

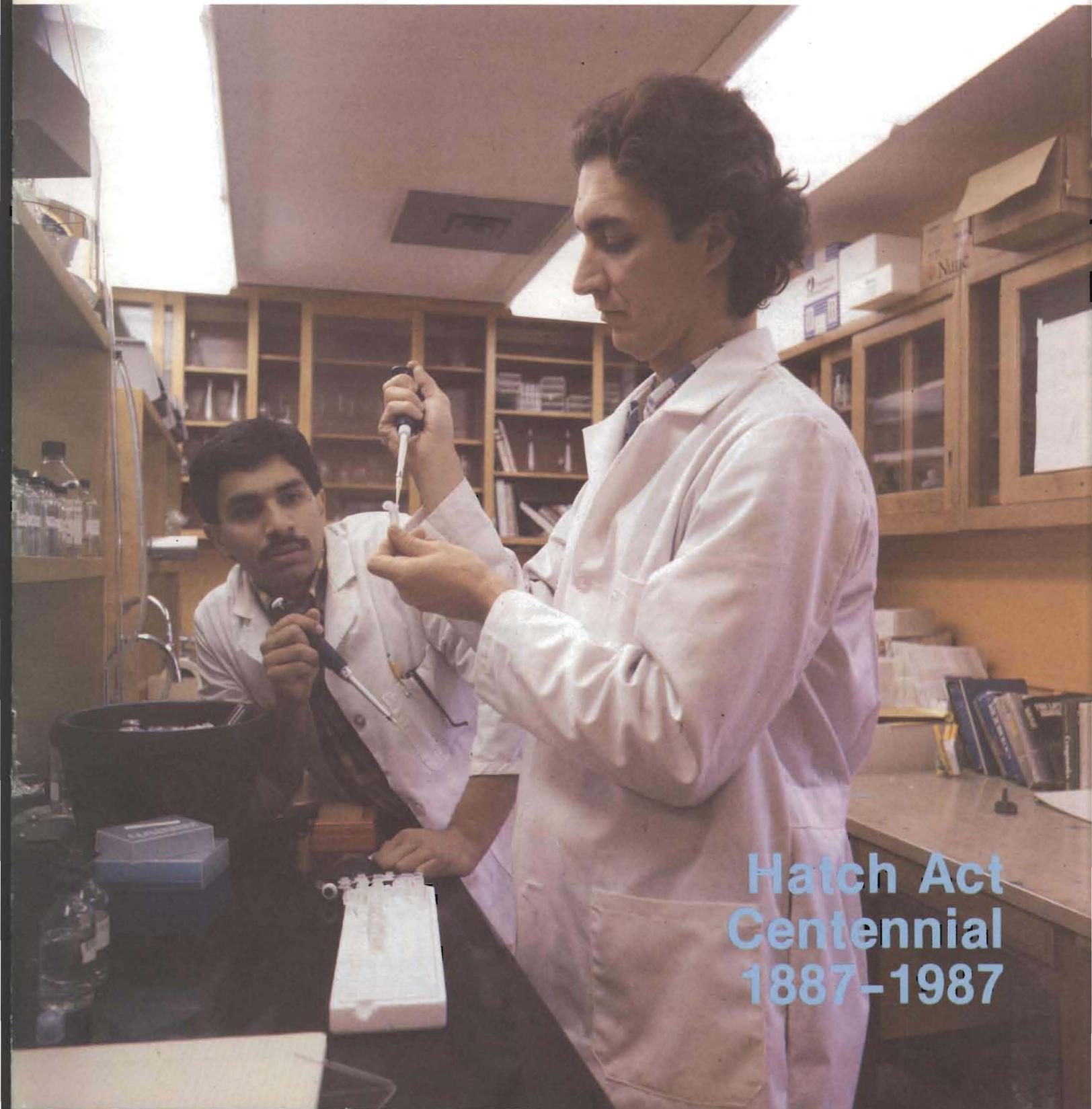


NORTH DAKOTA
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**Hatch Act
Centennial
1887-1987**

Director's Column

H. R. Lund



On March 2 and 3, 1987, I was privileged to be able to attend a presentation of a series of papers in Washington, D.C., to commemorate the Hatch Act Centennial. It was a memorable experience for a North Dakota farm boy, now Dean of Agriculture and Director of the Agriculture Experiment Station in North Dakota one of the most agriculturally oriented states in the nation! My wife, also a North Dakota native, and I came away with a sense that we had participated in something of significance, not only to the United States but the world. Please read the text of the Hatch Act of 1887 in this magazine and you will begin to feel the impact of what we have done as a "people" in this nation.

I cannot help but personalize this column with a reference to the "people" of this state and area. My grandparents from Norway and Denmark settled in Hillsboro and Valley City, respectively, before North Dakota became a state. My wife's grandparents from Norway settled in what became Steele county. Our roots are deep in North Dakota agriculture. Our parents saw the evolution of Agriculture from human and horse power to computer and diesel power in their lifetimes. What will we see in ours!

In my current professional role, I am called upon from time to time to project an answer to the question: "What is the future of agriculture?" Let's constrain our conjecture to North Dakota and its relationship to the nation and the world as a source of food, feed, fiber and fuel.

This year, 1987, is only 10 years since the 1977 World Food Conferences, which were held on this continent and Europe to discuss the impending food shortage. You wonder how 10 years later we could have been concerned when the very countries that were to have faced starvation and famine are now food exporters! However, hunger is still a fact of life in this world; there are over 5 billion humans on this planet and a doubling of this number is predicted early in the next century. "To feed the world" is a worthy challenge for agriculture now and into the future.

Our past record as agricultural scientists would predict a positive outcome at any point in human history of the future for several reasons. First, of all, there are now new ways to solve old problems. Food used to be "staples" converted to food in the kitchen and served up in three or more square meals a day. We see the food of the future composed of components of agricultural production and presented to us in convenient and "on-the-go" forms in a lifestyle quite different than that of today. If you don't think so, just look back

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On the Cover: The year 1987 marks the centennial of the Hatch Act and 100 years of experiment station research in the United States. Modern research might involve the genetic makeup of various crops; here agronomy researcher Phil McLean and student assistant Jorge Simental conduct plasmid DNA isolation of wheat. Photo by Harold Caldwell.

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Fertilizer may be used for auxiliary benefits such as disease suppression. The Soil Testing Laboratory at North Dakota State University introduced the chloride test this fall because of chloride's potential for foliar and root disease suppression. Fertilizer products and practices of the future may allow precise metering of nutrients to the plant over the growing season. Consideration and study of secondary nutrients such as sulfur and certain micronutrients will become more important.

Much erosion-prone land will be removed from production in the next 10 years. This land will probably not be needed for domestic food production in the near future; however, some marginal land will still remain in production. The baseline information that has been developed during the past 10 years, along with continuing efforts in management of erosion-prone land, will be used to reclaim or improve the productivity of these areas.

Soil and crop management in the future will require greater use of information sources. Computerized production records and soil maps will be available for convenient reference with expert systems developed for farmers to

query regarding management choices. Extension personnel and consultants will require a greater depth of training and will be integral components of the required information exchange. Farmers will have to become more highly trained in identifying nutrient deficiencies, insects, weeds and diseases.

The possibilities in soil management in the future are exciting and challenging. We will learn to improve and make better use of the soil resource by incorporating both basic and applied information into the management information base. Better use will be made of cultivated land and new practices will be developed and evolve for marginal or erosion-prone soils. Removal of some of these erosion-prone soils from production and developments in sustainable agriculture will result in environmental improvements that benefit all our citizens.

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as far as you are able and evaluate how different your life style is from that of your parents, grandparents or greatgrandparents.

Our commitment to the future will be enhanced by the new tools in agricultural research now becoming available to the bench or field scientists. These tools will provide the opportunity to "direct" desired changes in the products of agriculture rather than dependence upon chance and/or empirical occurrences. The products of agriculture in the future will include food, feed, fiber and fuel. Their outward appearance and sources of origin could be quite different than those of today.

There is no doubt that the composition and source of many of the foods that we eat in the future will be much different than those with which we are currently familiar. The components will be formed from non-plant or animal sources directly from carbon, hydrogen, nitrogen and minor essential elements and formulated by a safe and inexpensive energy source. These foods of the future will have carefully controlled energy levels and be absolutely safe from contamination since many would have a nonbiological origin. Already today we are seeing these artificial foods in sweeteners, cooking oils and low calorie items commonly sold on our grocery store shelves. The future involving foods from nonagricultural sources is already here!

We see that the eating of food is still and will continue to be a social function. The food preparation industry will continue to grow for energy and economical reasons and we will see the home kitchen become more and more a food

assembly center rather than food preparation center. The food of the future will be healthful, nutritious and require a decreasing level of biological input.

Agricultural research of the future will strive to be a focal point for research important to homemaking and feeding a growing and healthy family. There is no doubt that our family composition will change little since much of the drudgery associated with earning a living will have been eliminated by science.

There is no question that many common fibers will also be produced by specially bred plants, animals and biological processes. Fiber from a vat? Why not?

Approximately 3 percent of the total energy budget in the United States is devoted to the production of farm and ranch products to the "farm gate." An additional 17 percent or so of the national energy budget goes to put those products to our use. Our dependence upon fossil fuels will over the next one hundred years or so switch to nonfossil fuels. One needs only to view photosynthesis as an energy trapping process, available to us in vegetable oils and other high energy compounds now available to us for conversion to fuels useful in our lives.

The real issue for agricultural research is the maintenance of public funding of research important to the public. The Hatch Act of 1887 clearly stated the role of the public in this respect. As we have seen, the return on investment is enormous and continuing. We must not falter! Our motto should paraphrase statements commonly heard during the scientific revolution, "Agricultural Research for a Better Tomorrow."

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