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IMPACT ASSESSMENTS IN THE POLICY PROCESS: ESTIMATING THE IMPACT OF THE 1988 DROUGHT ON NORTH DAKOTA'S ECONOMY

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IMPACT ASSESSMENTS IN THE POLICY PROCESS: ESTIMATING THE IMPACT OF THE 1988 DROUGHT ON NORTH DAKOTA'S ECONOMY*

by Arlen Leholm, Larry Leistritz and Dwight Aakre[1]

The mid-June sun rises over the parched North Dakota landscape. Seasoned farmers are looking to the morning sky for signs of relief from an already stubborn stretch of heat and sparse rainfall. North Dakota may be next-year country, but this drought is already looking to rival the worst of the dirty thirties.

Wheat, North Dakota's principal crop, should be lush and green by mid-June, but North Dakota farmers in the western two-thirds of the state are already facing major yield losses. Pastures are brown and look like a desert scene from an old western movie.

Meanwhile, back in Fargo the NDSU-Extension Service has mobilized a team of Extension agronomists to estimate the yield losses in each region of the state. The first estimates are completed by June 10th; the news is not good for small grain crops in most areas of the state.

The drought has not gone unnoticed by North Dakota's congressional delegation. Senator Conrad has been trying to convince fellow legislators and USDA officials that the drought is already severe enough to warrant drought relief for North Dakota farmers and particularly ranchers with barren pastures. Additionally, forage supplies were low going into the spring of 1988 because 1987 was also a year of poor rainfall in much of western North Dakota.

Senator Conrad called the NDSU-Extension Service on June 12 with an urgent plea. He indicated he was having difficulty convincing policymakers of the severity of the drought in North Dakota and was going to meet with Secretary of Agriculture Lyng in just one hour. Any assistance we could provide him would be of great help.

NDSU's team of agronomists and economists mobilized quickly. Agronomists had just completed their first yield reduction estimates on June 10. Several agricultural economists made a quick macro analysis based on the agronomists' estimates of the small grains losses and likely price responses due to the severity of the pending drought nationwide.

They estimated a $900 million dollar direct loss due to the yield reductions to small grains. This combined with the indirect losses of $1.8 billion to North Dakota's agricultural-dependent communities resulted in a total estimated loss of $2.7 billion to North Dakota's economy. This loss was staggering because North Dakota's economy is 43 percent dependent on agriculture, and the $900 million direct loss is approximately 30 percent of the total average gross receipts to agriculture.

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*Paper presented at International Association for Impact Assessment 1989 Annual Meeting, Montreal, Canada, June 25-28, 1989.

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Senator Conrad had his estimates in one hour and made effective use of this information. The $2.7 billion loss figure was like a shot heard around the world. National policymakers paid attention to these estimates in addition to the national media. "Good Morning America" traveled to Napoleon, North Dakota, on June 15, 1988, to interview an Extension Economist in a parched wheat field. This interview helped highlight the severity of the drought in the northern plains.

The NDSU-Extension team of agronomists and economists continued to monitor the increasingly severe drought conditions as the growing season progressed. The methodology employed in making the economic forecasts is discussed below, but perhaps the nature of the quick response of the Extension team is most noteworthy in its role of influencing national policy.

METHODOLOGY EMPLOYED

Prices

The projected seasonal average prices used in the analysis were estimated for all North Dakota crops based on national production estimates both before and after the influence of the drought.

Crop Production Estimates

Yield reduction estimates were based on losses from a normal production year by standard yield-reduction estimating techniques from the team of professional agronomists at NDSU.

All Risk Insurance Payments

Payments to farmers insured by all-risk crop insurance was based on an estimated eight million acres of crop coverage and yield reductions by crop region in the state.

Deficiency Payment Losses

Farmers in 1988 would have been paid significant deficiency payments if they participated in the farm program. Deficiency payments are based on the difference between a stated target price for a commodity and the national average price for a commodity during the production year. For example, in the early spring of 1988 the wheat deficiency payment was estimated at $1.53, but because of rising national wheat prices estimates of the wheat deficiency were reduced to $0.38 by August 1. Increased prices benefit farmers only if they have something to sell.

Crop Inventory Gain

A minority of farmers stood to gain from the drought due to grain inventories from previous production years. Estimates of free stocks and farmer owned grain reserve commodities were developed, and the carry-over estimates into 1989 were projected at one-half the carry over into 1988.

Forgiven Advance Deficiency Payments

Farmers received up to 40 percent of their advance deficiency payments in the early spring of 1988. Using USDA-ASCS rulings, we estimated the savings to farmers due to forgiven advance deficiency payments. For some crops, the forty percent advance was more than the likely total estimated deficiency payments.

Disaster Aid Payments

Estimates of the disaster aid payments farmers would likely receive were based on the 1988 drought relief legislation package and the NDSU estimates of yield reductions.

Livestock Losses

The livestock losses were based on the fact that ranchers would have to sell their herds, move the herds to greener pastures out-of-state, or increase feed costs. Lower calf and cull-cow prices were also estimated.

The 1988 drought's impact on the state was highlighted in an August 11 press release.

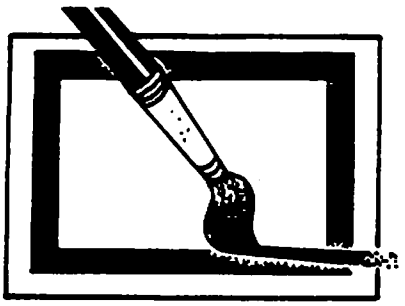
(see attached news release)

SUMMARY

The NDSU-Extension Service was at its finest hour in responding to the 1988 drought crisis. There may be a lesson here for the Land Grant System. University professionals can impact policy, if they have the will to do so and the courage to respond in a timely fashion. A 1990 analysis of the 1988 drought will not have the same impact on policymakers as the timely response from NDSU.

News From
NDSU EXTENSION SERVICE
North Dakota State University, Box 5655, Fargo, ND 58105
August 11, 1988

FEDERAL AID EASES DROUGHT LOSSES IN NORTH DAKOTA



North Dakota farmers lost an estimated $1,117 million to the drought this year, but direct federal aid will cut that loss to $706 million, according to a new study by the North Dakota State University Extension Service.

Direct federal assistance to farmers will total $411 million and will come mainly in the form of disaster payments for low yields, forgiveness of excess advance deficiency payments, and feed assistance to livestock producers.

Total drought losses to the state—including all the money that lost farm income would have generated in other sectors of the economy—would have come to $3,438 million, but federal aid will cut this to $2,172 million.

"This is a significant loss to the state, representing 9 to 10 percent of North Dakota's gross business volume," said Arlen Leholm, NDSU Extension Service economist who led the study. "But it is considerably less than it would have been had federal farm drought legislation not been passed. Household incomes will experience the biggest drop, $1,095 million. Retail trade volume will drop $525 million."

By comparison, said Leholm, these two sectors experienced average annual decreases of $131 million and $75 million during the slump in energy production in North Dakota in the early eighties. Overall, the loss from this year's drought is approximately three times the yearly loss caused by the energy slump.

- more -

Federal Aid--add 1

Wheat losses due to this year's drought account for 60 percent of the state's direct agricultural losses. Consequently, wheat producers will get the largest portion of direct drought aid—$227.5 million in disaster aid payments and $21.3 million in forgiven advance deficiency payments.

Altogether, North Dakota farmers will receive about $60 million for barley losses, $24 million for oats, $17 million for corn, $23 million for soybeans and lesser amounts for other crops.

"Losses up to 35 percent of normal yield are not covered by federal drought assistance," said Dwight Aakre, NDSU Extension Service economist. "But these losses are included in the total direct farm losses we have projected in this study. The losses come to $530 million dollars in small grain production, $473 million in deficiency payments, $225 million in livestock production and $131 million in row crop production."

The south Red River Valley will receive more direct federal aid than any other region, $74 million. The counties that comprise this region—Steele, Traill, Cass, Ransom, Richland and Sargent—experienced large percentage decreases in crop yields.

The north Red River Valley region, which suffered less crop loss than the rest of the state, will receive the least federal aid, $16 million.

Federal drought aid as a proportion of normal farm income will be greatest in the northwest region—Divide, Williams and McKenzie counties. Aid in that region will equal 55 percent of normal farm income.

Average aid for the state, as a percentage of normal income, will be 16 percent, according to Aakre.

Federal Losses--add 1

The north Red River Valley Region will receive the least aid as a percent of normal income, 4 percent.

NDSU Ag Communication
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Direct Farm Impact of Drought in North Dakota, estimated Aug. 11, 1988 (in millions of dollars)

Livestock Loss	$—225
Small Grain Loss	—530
Row Crop Loss	—131
Deficiency Payment Loss	—473
Crop Inventory Gain	+105
All Risk Crop Insurance	+136
Forgiven Advance Deficiency Payments	+ 35
Disaster Aid Payments	+377
Total Direct Farm Loss	**$—706**

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Drought Loss in North Dakota Before and After Federal Aid (in millions of dollars).

	Direct	Indirect	Total
Before Aid	$1,117	$2,321	$3,438
After Aid	$ 706	$1,466	$2,172

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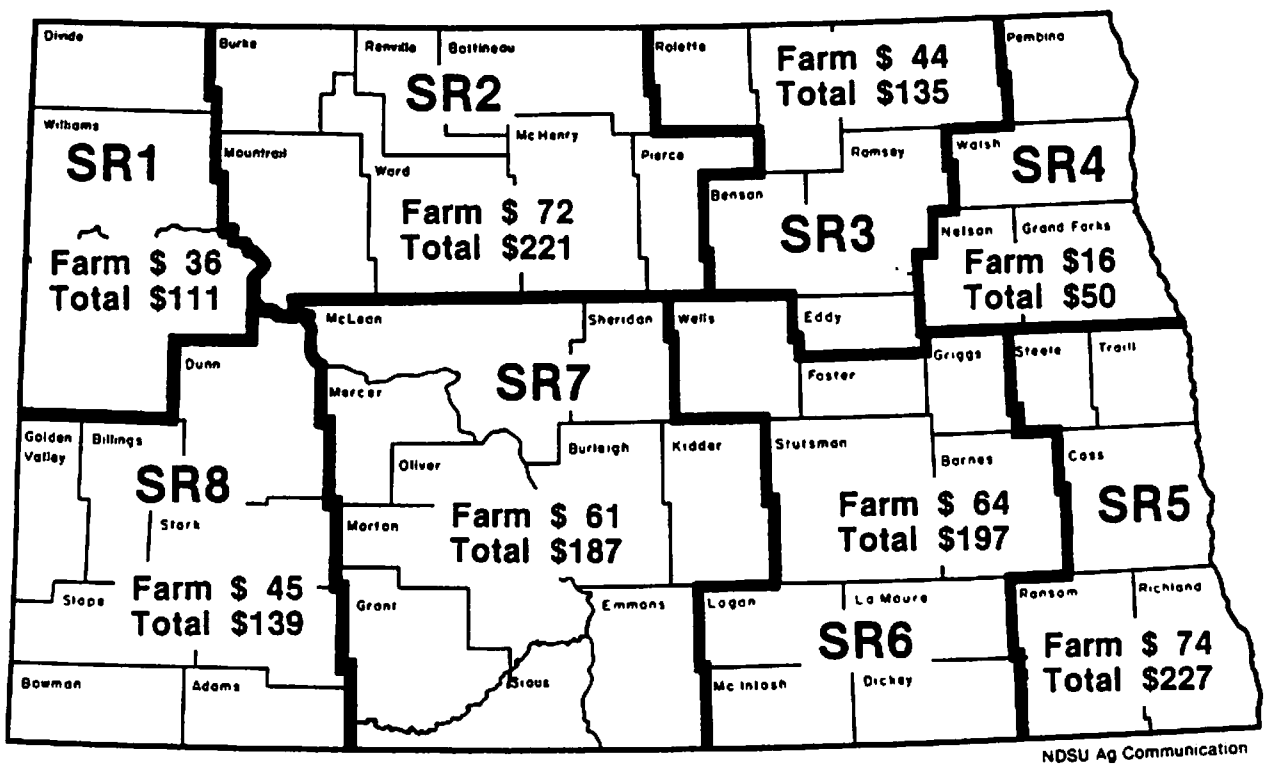
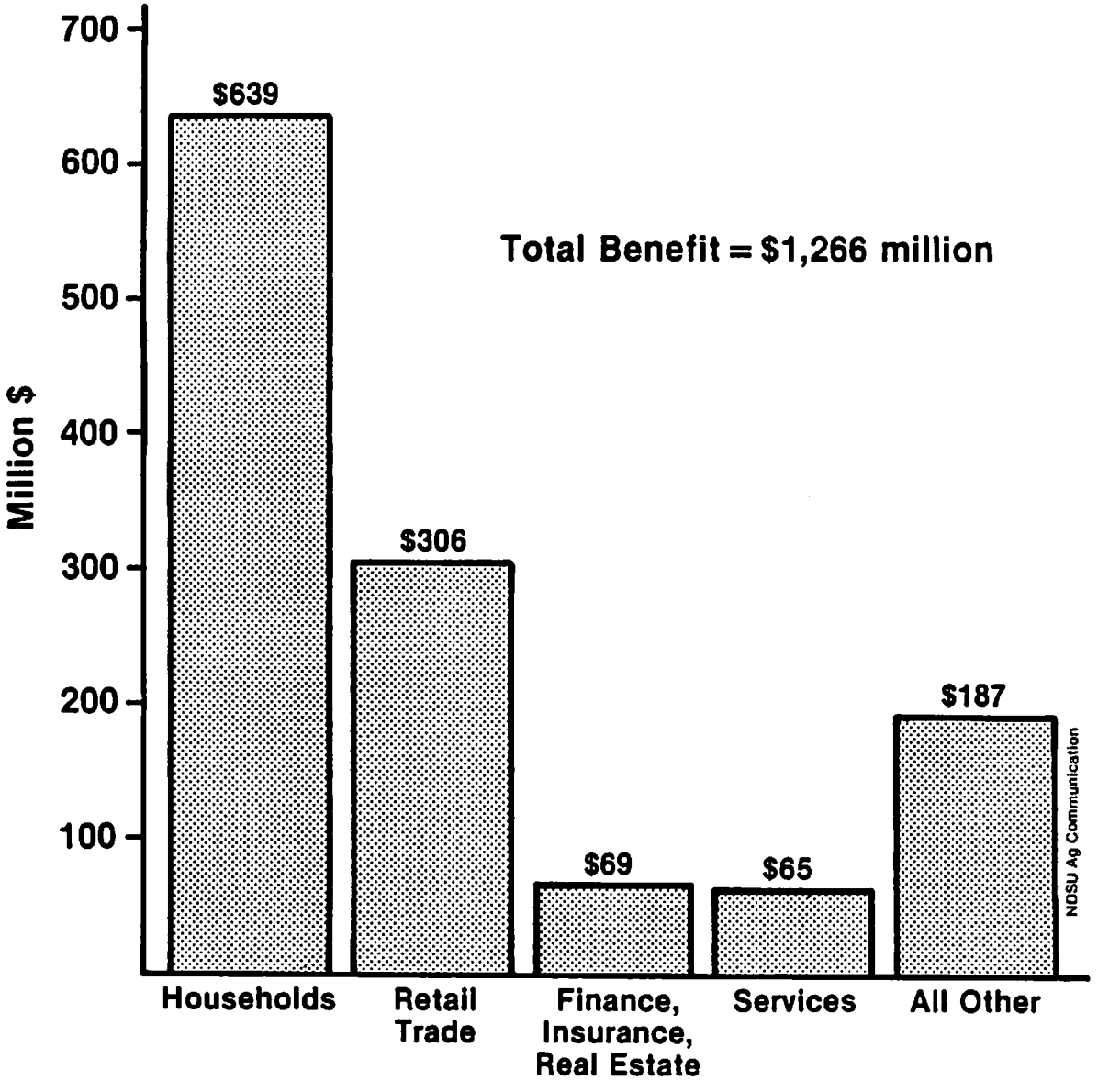
Federal Aid--add 4



Direct Farm Benefit and Total Benefit of Federal Drought Aid to North Dakota, by region (in millions of dollars).

Federal Aid--add 5



Total Drought Aid Benefits in North Dakota, by Economic Sector.

Federal Aid--add 6

Federal Drought Aid to North Dakota, by Crop.

	Forgiven Advance Deficiency Payments	Disaster Aid Payments
All Wheat	$21,276,309	$227,471,330
Barley	11,537,789	47,859,849
Oats	2,095,252	21,672,752
Corn	103,678	16,443,622
Soybeans	—	22,854,609
Sunflowers	—	6,465,486
Edible Beans	—	5,924,788
Rye	—	1,775,661
Flaxseed	—	1,938,231
Hay	—	16,786,000
Potatoes	—	7,270,900
Total	**$35,013,028**	**$376,463,228**

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