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## AGRONOMY

This man Hazen professed not to know much about agronomy. "You fellows know the facts," he would say, "I'm relying on you for a good decision," or something to this effect. But we knew that Arlon Hazen was a good student of crop and weed science over the years from the Williston Experiment Station through the many tough decisions at NDSU and around the state at various locations.

North Dakota was ready for and needed Arlon Hazen in 1956. Agriculture of the Plains had been depressed by drouth, low prices, and social frustrations during the 1930's. The agricultural outlook swung upwards in the 1940's with World War II, good prices, improved production, etc. The situation was favorable for a badly needed expansion of research staff and facilities in North Dakota and other states. However, residual financial conservatism due to the depression complex, generally adequate food production and moderate farm prices, along with careful actions of thrifty and conservative educators and administrators in the higher education system, did not lead to the expansion in the 1945-47 period that could have been funded easily with good support for agriculture.

From the late 1950's to 1978 some needed expansion of crop research in the form of new staff and new facilities has occurred with the support and implementation of Arlon Hazen.

North Dakota obtains about 65% of its annual income or new wealth from crop agriculture, so the status of crops research, teaching and extension is highly important to the state. Agronomy, the "crop and weed science" department at NDSU (then NDAC) prior to 1956, or to 1960, or to date has been, and is, too small to serve the state adequately. Agronomy had seven faculty members doing research and all teaching prior to 1957 when a barley geneticist was hired to attempt to solve some of the basic genetic problems of the barley crop.

Beginning in 1957 and continuing through the 1960's and 1970's, expansion of agronomic research and teaching occurred with the strong support of Dean and Director Hazen. Some significant research programs started in the 1960's which were of great need and certain "payoff"

to North Dakota were (1) a full-time seedstocks project and leader to supervise quick and efficient increase and distribution of new varieties of crops produced by NDSU and other states, and to provide leadership to the seed production facilities available at the Agronomy Seed Farm and Branch Stations. (2) Initiation of a strong weed control research and teaching program in 1962 which has developed into one of the excellent weed control programs at Land Grant Universities in the United States, and which is providing great service and value to North Dakota crop producers. Agronomy was ready with a research project in 1962 when Regional Research Funds became available to help start the weed control project and Director Hazen moved quickly to give it his full support. This investment in weed control research has returned millions of crop dollars to North Dakota producers. (3) Expansion of the breeding and genetics program in hard red spring wheat was recommended by Agronomy, wheat producers, the Wheat Commission, etc. in the early 1960's and Director Hazen gave this program his full support. (4) Also, in the 1960's Director Hazen's office gave its full support to a "full-fledged" research program to develop hybrid wheat in North Dakota. This project continues as the only public supported project of its kind in the United States. The project has developed very valuable genetic and cytogenetic information and has helped to make NDSU one of the two or three outstanding wheat research centers in the world. An economic and superior hybrid wheat has not been produced as quickly as many experts predicted but "it is on the way." (5) Director Hazen understands North Dakota agriculture and does not shrink from or delay making tough decisions. Shortly before the release of Olaf wheat a decision was necessary on whether NDSU would modify somewhat its policy on maintenance of very high standards of quality in hard red spring wheat. Upon the recommendations of members of the wheat improvement team at NDSU, with input from producers and industry, Director Hazen made a tough decision. He decided that NDSU should somewhat modify our high standards to allow the release of hard red spring wheats developed at NDSU having higher yielding potential

needed by producers, but still having all the quality characteristics needed by the milling and baking trade at home and for export to maintain the demand for and usefulness of our wheat.

In addition, Director Hazen has supported the new program development of soybean breeding; the breeding of hard red winter wheat to produce an alternative fall-seeded crop for North Dakota; a crop physiologist to cooperate with the breeders to produce better varieties for North Dakota; an oat breeding program; facilities to accommodate five new USDA crop scientists; and facilities to house three new, badly needed, Extension agronomists. Further, during this period upon the loss of the USDA durum wheat breeder assigned to NDSU, Director Hazen declared that North Dakota needed and would have its own durum wheat breeder, and we did!

Director Hazen has been especially effective in organizing, explaining, and supporting needs for research and teaching, and for physical facilities to the Legislative and Executive branches of state government. During the 1960 to 1978 period he has given strong support for new and expanded facilities for research in the crop and weed science area. New facilities used at least in part by crop scientists are Walster Hall, Waldron Laboratory, Waldron greenhouses, a renovated and modernized Wiidakas Laboratory (corn seedhouse) including expanded cold storage space for valuable Foundation seed, and a stronger improved branch station system. Also, 160 acres at the Dalrymple Experimental Plot were developed and placed into complete use in two to three years, and the "Northwest 22" field research area has been developed five miles northwest of the NDSU Experiment Station at Fargo.

Director Hazen has given his strong and continuous support to the many continuing and complex processes that lead to products from research. Some of these products are superior new crop varieties from our crop improvement teams. For example, six new varieties of hard red spring wheat, 11 new superior varieties of durum wheat, six new superior varieties of malting barley, and numerous inbreds and hybrids of corn and sunflower have been developed, many or most with NDSU and USDA cooperation. Most of these varieties or hybrids have been so superior and popular with producers that they have occupied most or all of the crop acres of the specific crop in North Dakota and much of the acreage of that crop in adjoining states — a few have been licensed in Canada for production there. As mentioned earlier, NDSU has become a national center for excellence in research on improvement of wheat, barley, sunflower, and flax, and in research on control of weeds in crops and grassland.

Director Hazen also is the Dean of the College of Agriculture, meaning that he has a second job as chief administrative officer for the "teaching" activities of the College of Agriculture. Enrollments of NDSU and the College of Agriculture have more than doubled during the 1956 to 1978 period. In addition students from other Colleges at NDSU have come to take courses in Genetics or Introduction to Agronomy, or Weed Science, or Experimental Design. This is good as more students are trained and more youth of North Dakota are served. Dean Walster used to say that "the first duty of the

faculty is to teach the students," and for professors with joint teaching-research appointments, the highest priority duty is to meet and teach the students in the classroom.

Teaching facilities in Agronomy are much less than adequate or ideal but we have advanced as much as possible under the "formula" restriction and other limitations during the 1956-78 period. During the 1956 to 1978 period students taught and majors have increased about fourfold. Dean Hazen has approved the increase of "teaching time" for professors in Agronomy, especially for those professors teaching the greatly increased enrollments in Introduction to Agronomy, Genetics and Weed Science. Many new courses and new curriculums for students have been started and taught during this period. Also, Dean Hazen has been most helpful in seeking all teaching support funds possible and making the funds available to improve teaching programs for students.

Many opportunities become available and are necessary and valuable to supplement the teaching and research program of the College of Agriculture and Agricultural Experiment Station. Dean Hazen has been very receptive and helpful in providing facilities for personnel of the United States Department of Agriculture as they are associated with Agronomy and other departments. The USDA personnel conduct research of value to North Dakota and often teach or advise graduate students or otherwise perform useful services for the University and North Dakota. Also, office and other facilities have been provided for three new Extension Agronomists of great benefit to North Dakota during the 1956-78 period.

Graduate student enrollment has increased in Agronomy and Agriculture during the 1956-78 period. In Agronomy, graduate enrollment has increased from two or three students as M.S. candidates in 1956 to 58 M.S. and Ph.D. candidates in 1978. Dean Hazen has supported and made decisions to provide assistantship funds for some students, money that could have supported other valuable research objectives. Also, our facilities and faculty have been used to train a limited number of foreign students from lesser developed countries as our contribution to helping less fortunate countries, training agronomists to improve food crop production in order to ease world hunger. Our graduate program also has provided high quality career training, especially in plant breeding and weed control science to dozens of North Dakota youth who now serve agriculture as scientists, extension specialists, agribusinessmen, farmers, etc., in North Dakota or other states. In addition, while North Dakota is providing faculty and facilities to train M.S. or Ph.D. degree holders, these students are providing valuable research, teaching and other assistance to Agronomy and agriculture of North Dakota. Agronomy produced the first Ph.D. from NDSU in 1963, and has produced 113 M.S. and 65 Ph.D.'s during the 1956-78 period of Dean Hazen's tenure in the Dean's office.

The NDSU College of Agriculture and Agricultural Experiment Station has come a long way since 1956. A strong base of qualified staff personnel, facilities, and operating budget has been laid under Dean Hazen's direction and administration.