



NORTH DAKOTA  
**Farm Research**

Bimonthly  
Bulletin

Vol. 36, No. 3

November-December, 1978



**THE HAZEN YEARS — 1956-1978**

# Director's Column



**Arlon G. Hazen**

*"Agriculture is the most healthful, most useful and most noble employment of man"*— George Washington.

No doubt the Father of our Country was thinking primarily of those who were tilling the soil when he made the statement quoted above. In that sense, his words reflect profound wisdom.

But as our nation has grown from its infancy during the past 200 years, this creature we call "agriculture" has also grown. With this growth have come profound changes. The dominant factors which have caused these changes include: replacement of horses with tractors; bringing of electricity to our rural areas; better roads and transportation; instant communications; federal and state government activity in many areas such as education, research, commodity programs, marketing orders, pure food and drug regulations, and foreign trade; and development of a different concept and use of financial credit. Industry also has made significant contributions to the changes in agriculture with emphasis on farm machinery and equipment of all types; chemicals and other supplies; processing equipment; and the highly specialized wholesale and retail food marketing systems.

To summarize these changes and growth in agriculture another way, we have changed from a situation only two hundred years ago when 85-90% of our population was confined to the land, producing food and fiber for themselves and the balance of our population, to the present when one person produces enough food and fiber for between 50 and 60 others. However, today's agriculture does require the employment of many more individuals when viewed in the broad sense. Agriculture today is properly defined as the production, transporting, processing, and marketing of food and fiber. In this context probably more than 40% of our employed population could be considered as directly or indirectly in agriculture. Not only does the employment of a great many people depend upon those who produce food and fiber, but also and more importantly *all* of us depend upon them for our existence. Man has found no substitute for food or shelter to guarantee his health and existence.

Agriculture in the United States is the envy of practically all other nations of the world. It has advanced to its present level for four basic reasons.

First, our form of government has allowed individuals to maintain their rights, privileges, and opportunities to exploit and utilize initiative.

**(Guest Column Continued on Page 5)**

## In This Issue

|   |    |
|---|----|
| Agricultural Economics — Fred R. Taylor .....               | 3  |
| Agricultural Education — Don Priebe .....                   | 4  |
| Agricultural Engineering — George Pratt .....               | 6  |
| Agronomy — J. F. Carter .....                               | 9  |
| Animal Science — Clayton Haugse .....                       | 11 |
| Bacteriology — Kenneth McMahon .....                        | 13 |
| Biochemistry — Harold Klosterman .....                      | 15 |
| Botany — H. Goetz .....                                     | 16 |
| Cereal Chemistry and Technology — O. J. Banasik .....       | 19 |
| Entomology — John T. Schultz .....                          | 21 |
| Horticulture and Forestry — E. P. Lana .....                | 22 |
| Plant Pathology — R. L. Kiesling .....                      | 25 |
| Soils — Charles M. Smith .....                              | 28 |
| Veterinary Science — Myron Andrews .....                    | 31 |
| Branch Station Changes and Development — 1957 to 1978 ..... | 32 |
| Off-Station Research Pays Off .....                         | 35 |
| The Agronomy Seed Farm — LeRoy Spilde .....                 | 38 |
| Carrington Irrigation Branch Station — Howard Olson .....   | 39 |
| Dickinson Branch Station — Tom Conlon .....                 | 41 |
| Hettinger Branch Station — Tim Faller .....                 | 43 |
| Langdon Branch Station — Robert Nowatzki .....              | 44 |
| North Central Experiment Station — Ben Hoag .....           | 45 |
| Williston Branch Station — Ernest French .....              | 46 |

**Our Cover:** This issue of North Dakota Farm Research salutes Arlon G. Hazen, who served for 22 years as Dean of the College of Agriculture and Director of the Agricultural Experiment Station at NDSU. He resigned effective November 1 to accept the position of Regional Director of the Association of North Central Experiment Station Directors. His new office is in Hultz Hall on the NDSU campus. — Photo by James Berg



**Vol. 36, No. 3**

**November-December, 1978**

A BIMONTHLY progress report published by the

**Agricultural Experiment Station,  
North Dakota State University of  
Agriculture and Applied Science  
Fargo, North Dakota 58102**

**Arlon G. Hazen**

*Dean of Agriculture, and Director  
of Agricultural Experiment Station*

**EDITORIAL ADVISOR**

**H. Roald Lund**

**EDITORS**

*Gary Moran*

*Dorothea McCullough*

to the department and was remodeled in 1977. The improvement of facilities was accompanied by purchase of equipment designed to provide a modern and efficient setting for teacher preparation.

Professor Owen retired in June of 1975 and was subsequently named Professor Emeritus. Vernon Luft joined the staff on July 1, 1975.

Recent years have been marked by continued development of the pre-service teacher preparation program. Several courses have been added to meet the changing needs. An Early Experience program has been implemented to provide students with actual school experience early in their college careers. A Supervision of Student Teaching course has been developed for supervising teachers and a manual has been developed for student teachers and their supervising teachers. Micro-teaching with video-tape has been incorporated as an integral part of the teacher preparation program.

An option to prepare persons for Cooperative Extension Service positions is being developed. An internship with a County Agricultural Extension Agent is an integral part of this program.

Various research and development projects have been carried out in the department. Several of these,

including curriculum development efforts, have been cooperative ventures with the North Dakota State Board for Vocational Education.

A formal research program through the North Dakota Agricultural Experiment Station has recently been initiated during the tenure of Director Hazen. A Graduate Research Assistantship was added and a project to determine agricultural manpower needs in North Dakota has been approved and funded. This project, currently in progress, is designed to develop methodology and to determine the employment needs in various agricultural occupations in the state. These data will be useful for planning and designing educational programs for potential workers in these occupations.

The scope and variety of activities in the Department of Agricultural Education indicated a critical need for more professional staff. An added position was authorized in 1977 and on August 15 of that year Lawrence Helt joined the Department staff.

The Department of Agricultural Education has experienced steady growth and development during the tenure of Dean and Director Arlon G. Hazen. The support of the Office of the Dean and Director has been instrumental in this growth and development.

---

### (Guest Column Continued from Page 2)

Second, we recognized early in our self-government the huge dividends to be derived from relatively modest investments in education and research. This has been particularly true for agriculture, and one of the most unique aspects of this success has been the land-grant system of agricultural teaching, research and extension. This system, beginning in 1862, has been a classic example of a genuine federal-state cooperative undertaking.

Third, private industry directly related to agriculture has flourished under our capitalistic and competitive free enterprise system.

And fourth, the individuals who have owned and operated farms and ranches have maintained an intense loyalty to their unique way of life, utilizing the natural resources of land, water and air to produce the essential food and fiber for all our people and many in foreign lands as well. Each of these basic "parts" of agriculture was dependent upon and essential to the other three in achieving the current level of success.

When North Dakota became a state in 1889 its constitution provided for the land-grant agricultural college at Fargo. The first legislative session in 1890 appropriated funds and entered into the federal-state partnership with the federal government to establish and maintain an agricultural experiment station. Immediately after passage of the Smith-Lever Act by the Congress in 1914, North Dakota incorporated its existing system of taking research findings to the people into the new federal-state Cooperative Extension Service. North Dakota has been a leader in agriculture since statehood. This is as it should be.

It has been my personal privilege to have been associated with the land-grant research and teaching portion of agriculture in North Dakota for 33 continuous years, beginning in 1946 at the Williston Branch Station

of the North Dakota Agricultural Experiment Station. Since 1956, and for one-fourth of its 88 years of existence, I have served as the Dean, College of Agriculture and the Director, Agricultural Experiment Station, North Dakota State University. In these capacities and as an "outsider" from Oklahoma, it has been a highly rewarding experience to have had an active part in the agriculture of North Dakota.

The people of North Dakota, through their state and federal legislative representatives, have provided the financial resources to continually improve the program of agricultural research and education at North Dakota State University. This support has been a wise investment, and some of the examples of results of this investment for the past score of years are summarized in this issue of your *Farm Research*. These examples have been prepared by the various research scientists at our seven branch stations throughout the state and the main station at Fargo in recognition of this being the last issue of *Farm Research* which will carry my name as the Director of the North Dakota Agricultural Experiment Station.

Therefore, I take this opportunity to express both my pride and appreciation. I am proud to have been designated for these years to be the administrator for these scientists, faculty, and other employees of the College of Agriculture and the Agricultural Experiment Station. I am most appreciative of the splendid support and friendships accorded me during these years from a large number of North Dakotans, including farmers, ranchers, students, legislators, businessmen, professionals, and most of all, the highly competent and loyal colleagues employed in the College of Agriculture, Agricultural Experiment Station, and the Cooperative Extension Service, North Dakota State University.

May the success of our "agricultural system" continue indefinitely, and those who would seek to decrease or destroy its potential for the future fail miserably!

Agricultural Experiment Station  
**NORTH DAKOTA STATE UNIVERSITY**  
of Agriculture and Applied Science  
University Station  
Fargo, North Dakota 58102  
Publication

*Alton S. Hayden*

DIRECTOR

to

POSTAGE AND FEES PAID  
U.S. DEPARTMENT OF  
AGRICULTURE  
AGR 101



BULK THIRD-CLASS