NORTH DAKOTA
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From the Director

A. G. Hazen

The Forty-fourth Legislative Assembly provided authorization and financial support for an expanded research effort in the Agricultural Experiment Station during the coming 1975-77 biennium. This provision for added effort was in addition to funds for continuing the present level of research commitment.

Equally important, the 1975 Session also granted support for added facilities including completion of the Veterinary Science-Bacteriology building currently under construction, completion of the renovation of meat handling facilities to meet current meat inspection standards, and an Agricultural Science building.

A major increase in the "grass-n-beef" research effort by added personnel and development of a more comprehensive and coordinated program among existing personnel is planned. This increased effort will principally involve personnel in the departments of Animal Science and Botany and the branch stations located at Dickinson and Carrington. For several months research personnel have been developing goals and objectives which are intended to give added impetus to this important segment of our agricultural productivity in North Dakota.

Another area which will have added support will be fundamental research in development of better management of the "saline seep" situations which have been prevalent for many years in some of our soils. Lost or reduced production from these affected acreages is significant, and the solutions to these problems are complex.

A third area of increased research activity will be in the pathological studies of diseases of the large-seeded legumes which include dry edible beans and soybeans, and of bacterial and fungal organisms affecting plant roots such as the cereal root rots. Only with a more thorough understanding of these several plant disease problems can adequate control and management of them be accomplished.

Added effort will also be provided in the farm power and machinery research, particularly relat-

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On the Cover: Dr. Warren Whitman, chairman, Department of Botany, spreads mature native grass hay to seed a leveled spoil area as part of a research project to establish vegetation on strip mining operation residue. (Photo by Jim Berg)

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Yield increases of alfalfa and alfalfa-grass mixtures grown without adequate nitrogen fertilization are generally higher in response to the water spreading system than increases for adequately fertilized production (Tables 2 and 3). This is particularly true for alfalfa-grass mixtures. This again indicates that the alfalfa was better able to supply nitrogen for maximum production when the water spreading system apparently increased stored soil moisture.

General observations regarding variety performance are apparent from 1963-66 average yields (Tables 2 and 3). Canadian No. 1 bromegrass generally yields less than Lincoln bromegrass. Production levels of Nordan crested wheatgrass and Lincoln bromegrass are about equal. Teton alfalfa generally yields less than Vernal and Ladak under drier conditions. Average production of Canadian No. 1/Vernal and Nordan/Vernal mixtures were generally about the same. Stands of grass in the mixtures remained at about 50 per cent throughout the study.

Conclusions

Fertilizing crested wheatgrass and bromegrass with 50 lb/a of nitrogen annually more than doubled their forage production. These grasses, if adequately fertilized with nitrogen, generally would show little production advantage when grown in a water spreading system. Alfalfa and alfalfa-grass mixtures responded to nitrogen fertilizer when average or below average precipitation was received. More research is needed to determine if this condition is more than just one isolated case in western North Dakota.

Of the treatments studied, alfalfa and alfalfa-grass mixtures responded best to excess water trapped by the water spreading system. The system should at least double forage production in very dry years or in years when second cuttings are made possible by trapping timely runoff water. A good water spreading system should insure consistent production of alfalfa or alfalfa-grass mixtures in semi-arid western North Dakota.

From the Director . . . (continued from page 2)

ing to energy conservation; in waste disposal and pollution control; and by the addition of an immunologist-serologist in the Veterinary Science Animal Diagnostic Laboratory to assist in providing a greater breadth of competence in this important segment of the Agricultural Experiment Station program.

These efforts will mean personnel additions to the departments of Agricultural Engineering, Animal Science, Bacteriology, Biochemistry, Botany, Plant Pathology, Soils, and Veterinary Science, and two joint appointments with the Cooperative Extension Service. Technicians to assist existing professional personnel will also be provided in Agronomy, Biochemistry, Entomology, and Horticulture and Forestry.

This is the first significant addition to agricultural research capability which has been provided to this Station by state legislative action for several bienniums, and this investment in the future agricultural production capability of our North Dakota farms and ranches will pay handsome dividends.

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BULK THIRD-CLASS

limited data are available from the North Dakota Crop and Livestock Reporting Service for the Central District consisting of Eddy, Foster, Stutsman, Wells, Sheridan and Kidder counties (Table 3). Based on 5-year average yield estimates and 1972-74 prices, sunflowers would appear to give as high as or higher return than other crops grown in this area. Costs of production are generally considered similar to those of small grains and flax, although this will depend on usage of fertilizers, herbicides, insecticides, artificial drying and other inputs.

Seasonal droughts, bird depredation, available markets, lack of row-crop equipment and performance of subsequent crops on sunflower ground are other considerations of concern to prospective growers. Information on certain of these and other production related problems is available in the North Dakota Agricultural Extension Service Circular A-538, Sunflower Production in North Dakota.

Table 3. Average Yields, Prices, and Values Per Acre of Sunflowers and Alternative Crops in Central North Dakota.[1]

Crop	5-Year Average Yield	1974 Average Prices	Value Per Acre	1972-74 Average Prices	1972-74 Value Per Acre
Sunflowers	892 (lb)	16.03 (cwt)	$142.99	$9.81 (cwt)	$ 87.51
Wheat (HRS)[2]	28.3	4.90	138.67	3.69	104.43
Barley[2]	39.9	3.30	131.67	2.14	85.39
Flax[2]	11.5	10.20	117.30	6.98	80.27
Oats[2]	49.7	1.65	82.00	1.12	55.66

[1] *From North Dakota Crop and Livestock Reporting Service statistics, 1970-75, for Eddy, Foster, Stutsman, Wells Sheridan, and Kidder counties.*

[2] *Yields and prices on a bushel basis.*