

From the DIRECTOR



A. G. HAZEN

Within the last 10 years, the amber waves of grain in eastern North Dakota and western Minnesota have become intermingled with fields of yellow. In a scant decade, sunflowers have changed from an unheralded agricultural crop to more than 600,000 acres in North Dakota and Minnesota alone.

With this increased interest in sunflowers has come a need for research to solve the problems involved with sunflower production, for sunflowers are not a crop without diseases and insects. Downy mildew, rust, sclerotinia stalk rot, and verticillium wilt are troublesome diseases. Of the sunflower attacking insects, the head moth, the midge which caused concern in the Valley last year, stem maggots and stalk borers are most common. Once disease, weed, and insect problems are solved, bird damage, harvesting and handling problems still remain.

Although the non-oil sunflower acreage has increased since the introduction of the crop in this area, oilseed sunflowers provide the greatest opportunity for expansion. The recent discovery of cytoplasmic male sterile and fertility restorer lines, such as those used in corn and sorghum, should make possible more efficient production of hybrid sunflowers. Experimental hybrids have significantly outyielded open-pollinated varieties, by as much as 30 per cent.

The goal of the cooperative federal-state sunflower research program at North Dakota State University is to assist in establishing the sunflower as an attractive alternative crop in its area of adaptation. One specific objective of the program is to develop and evaluate cytoplasmic male sterile lines and restorer lines which when crossed produce superior performing hybrid varieties. Others are to discover sources of resistance to the major sunflower diseases and to use this resistance in the development of new varieties, and to study the etiology and epidemiology of sunflower diseases, hoping to develop management practices that can be used to reduce losses from the major sunflower diseases.

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On The Cover: Dr. G. N. Fick, research agronomist, USDA; Clarence Swallers, assistant professor, Department of Agronomy; and Dr. David Zimmer, research plant pathologist, USDA, survey powdery mildew damage in a field of hybrid sunflowers.

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Table 3. Two-year results with whole vs. rolled oats.

Data on:	whole oats		rolled oats	
	1969-70	1970-71	1969-70	1970-71
Agv. initial weight per head	370.6	432.1	370.0	430.7
Avg. final weight per head	1005.6	1065.0	1060.7	1101.4
Days fed	314	331	314	331
Avg. daily gain per head	2.02	1.91	2.20	2.03
Hot carcass weight per head	571.9	618.0	636.1	656.4
Avg. dressing per cent	56.87	58.03	59.97	59.60
Avg. grade	7.38	10.10	9.29	10.14
Feed cost per hundred-pound gain	\$14.26	\$16.03	\$13.19	\$15.37

Summary

These trials show that the high quality calves produced by North Dakota farmers and ranchers can be self-fed economically from weaning to slaughter, using oats and hay plus minerals.

Although rolled oats has given the best returns of the three rations fed in the trials reported here, rate of gain, feed efficiency and carcass quality have been satisfactory for all three rations.

Until the calves reached a weight of 600 pounds, gains were as good with whole oats as they

were with rolled or ground oats. Beyond this growth stage, processed feed produced the best gains. About 80 pounds less feed was required to produce 100 pounds gain with both ground and rolled oats.

It should be emphasized that calves in these trials are vaccinated for blackleg and malignant edema, and for type C and D enterotoxemia (over-eating disease) before being fed high energy rations.

FROM THE DIRECTOR

(Continued from page 2)

Until more disease and insect resistant varieties become available, growers can minimize losses through management practices. Crop rotation, plowing down sunflower refuse in the fall, early season control of volunteer plants, destruction of wild sunflowers and timely application of approved insecticides will help to minimize losses.

Sunflowers are particularly attractive to birds and considerable damage has resulted in isolated fields. A chemical repellent is now under study.

Visitors are always welcome to visit the research plots located on the NDSU farm crops research site west of the campus, either on formally organized tours or by appointment with sunflower researchers.