

Research Management in the Agricultural Experiment Station, North Dakota State University

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"How to get the most public benefit from the research dollar" is a problem that faces both scientists and administrators. The question is not a new one, and in 1966 a federal-state joint task force released the results of an exhaustive study into this question entitled, "A National Program of Research for Agriculture." This study and publication became the basis for a computerized information management and retrieval program known as CRIS (Current Research Information System).

The basic proposition of the system is that all agricultural research projects can be classified into one or more of the nine national goals established in 1966 for agricultural research in the United States. And further classification of each research project can be accomplished by assignment to one or more of the 98 Research Problem Areas (RPA) which are related to the nine national goals.

All federal or state agricultural research is conducted within the framework of formally written project outlines. Each project outline is developed to provide certain common elements of information irrespective of where the research is conducted. This information is supplied to a central computer on a continuing basis which allows for update and retrieval of current research and financial information.

In addition to the major objective of defining the goals of agricultural and forestry research, this task force was charged with developing a three-dimensional research classification system, e.g., **ACTIVITY**, which shows the purpose or objectives of the research; **COMMODITY**, which indicates the resource benefitted; and **FIELD OF SCIENCE**, which shows the scientific discipline employed in solving the problem.

The North Dakota Agricultural Experiment Station has taken an active role in the application of the concepts in CRIS to seek an answer to the opening question in this article as it applies to this state and region. This issue of Farm Research reports short summaries of some of the research projects listed in this publication. The listing of projects from the main station at Fargo and each of the seven branch stations provides the basis for the following presentation of selected parts of the complete project analysis.

In Figure 1, the nine state and national goals have been combined into five major areas of interest to us in North Dakota and represent the expenditure of \$8,118,775 in FY 76, including all administrative costs connected with the management of more than 250 projects in the state system for agricultural research. The detailed presentation is found in Table 1. For North Dakota it is no surprise that 58.7 per cent of the total research effort is assigned to the problems of crop and livestock production, a reflection of our strong agricultural orientation.

Table 1. State and national goals for agricultural research as developed by the 1966 joint USDA-state agricultural experiment station task force showing funds assigned to each in fiscal year 1976.

GOAL	TITLE	1976	
		Funds	%
1	Insure a stable and productive agriculture for the future through wise management of the nation's natural resources (RPA's 100-112).	\$1,601,070	19.8
2	Protect forests, crops and livestock from insects, diseases and other hazards (RPA's 201-213).	1,479,942	18.2
3	Produce an adequate supply of agricultural products (RPA's 301-318).	3,285,669	40.5
4	Expand the demand for agricultural products by developing new and improved products with better quality (RPA's 401-409).	730,690	9.0
5	Improve efficiency in the marketing system (RPA's 501-511).	204,804	2.5
6	Expand export markets (RPA 601).	39,091	.5
7	Improve the health, nutrition and well-being of the American Consumer (RPA's 701-708).	105,247	1.3
8	Assist rural Americans to improve their levels of living (RPA's 801-808).	12,733	.2
9	Promote community improvement, including development of beauty, recreation, environment, economic opportunity and public services (RPA's 901-908).	447,023	5.5
		7,906,269	
	Unassigned	212,506	2.5
	GRAND TOTAL	\$8,118,775	100.0

A reader with more than casual interest in the analysis of the research effort should pursue the Research Problem Area (RPA) presentation in Table 2. Recall that the RPA's are the related areas of research which are compiled to develop a goal statement.

Major program or budget changes develop from careful study of the RPA's. To this end the new research workload changes proposed in the upcoming biennium were based on RPA changes and presented in this manner to the appropriate administrative boards. Even without additional

Table 2. Project analysis of state agricultural research program by research problem area within each state and national goal for fiscal year 1976.

CRIS Identity	Research Problem Area	Fiscal Year Expenditures		CRIS Identity	Research Problem Area	Fiscal Year Expenditures	
		1976	%			1976	%
101	Appraisal of Soil Resources	\$ 283,993	3.5	405	Improved Acpt., Field Crops	207,670	2.6
102	Soil-Plant Relationships	345,015	4.3	406	New Food Prod. from Field Crops	166,640	2.1
103	Saline, Sodic Soils & Salinity	72,948	.9	407	New Feed Prod. from Field Crops	28,986	.4
104	Alternative Uses of Land	262,688	3.2	408	Quality Mtce., Field Crops	220,670	2.7
105	Water Conservation	101,592	1.3	409	Prod. of Animal Products	9,594	.1
106	Irrigation Systems & Facilities	87,454	1.1	411	New & Improv. Non-Food Animal Prod.	2,764	-0-
107	Watershed Protection & Management	16,414	.2		Goal 4 Subtotal	\$ 730,690	9.0
108	Watershed Management	79,320	1.0	501	Improvement of Grades & Standards	\$ 12,822	.2
109	Weather Modification	145,126	1.8	503	Marketing Eff. of Agric. Products	50,298	.6
110	Appraisal of Forest & Range	51,388	.6	506	Supply, Demand, & Price Analysis	24,382	.3
111	Management of Forest & Timber	12,532	.2	507	Competitive Interrelationships in Agriculture	27,176	.3
112	Improvement of Range Resources	142,600	1.8	508	Domestic Market Development	9,379	.1
	Goal 1 Subtotal	\$1,601,070	19.8	509	Marketing Systems	6,556	.1
201	Control of Insects Affecting Forests	\$ 12,532	.2	511	Agricultural Statistics	74,191	.9
202	Disease, Parasites & Nematodes in Forests	12,532	.2		Goal 5 Subtotal	\$ 204,804	2.5
204	Insect Cont., Fruits & Veg.	-0-	-0-	601	Foreign Market Development	\$ 39,091	.5
205	Disease Cont., Fruits & Veg.	72,413	.9		Goal 6 Subtotal	\$ 39,091	.5
207	Insect Cont., Field Crops & Range	205,234	2.5	701	Insure Pure Food Products	\$ 68,333	.8
208	Disease Cont., Field Crops & Range	392,634	4.8	702	Protect Food & Feed from Toxins	21,674	.3
209	Weed Cont., Field Crops & Range	228,356	2.8	706	Control of Insect Pests of Man	-0-	-0-
210	Insects & Para. Affecting Livestock, Poultry	20,992	.3	707	Prevent Transmis. of Ani. Dis. to Man	3,127	-0-
211	Disease Control, Livestock	461,031	5.7	708	Human Nutrition	12,113	.2
212	Control of Livestock Parasites	42,989	.5		Goal 7 Subtotal	\$ 105,247	1.3
213	Protect Livestock from Toxic Chem.	28,102	.4	806	Individual & Family Adjustments	\$ 7,034	.1
214	Protecting Plants, Ani. & Man from Pollution	3,127	-0-	808	Balance Farm Output & Market Demand	5,699	.1
	Goal 2 Subtotal	\$1,479,942	18.2		Goal 8 Subtotal	\$ 12,733	.2
301	Breeding of Forest Trees	\$ 25,064	.3	901	Waste Disposal	\$ 189,672	2.3
304	Biol. Improvement, Fruits & Veg.	171,579	2.1	902	Outdoor Recreation	3,410	-0-
306	Prod. Mgt. for Fruits and Veggies.	3,518	-0-	904	Wildlife Management	7,309	.1
307	Biol. Improvement, Field Crops	1,647,072	20.3	905	Trees to Enhance Rural & Urban Environment	3,443	-0-
308	Mechanization of Prod. of Field Crops	13,300	.2	906	Ornamentals & Turf	27,122	.3
309	Production Systems, Field Crops	102,045	1.3	907	Improved Income/Rural Families	91,614	1.1
310	Reprod. Performance, Livestock	105,484	1.3	908	Rural Community Services	124,453	1.5
311	Biol. Improvement, Livestock	376,343	4.6		Goal 9 Subtotal	\$ 447,023	5.5
312	Environ. Stress on Livestock	98,985	1.2		Unassigned	212,506	2.5
313	Production Systems, Livestock	120,471	1.5		GRAND TOTAL	\$8,118,775	100.0
315	Improvement of Farm Facilities	65,253	.8				
316	Farm Business Management	38,126	.5				
317	Structures used in Prod. of Liv. Pou.	15,326	.2				
318	Biol. Technology & Biometry	503,103	6.2				
	Goal 3 Subtotal	\$3,285,669	40.5				
403	New & Improv. Fruit & Veg. Products	\$ 17,806	.2				
404	Quality Mtce., Fruits & Veg.	76,560	.9				

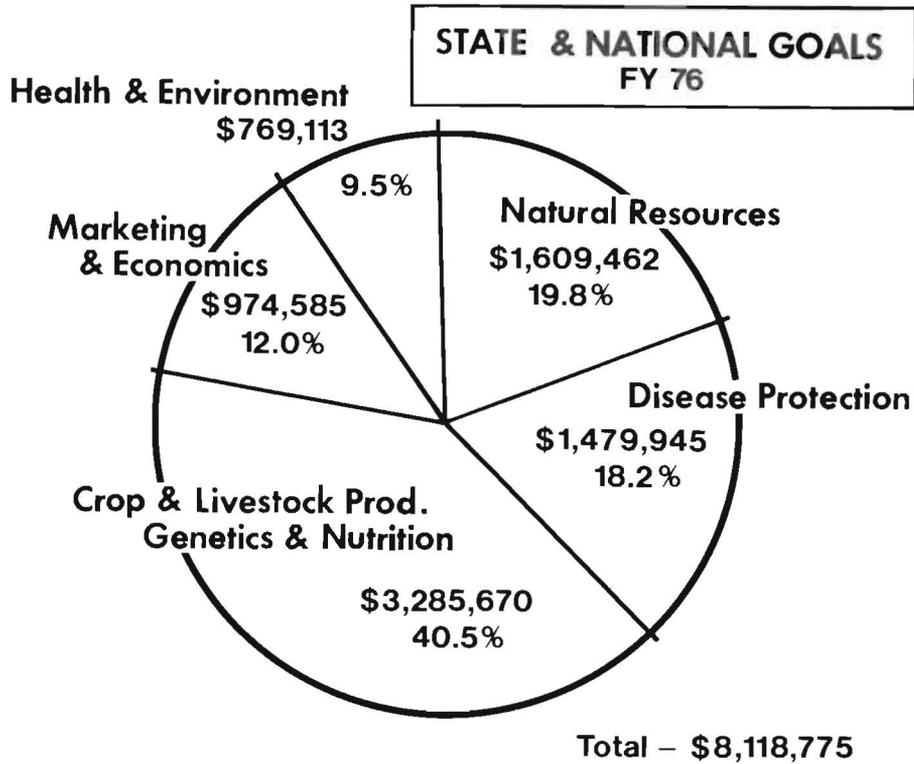


Figure 1. State and national goals for agricultural research combined into five major areas for fiscal year 1976.

CURRENT RESEARCH EFFORT COMMODITY EMPHASIS

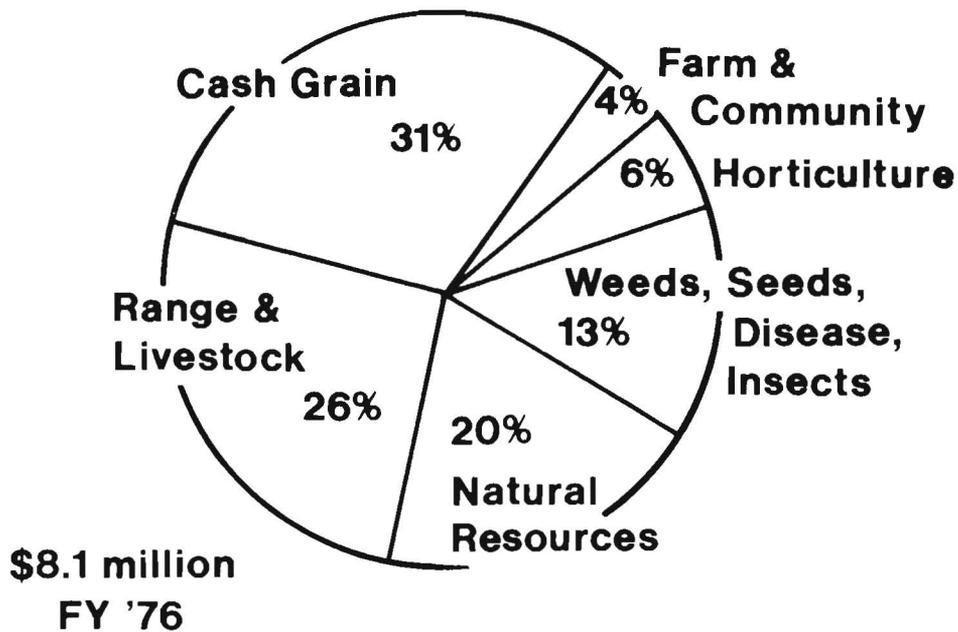


Figure 2. Current research effort on a commodity basis, fiscal year 1976.

research workload funds there is a continuing evaluation and reassignment of funds within the present authorization.

The "yardstick" most commonly used for research effort evaluations is based upon the COMMODITY classification. Although interesting, it may be somewhat misleading since the interrelationships between the resources being benefited are not readily evident to the casual observer. For example, considerable marketing research could be done on the way to the final identification of crops or livestock in a project. However, the presentation in Figure 2 of the current research effort on a COMMODITY basis is valid enough for use in this discussion. Note again that more than half of the total experiment station resources are devoted to crop and livestock production. About one dollar in five is spent on soil, water, utilization of land, and climate.

Detailed analyses of ACTIVITY, COMMODITY, SCIENCE and RPA classifications are made annually and distributed among the agricultural administration, review boards and agencies interested in agriculture. The NDSU Business Office and the Agricultural Experiment Station Office have cooperated in developing a "MINICRIS"

program in conjunction with the university cost accounting system which provides us with monthly printouts of the project analysis as described here. Cumulative quarterly printouts also are now available. It is safe to say the North Dakota Agricultural Experiment Station has one of the most closely monitored agricultural research programs in the USA!

The cost accounting system at NDSU has always provided information on sources of funds in the agricultural research program. Figure 3 presents the Fiscal Year 1976 analysis. Traditionally the bulk of the agricultural research funding has come from the State of North Dakota general fund appropriations, e.g., 62.7 per cent. The ratio of all other sources of funds to state and federal appropriated funds has changed only slightly in favor of the public funding in recent years and would not support the sometimes heard comment that agricultural research is paid for by specific interest groups or agencies. The land-grant university concept is premised on public support of research. This is especially true in North Dakota and programs such as those described will help to assure that we are indeed "getting the most public benefit from the public research dollar."

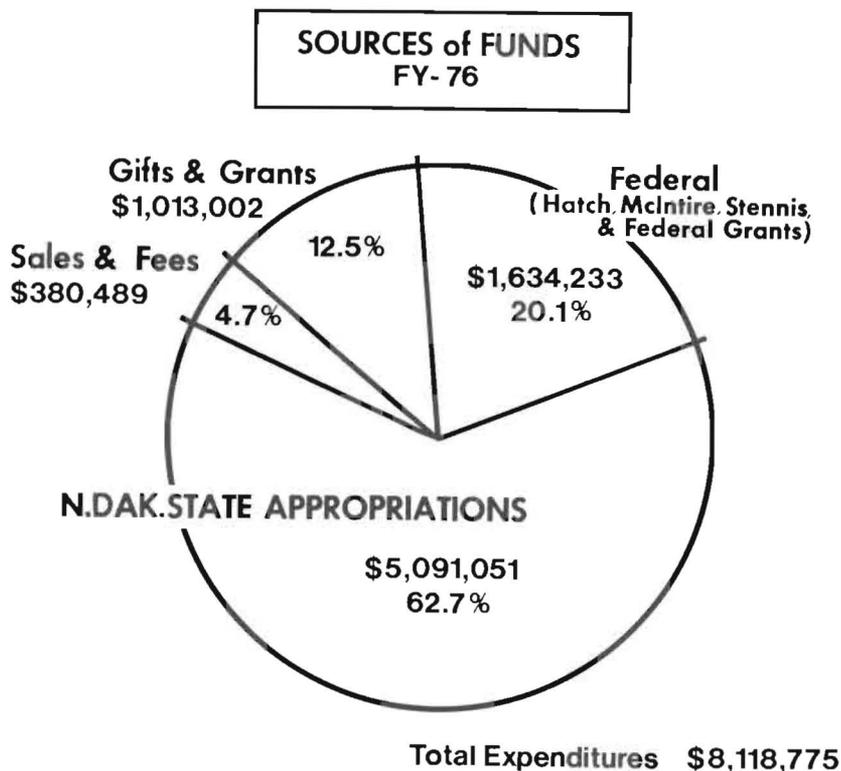


Figure 3. Sources of funds for the agricultural experiment station, fiscal year 1976.