field days
Lumbermen's S.C.**	Lumbermen's S.C.**	Lumbermen's S.C.**	Lumbermen's S.C.**	Lumbermen's S.C.**
Ind. plant location	Ind. plant location	Ind. plant location	Ind. plant location	Ind. plant location
Dry kiln opr. S.C.**	Dry kiln opr. S.C.**	Dry kiln opr. S.C.**	Dry kiln opr. S.C.**	Dry kiln opr. S.C.**
Lumber grading	- - - - -	Lumber grading	- - - - -	Lumber grading

* These are suggested by districts as a generalization only

** Offered on the St. Paul Campus only.

Situational Statement - Horticultural Science

Northeast District

Fruit --- Commercial fruit production is limited except in the Duluth and Grand Rapids area where there seems to be a potential for both raspberry and strawberry production. Weed control is one of the primary problems that should be given emphasis. Solving the harvesting problem is a factor which appears to limit the expansion of the industry.

Vegetables and Potatoes --- Commercial seed production of potatoes continues to have a possibility for some of the newly developed varieties. Emphasis for home owners in the low income group should be placed on the value of the home vegetable garden. Vegetable variety trials will be available to interested counties in the district. The commercial production of potatoes and vegetables in the irrigated areas should receive further study. Vegetable variety and cultural practice plots under irrigation would be desirable.

Nursery production --- Nursery production could expand with the native plant materials. This is true for both trees and shrubbery. Training for area workers in maintenance as well as in the skill of arboriculture should be emphasized.

Floriculture --- Both the culture and marketing of bedding plants need emphasis in this area.

Turf --- Commercial sod production of high quality could enter the market in the urban areas. There is a widespread demand for quality sod both in governmental programs and at the residential level.

Landscape design and maintenance --- Emphasis on residential landscaping would help to enhance and develop the visual aspects of many of the communities. Landscape maintenance is an important part of the landscape scene.

PLANT PATHOLOGY
NORTHEAST DISTRICT

Program emphasis is determined by several factors: The importance of the crop, the need for improvement in a situation, the characteristics of a crop, the availability of known but non-applied information, availability of qualified personnel to do the work, and local desire and cooperation on a project.

Alfalfa Diseases

Districts--Central, Southeast, Southwest, Northeast, Northwest.

Leaf diseases and stand loss are the most serious diseases of this crop. Little can be recommended for control of leaf diseases. Early harvest in line with recommendations by the Agronomists will reduce losses. There are no highly resistant varieties and cultural practices have little effect. Fungicide application has not been developed for this crop. Stand loss can be reduced by the use of disease resistant varieties and land selection to avoid low ground. Many of the new commercial varieties have no resistance to bacterial wilt, and all varieties are susceptible to Phytophthora root rot. These diseases together with crown rots cause stand reductions.

Intensive Small Fruit and Vegetable Crops

Districts--Central, Southeast, Southwest, Northeast, Northwest.

The growers of these crops may be large commercial, small commercial, or home garden growers. There are many of them in all parts of the state and their degree of success with these crops varies a great deal. The potential return on many of these crops justifies a relatively high investment in a total program of growing. University personnel and some private growers have demonstrated that high yields of high quality crops can be produced in most years with some of these crops. To the extent that these crops are important, more demonstrations could be run and the necessary procedures emphasized. Demonstration plots require good facilities and constant attention by interested and qualified personnel.

ENTOMOLOGY
NORTHEAST DISTRICT

1. Insect Infestation of Field Crops

- a. Insects comprise a group of important limiting factors to crop production in Minnesota. The annual loss from insect infestation may reach 20 percent. New knowledge about insects and the development of integrated insect management have reduced the threat of severe crop losses from some of these insects. The need for improved techniques for managing current insect populations as well as newly introduced species is essential, particularly with the greater legal restrictions on chemical control practices.

2. Insect Infestation of Post-Harvest Crops

- a. Losses to stored grains and cereal products in the United States, including the cost of prevention and control, approaches 1 billion dollars annually. Discussions on the increasing world population and the consequent increased food requirements focus almost all the attention on food production and little on food conservation. In addition, the importance of stored-product entomology has not been fully appreciated because of the damage is of an insidious nature. Neither has the association between stored-product insects and pathogenic microorganisms or mycotoxins been investigated properly. Such contaminants become more important with the expanded use of "convenience foods" to feed our growing human population.

3. Proper Use of Pesticides

- a. The use of chemical pesticides presents some problems and places great responsibilities on those who use, recommend or sell them. Only through educational programs can people be made aware of these responsibilities.

4. Pest Control Problems for Homeowners

- a. As more people move to the suburbs, they have more time for gardening and landscaping. During this time they frequently encounter problems associated with household, garden or lawn insects and they need assistance in solving them.

5. Youth Projects

- a. We must rely on the younger generations to provide the expertise needed to continue and expand all phases of the biological sciences. Entomologists have been negligent in bringing their profession to the attention of our youth. Consequently we find challenging entomological positions in teaching, research, and extension going unfilled.

We will give increased attention in all districts to (1) developing an improved method of insect identification and control recommendations for the urban populations, (2) initiating educational programs on the benefit and hazards of insects and insecticides, and (3) curtailing the use of persistent insecticides as less hazardous insecticides become available.

Dairy
Northeast District

SITUATION: Total dairy cows in Minnesota reached a peak of 1.7 million in 1943. There has been a reduction nearly every year since then. By January 1, 1970, dairy cow numbers in Minnesota may be below one million for the first time in over 60 years. Dairy herds have decreased from 165,000 to 46,000 during the past 25 years. Average milk production per cow has increased from 4,600 lbs. to 9,710 lbs. during this time so total milk production of just over 10 billion pounds is greater than a quarter of a century ago. During the past year, Minnesota slipped into third place in milk production below Wisconsin and New York. Minnesota leads all states in butter and dry milk production. 80% of the milk production of Minnesota is marketed outside the state mainly as butter, milk powder and cheese. These products must meet the quality standards of the states where sold. 18.6% of all dairy cows in Minnesota are enrolled in the DHI program. This compares with 3.0% in 1950, the first time it reached this percentage. In 1968, cows tested in the DHI program averaged 12,717 lbs. of milk or 36% greater than the cows not on test with an average of 9,030 lbs. The net annual returns for labor per cow was \$198 or \$103 greater for the average DHI cow tested than those not tested.

There has been a great decrease in milk cows and increase in beef cows in northern and western Minnesota, the maintenance of dairy cow numbers above state average in an area extending from the S.E. corner of the state to Becker County and the decrease in both dairy and beef cows in several south central counties where corn and soybeans have taken over as a cash crop. In 1959, every county in Minnesota had more dairy cows than beef cows but by 1969, 25 counties had more beef than dairy cows.

These trends will undoubtedly continue with over 80% of the dairy cows concentrated in about 30 counties from S.E. Minnesota to Detroit Lakes by 1975.

Taking the five supervising districts, the following situation exists and the following suggestions are made regarding extension programs. All the offered programs will fit each district though the approach in presenting the programs may differ.

N.E. District

Morrison, Kanabec and Pine Counties are in the dairy area where a 55% or more of cash farm income comes from sale of milk. One of the great needs is more participation in the DHI program. Morrison, with 55% of the cash farm income from the sale of milk, has only 6.0% on test or less than 1/3 of state average. Dairy extension programs in these counties on a county basis much the same as in the Central District. In the remaining counties, dairying is rapidly disappearing and dairy extension programs in the future will be geared to the special problems of the area such as limited income, small scattered herds, higher feed costs, limited markets and less opportunity for making money than other areas. Dairy extension work will be carried out in area meetings with extension agents doing much of the counseling with individual dairymen.

Why the Changes in the Dairy Programs Offered

Those Not Changed -

These are relatively new, are in fields that need much attention at present to get caught up in presenting new knowledge available on the subjects. Will serve as now developed for coming two years or more.

Those Being Modified -

Dairy Farm Tours - Some suggestions are made to make these more effective as a teaching method.

Dairy Forum Series - Organized on specific subjects so as to recruit personnel more efficiently to cover the subject well. Also, provides alternatives for agent to select the topic desired.

Dairy Seminar Series - These have served a purpose well for past eight years. It is felt a different approach now will be more effective so the former dairy seminars are not being offered this year.

Professional Improvement Dairy Seminars - These never caught on because they were never really developed locally or they didn't have appeal as outlined. So seven specific subjects are suggested with the thought each will appeal to a specific group. These will not be effective unless the county agent contacts and enrolls interested people in them.

Those Being Added

Dairy Cattle Nutrition and Feeding Schools - This is pulled out of the dairy seminar series and expanded to answer present feeding questions as well as presenting basic background information.

Dairy Management Planning - One of the real questions of present dairy farmers is "Where do I go from here and how?" Should I go out of dairying, stay where I am or expand? What are the industry trends

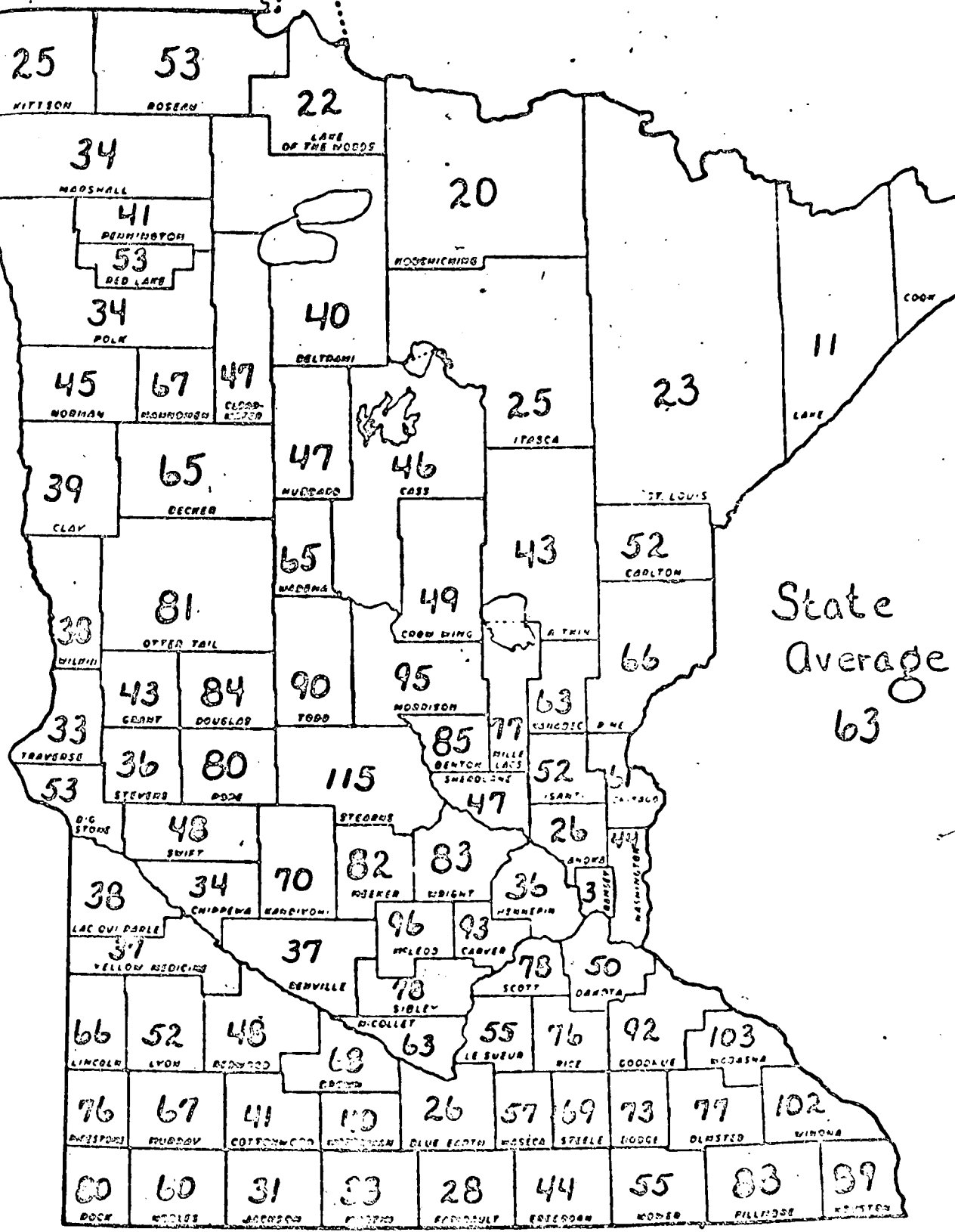
that I should consider in deciding? How can I best use available capital and credit? What type of housing and equipment will best meet my needs and at what cost? How to fit these matters into availability and use of capital? How do these fit other alternatives and possible returns on investments available to me? Am I a good enough dairyman to consider expanding?

This program is designed to help the dairymen in analyzing his situation so as to arrive at a better answer to these questions. Costs are so great that all possible mistakes should be avoided.

The Future of Dairying - This is designed to present as complete a picture on the future of dairying as possible. As the contents specify, this covers several areas that affect the future of dairying as a business. This program will fit in well with the Dairy Management Planning Program listed above. Some counties may wish to schedule both of these on successive weeks.

Calf and Youngstock Management - This covers all phases of calf raising and leads into feeding and management of replacement females in the dairy herd and especially on how to best utilize male calves of the dairy herds. Should they be sold at birth, raised as veal, raised and sold as feeders, or fed out as finished steers. What are the costs and returns from each alternative? What facilities are needed? A complete analysis so the individual dairyman can decide what is best for his individual farm circumstance.

% Cows 1968 of 1943



State Average 63

A. Dairy Cow Population 1969 - % of 1959

State Average 81%

EXTENSION SERVICE SUPERVISORY DISTRICTS

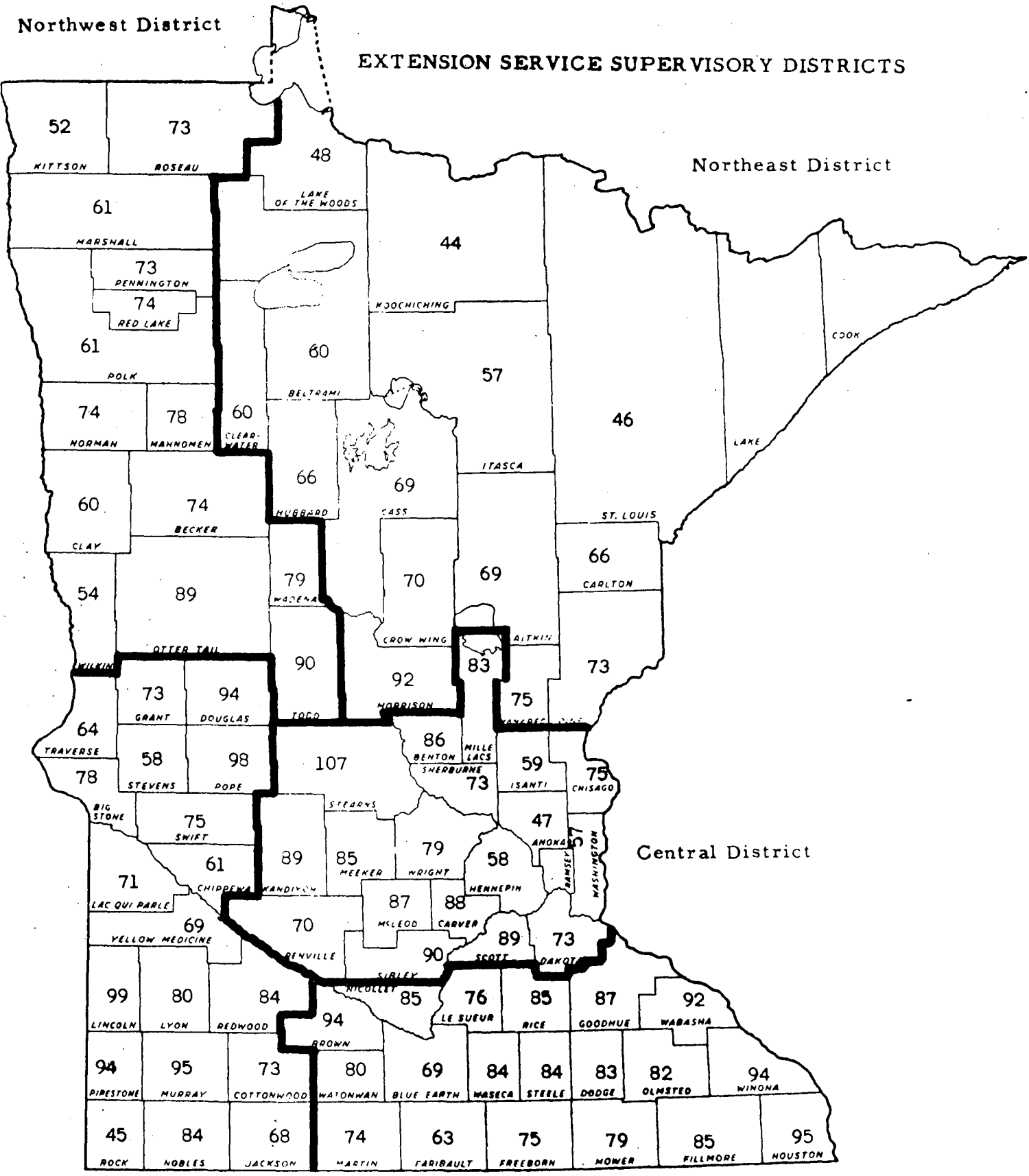
Northwest District

Northeast District

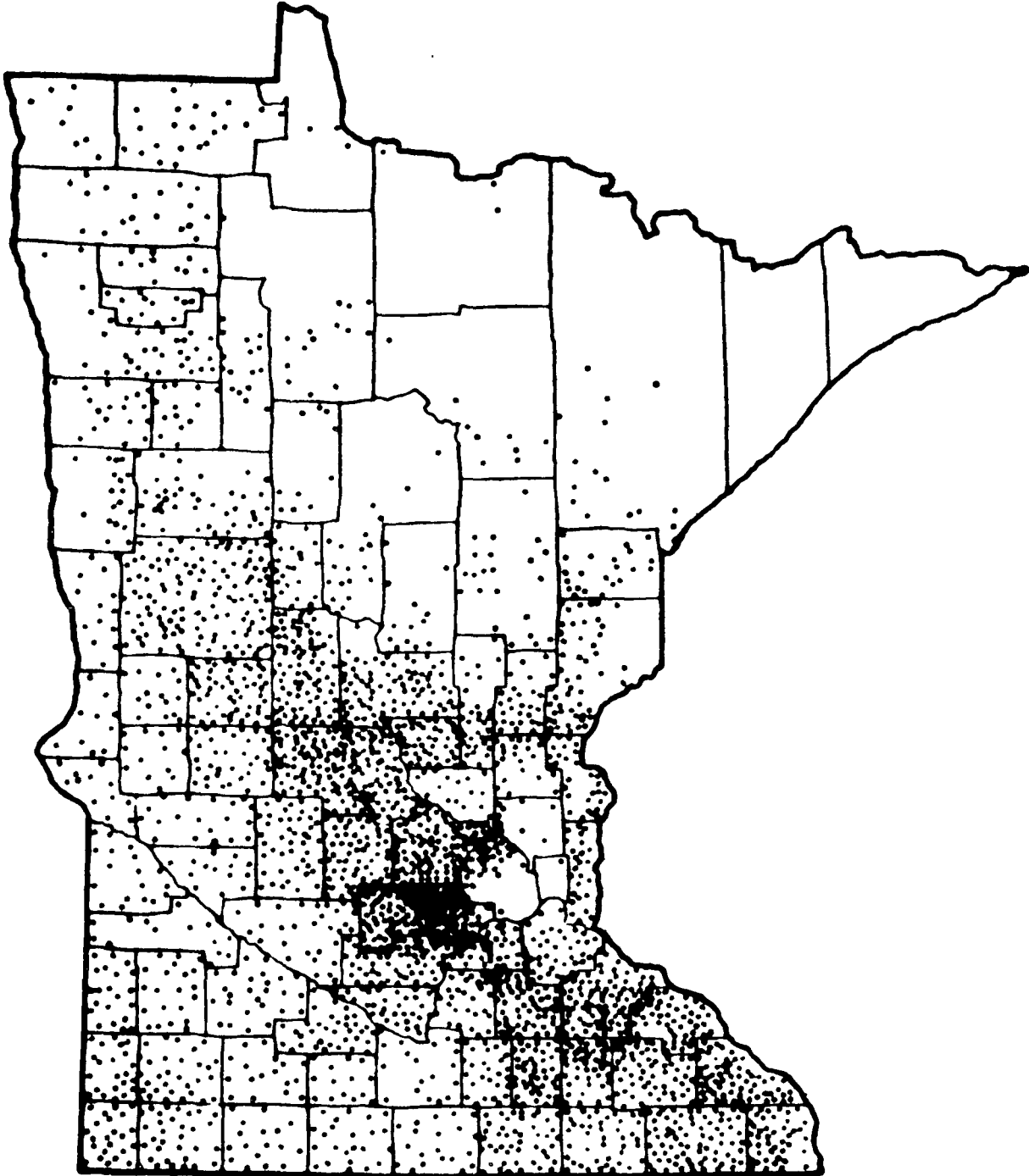
Central District

Southwest District

Southeast District



MILK COWS AND HEIFERS ON FARMS, JANUARY 1



One Dot=500 Cows and Heifers

D. Cows and Heifers Two Years and Over
Percentages - Those Kept for Milk as of Total
State Average 68%

Northwest District

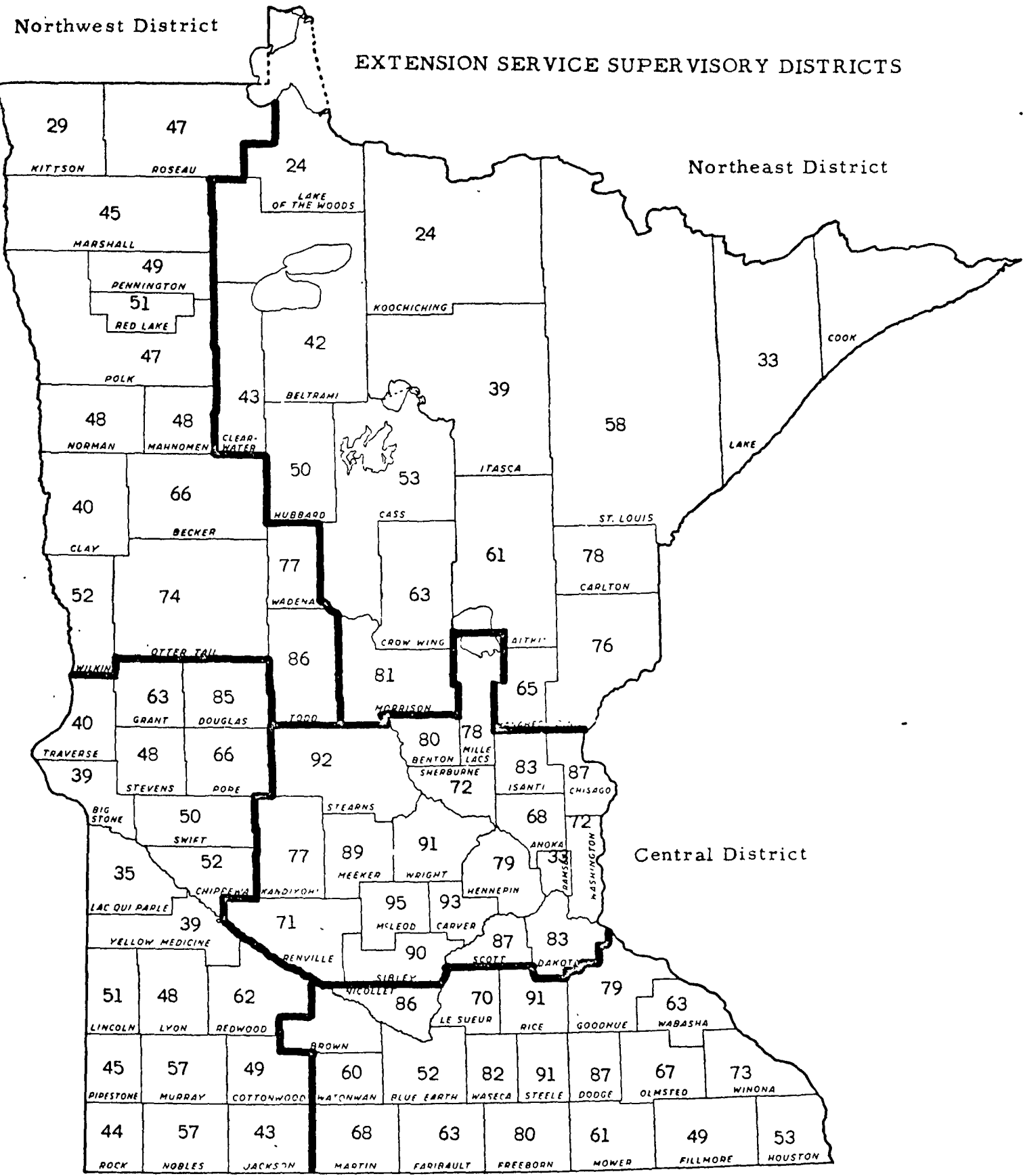
EXTENSION SERVICE SUPERVISORY DISTRICTS

Northeast District

Central District

Southwest District

Southeast District



BEEF CATTLE (Northeast, Northwest, Central Districts)

Situation.

Beef cattle feeding continues to increase in Minnesota. There are considerable resources for continued expansion in cattle feeding, particularly in the southern one-half of the state. About 585,000 head of cattle were on feed on January 1, with about 1,900,000 head slaughtered this past year. Most of these cattle are fed in the southern part of the state, however, there are trends toward increased cattle grazing in the northern part of the state.

Beef cow numbers have expanded in all areas of the state except the far northeast area. (See attached sheet on Cattle Placed on Feed, Beef Cows and Heifers on Farms, and Cow Population Other than Dairy). Beef cow numbers increased to 518,000. Eighty percent of these herds are commercial while the rest are purebreds. Beef cow herds fit the feed and labor supply in most areas, particularly the central and northern part of the state. Many farm residents who work off-the-farm can supplement their income and utilize more of their resources with a beef enterprise.

Objectives of Cattle Feeding.

To provide cattle feeders with current information on:

1. Feed-lot rations, feeding regimes, and pasture grazing.
2. Proper balancing of feed rations.
3. Protein and mineral supplementation.
4. Use of feed additives.
5. Feed-lot and pasture management.
6. Feed-lot, pasture health program.
7. Economic considerations and outlook.
8. Proper selection of profitable meaty cattle.
9. Proper marketing at desired weight.

Plan of Action.

1. An in-depth series of meetings will be held in various multi-county areas. This series will take 3-5 days or nights, dependent on the clientele requests.
2. Single county beef feed-lot nutrition management meetings will deal with specific problem areas.
3. Beef feed-lot tours with a one-half day formal meeting will be used to demonstrate successful operations and technology.
4. Beef feed-lot forums. A group of specialists will present current research findings in a brief stimulating presentation to precipitate questions from the audience. The forum will primarily be an on-the-spot problem solving function.
5. Area and branch experiment station days. Research findings on beef cattle feeding will be presented at various stations and area locations.
6. Disseminate information through circular letters, news releases, radio, correspondence and consultations.

BEEF CATTLE (Northeast, Northwest, Central Districts)

Objectives of Beef Cow Herds.

To provide beef cow producers with current information on:

1. Basic nutritional requirements of the beef cow and developing calf.
2. Application of these principles through practical ration formulation with proper protein, vitamin, mineral, and energy balance.
3. Feeder cattle production through proper breeding, feeding, marketing systems.
4. Building and feeding facilities.
5. Economic considerations.
6. Herd health programs.

Plan of Action.

1. An in-depth series conducted over a 3-4 day period will be held in a multi-county area.
2. Single cow beef cow management meetings will deal primarily with specific problem areas.
3. Beef cow pasture tours will demonstrate proper management, breeding and nutrition practices.
4. Feeder cattle auctions will be used to demonstrate difference in beef calf value and alternatives in marketing.

Objectives of Beef Cattle Performance Testing.

To provide an on-the-farm beef cattle performance testing program which will:

1. Realize greater profit from their beef cow herds.
2. Give a systematic measurement of difference among animals in traits of economic value.
3. Record these differences in a permanent records.
4. Help the breeder select and cull individuals on genetic merit.

Plan of Action.

1. Individual breeders will be encouraged to continue to collect records on their herds through the aid of the state specialist, county agents or other officials designated by the Minnesota Beef Cattle Improvement Association.
2. Multi-county, or single county meetings.
3. Area and county weighing, grading and identification demonstrations.
4. Cooperate with state beef organizations to sponsor state beef field days.

C. Cow Population Other Than Dairy

1969 - % of 1959

State Average 166%

EXTENSION SERVICE SUPERVISORY DISTRICTS

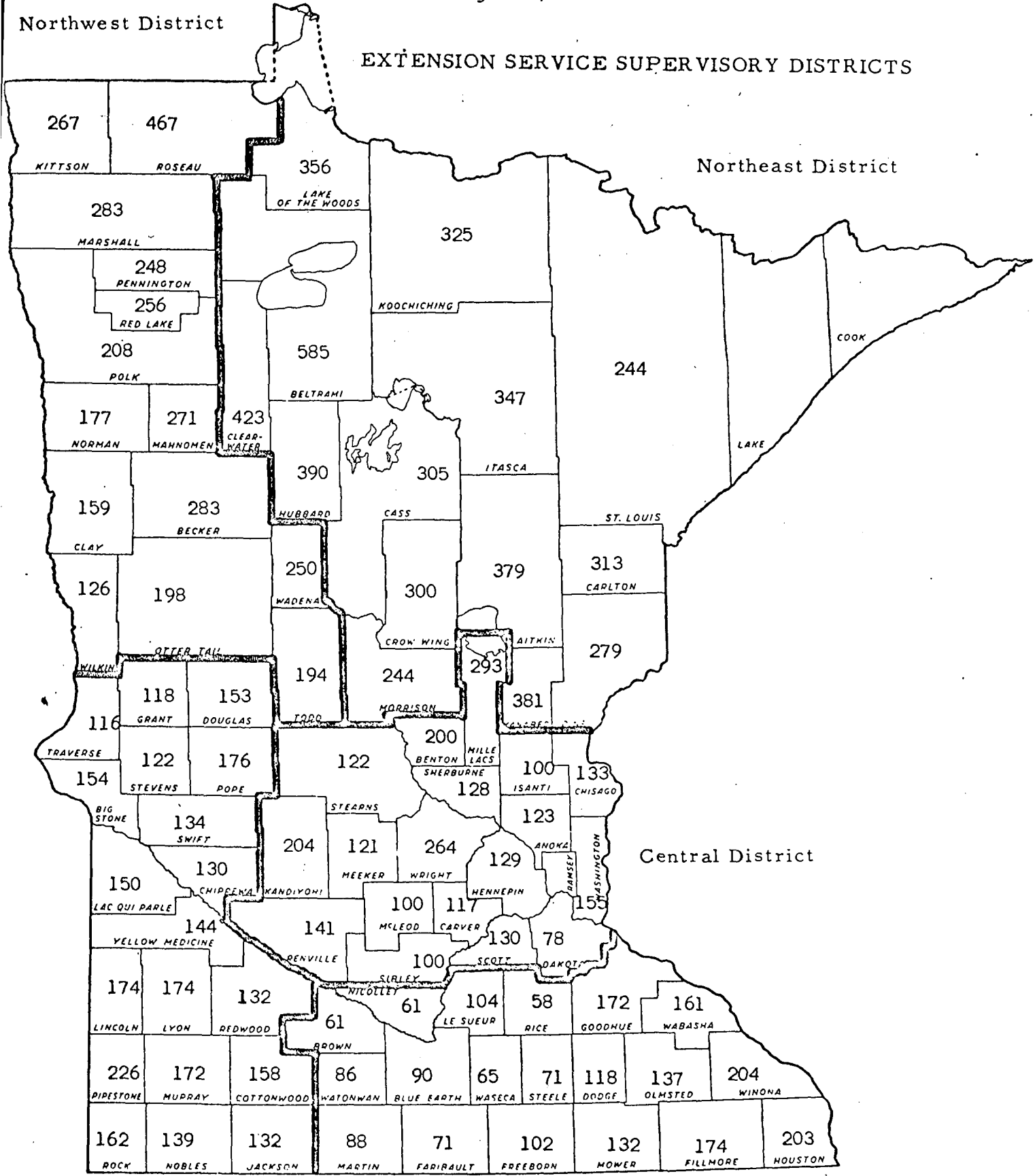
Northwest District

Northeast District

Central District

Southwest District

Southeast District



SHEEP (Statewide)

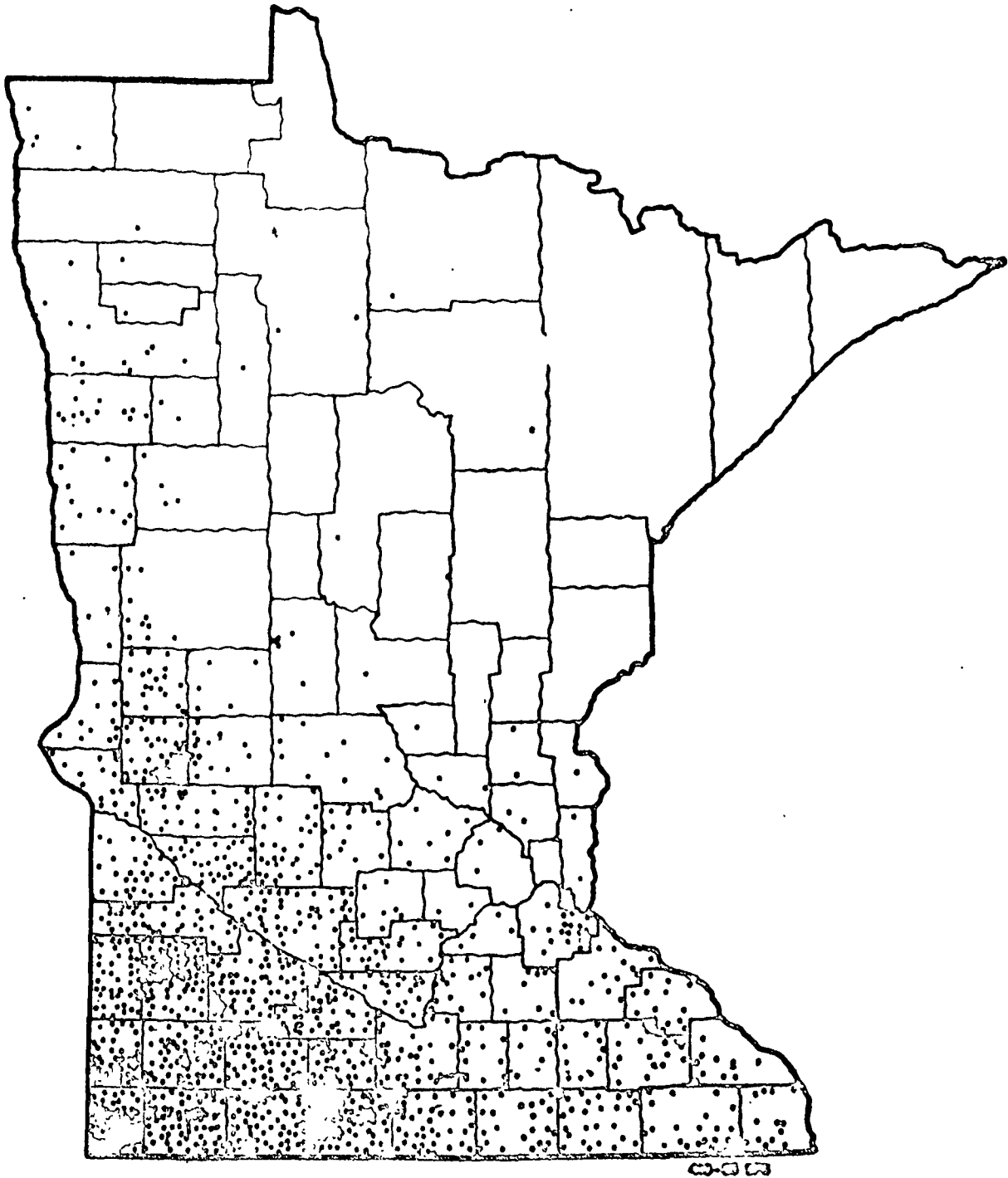
Situation.

The sheep population continued a downward trend and are at the lowest level since January 1927. The number of sheep and lambs on feed January 1 was 12 percent less, while stock sheep inventory was down 14 percent. Ewes, one-year-old and over, and ewe lambs under one-year-old were down 14 percent since a year ago. (See attached sheet Stock Sheep on Farms.) Along with fewer flock owners, it is apparent that care and management of Minnesota flocks has improved, however, much improvement must still be made.

Objectives of Sheep Programs.

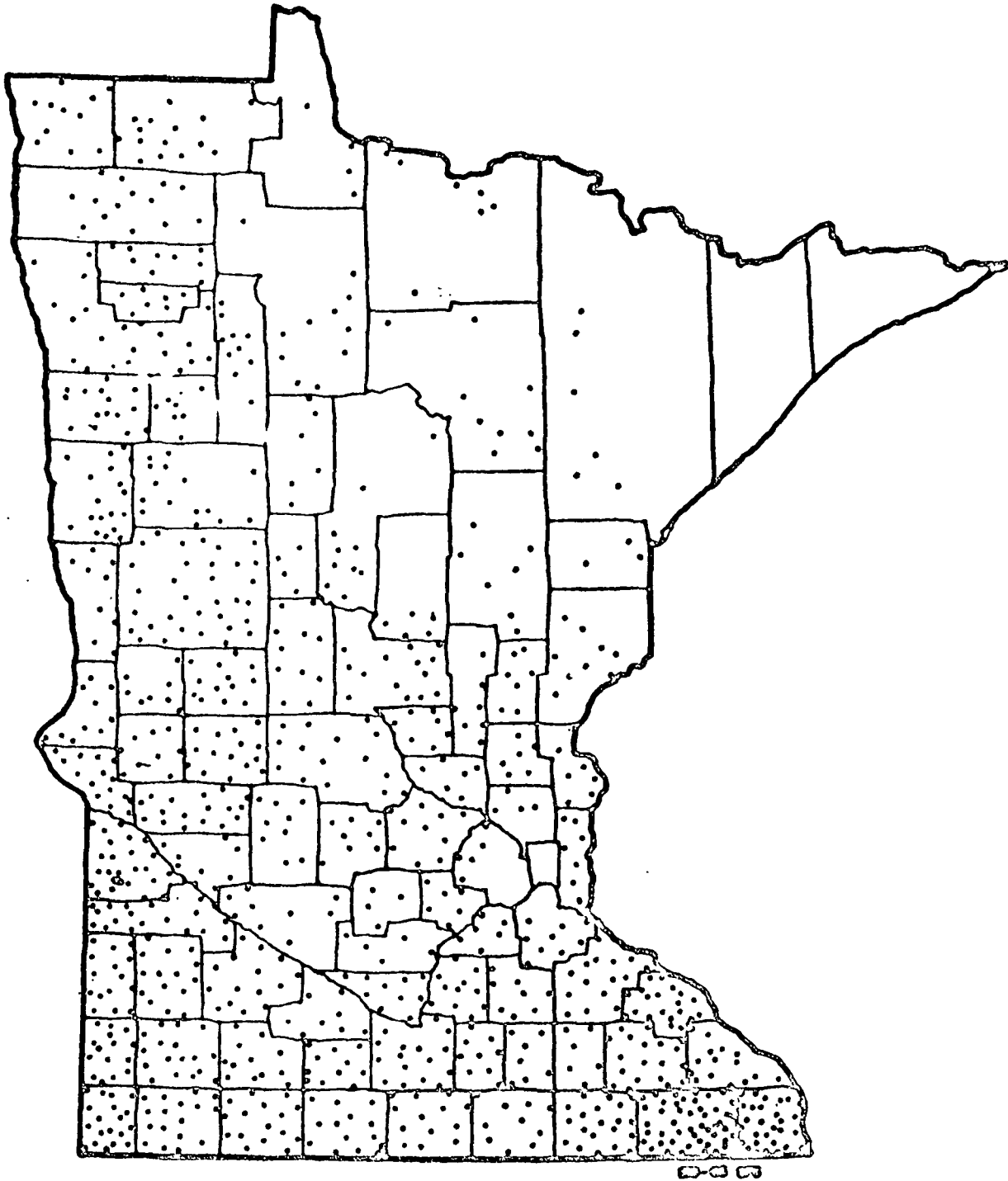
To teach the principles of breeding, selection, nutrition and management practices for the improvement of lamb production and realize a greater profit for farm flock and farm sheep feeding regimes.

CATTLE PLACED ON FEED



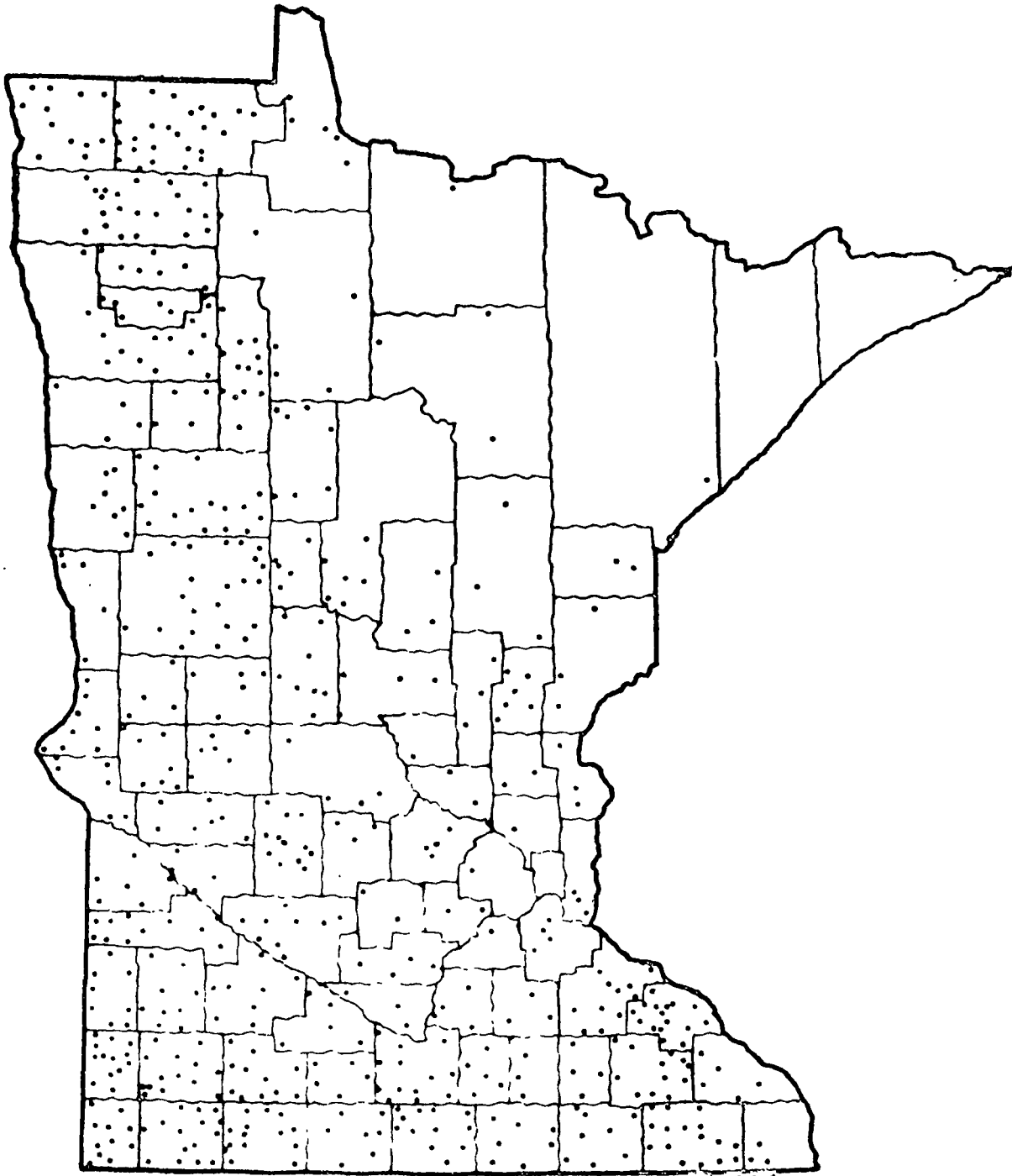
One Dot = 500 Cattle

BEEF COWS AND HEIFERS ON FARMS, JANUARY 1



One Dot = 500 Beef Cows and Heifers

STOCK SHEEP ON FARMS, JANUARY 1



624-53 S.C.

One Dot = 1,000 Sheep

SWINE (The State)

Situation.

The distribution of hogs in Minnesota is illustrated on the accompanying map, showing "Sows Farrowed". For many years Minnesota has produced about six million hogs annually. This level of production will likely continue. Certainly feed and other inputs are available for expansion if the present profit potential continues.

There is a rapid and continuing decline in number of producers. A survey of swine short course participants in 1967 showed that 35 percent of these farmers produced 500 or more hogs annually; 9 percent produced more than 1100 hogs. Even then these statistics do not apply to all hog producers in Minn. They do indicate the trend to fewer, but larger units. These specialized producers keep up-to-date on both popular and scientific or semi-scientific publications. This widespread information often raises additional questions or develops a need for help in evaluating the information and putting it to use. Often such producers want answers to very specific questions and solutions to specific problems. At times individual consultation would appear to be needed.

We still have concern for the smaller producers. The problem is how to reach them with information that could help them. Certainly rather elemental principles on breeding, feeding, management, etc., are needed. How can these producers be made to realize their need and be stimulated to do something about it?

Some general plans or programs that might generally apply for Minnesota follows:

Problems and Interests.

The most common questions or items of interest seem to be about as follows (in approximate order of amount of interest).

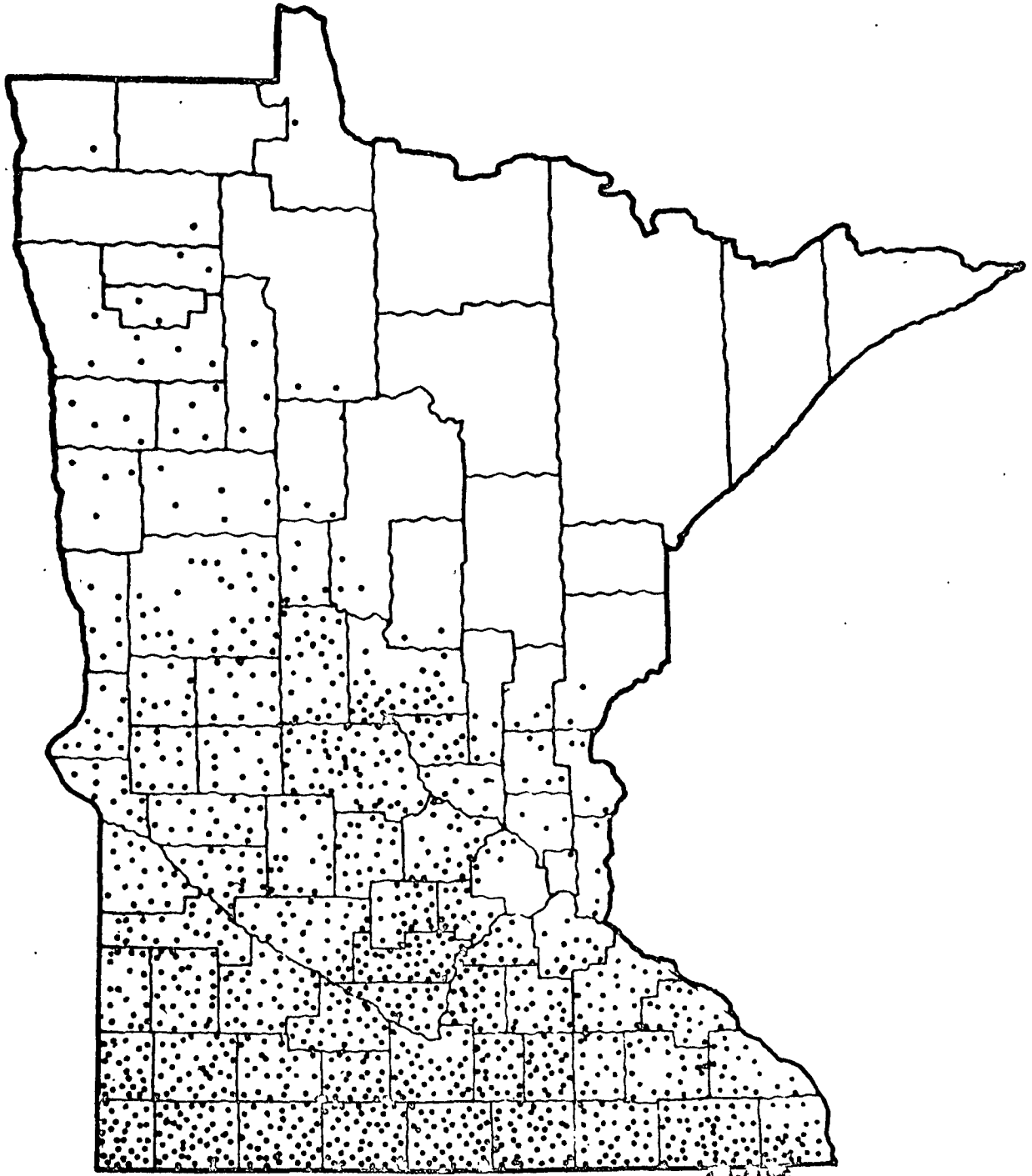
1. Buildings, equipment, feed storage and handling.
 - a. planning and construction.
 - b. economics.
2. Disease control and herd health.
3. Management.
 - a. general overall planning.
 - b. general herd management (especially the breeding herd).
4. Nutrition, feeds, feeding (including new feeds, methods of and affect of processing, etc.)
5. Carcass evaluation and information.
6. Breeding (genetics and breeding programs).
7. Marketing.

Various types of programs or procedures might help answer or solve these.

Programs.

1. In depth short courses, preferably multi-county, may still be held. These would be 2 to 4 day programs. Such programs probably are of less interest than formerly.
2. One-day programs in breadth, rather than depth, such as the Experiment Station Days. These help keep producers up to date on latest research and information, but probably do not provide all that is desired on "action programs".

ALL SOWS FARROWED



One Dot = 500 Sows

SWINE (The State)

3. Swine forums or seminars; these have potential and might help replace the short courses; they can be made quite specific to meet needs. For example one year one might have a one-day forum might be devoted to buildings, equipment and perhaps economics of various systems. Other examples could be used. Of course more than one, one-day forums could be conducted in a year. Over a period of three or four years most topics might be fairly well covered.

One advantage of these forums is the lack of formality. Producers can have a chance to ask questions. Also on some topics, such as management, the producers themselves can be "instructors" through the discussions; they have a great deal of knowledge that they can share.

4. General meetings and events; occasionally something on swine production can be, and often is, included in more general community events such as crop-shows, barrow shows, etc. These do not permit much educational depth or breadth, but often are means of reaching farmers and others that would not attend a specialized meeting.
5. Tours; these are discouraged because of disease and other problems. The information often has to be too general and too short.
6. Mass-media; T.V., radio, news articles, circular letters, etc., could be utilized far more than they have been.
7. Consultation and personal assistance; there still seems to be a big demand for assistance on specific questions and individual planning. The specialized producers probably wish more of this than even smaller producers. Perhaps more specialized, detailed publications would help. Specialist help probably can't be available for most such assistance; area livestock agents will probably fill some of the need. In the future more consultants will probably be available for a fee.

SWINE (Northeast and Northwest Districts)

Except for the Red River Valley and some other areas much of the production is, of course, feeder pigs.

Because the swine producers are less concentrated, problems are often encountered in assembling enough producers in one location to justify use of as many staff as might be desired. On the other hand each individual producer is just as important and just as entitled to help as those in other areas.

Forums or short courses should still be considered, however. In some cases the appropriate specialists might conduct part or all of one forum or short course in a general geographic area. The county agents

then might use material and ideas obtained at these sessions, to supplement their own knowledge and materials to conduct similar sessions at the local or county level.

Some feeder pig producers still have poor quality pigs. Breeding programs seem to need emphasis along with ideas and assistance in obtaining desirable boars. Programs centered around breeding management and other management to obtain, and keep, large litters of big pigs might be given a high priority.

The optimum use of feeds common to the area, such as barley and oats, should be stressed in our educational programs. This should include relative costs of these and other feeds. Preparation and supplementation of feeds such as barley and oats needs consideration in educational programs.

These are, of course, only a few of the items of interest and educational methods. Discussions between county agents and specialists should be encouraged so that specialists can provide as much assistance as possible in helping the agents develop or supplement desirable programs.

MEAT (State wide)

Situation.

A limited meats program has been conducted over the past years. These programs have been in conjunction with the existing programs to emphasize the desired end-product. Since the end-product of all meat animal production programs is the production of a nutritious, wholesome, high quality end product, we need to continue this emphasis as well as presenting to the consuming public the changes in, and the merit of, quality meat products.

Objectives.

To teach the changes in carcass composition and quality, and to show how these changes influence consumer acceptance. Assist producers in selection of high quality meaty breeding stock through carcass evaluation. Increase consumer knowledge of meat quality and its influence on nutrient value and palatability characteristics.

Plan of Action.

1. One-day beef, pork or lamb consumer seminars including topics such as:
 - a. meat quality and composition discussed by representatives from meat processing, retailer, nutritionist, producer and researcher.
 - b. market concepts for recognizing meat quality.
 - c. production factors which influence meat quality.
 - d. producers responsibility in the production, promotion and sale of meatier meat.
 - e. knowing wholesale and retail cuts.
 - f. meat preparation and cookery.
 - g. economic and nutritional consideration in selecting meat cuts.
 - h. grading and value difference potential.

2. General events.

General community events such as carcass contest shows, locker plant exhibits and shows, etc., do allow some means of presenting educational materials. These events are usually sponsored by an organized group and may act as a vehicle to reach some producers and consumers which may not attend a more structured program. These types of shows should have some type of formal presentation explaining a phase of quality meat production.

3. Mass media; T.V., radio, telelectures, news articles, should be utilized to a greater extent.

Poultry
Statewide

Situation

Minnesota is facing increased competition due to expansion of egg production in other areas. Production is still somewhat cyclic and a wide variance in egg prices results. In order to remain competitive the Minnesota industry must strive to gain greater production and marketing efficiencies and improve product quality in order to maximize returns. Problems have no district orientation, but must be met on the basis of the needs of the industry in a specific location.

Priority Problems

1. Improvement in product quality.
2. Disease control and prevention programs.
3. Proper environmental control and rearing arrangements.
4. Emerging problems in waste disposal.
5. Economic assembly for marketing.

Program Direction and Methods

1. Timely articles in Poultry Patter newsletter.
2. More complete series of Fact Sheets.
3. Work with producers and allied industry personnel individually and in meetings to improve egg quality and increase production and marketing efficiencies.
4. Cooperate with trade associations and government agencies in their programs to improve poultry production and product quality.

Submitted by Melvin L. Hamre

Turkeys
Statewide

Minnesota is the leading state in turkey production, raising about 15 percent of the national crop. Minnesota is in a good position to maintain its leadership but the growers and related industry must utilize the technology available to them.

The production of turkey is still very seasoned, with peak poult production in March, April, May and June, with the heaviest processing coming September, October and November. Turkey is still a holiday meat. But as further processing develops there will be a need for fresh, large-type turkeys the year-round. This will force year-round production of large-type turkeys, as well as the fryer-roaster. Confinement rearing of large toms in insulated buildings will be stimulated during the winter months. Associated with this will be new disease problems, different nutritional requirements, and grade problems requiring changes in management practices.

Submitted by Robert W. Berg

PRIORITY PROBLEMS OR EDUCATIONAL NEEDS

1. There is a need for better distribution of production of large turkeys because of the need for fresh turkeys for further processing.
2. Cholera and leg weakness have been on the increase.
3. Damp weather has created moldy feed grain which needs to be salvaged.
4. There is an increasing interest in contracts and kind of contracts available to the turkey grower.
5. Make the consuming public aware of the various turkey products that are available and how they can be used.

RECOMMENDATIONS FOR PROGRAM DIRECTION OR METHOD

1. Workshop at the Minnesota Turkey Convention.
2. Area turkey meetings.
3. Display of turkey products at the Minnesota State Fair in cooperation with the industry.
4. Monthly articles in Gobbles Magazine and Turkey World.
5. Farm and industry visits and office calls.