All-Risk Crop Insurance

As An Aid To Survival Of Farm Businesses

L. W. Schaffner, Carl E. Olson, and Dennis L. Powell

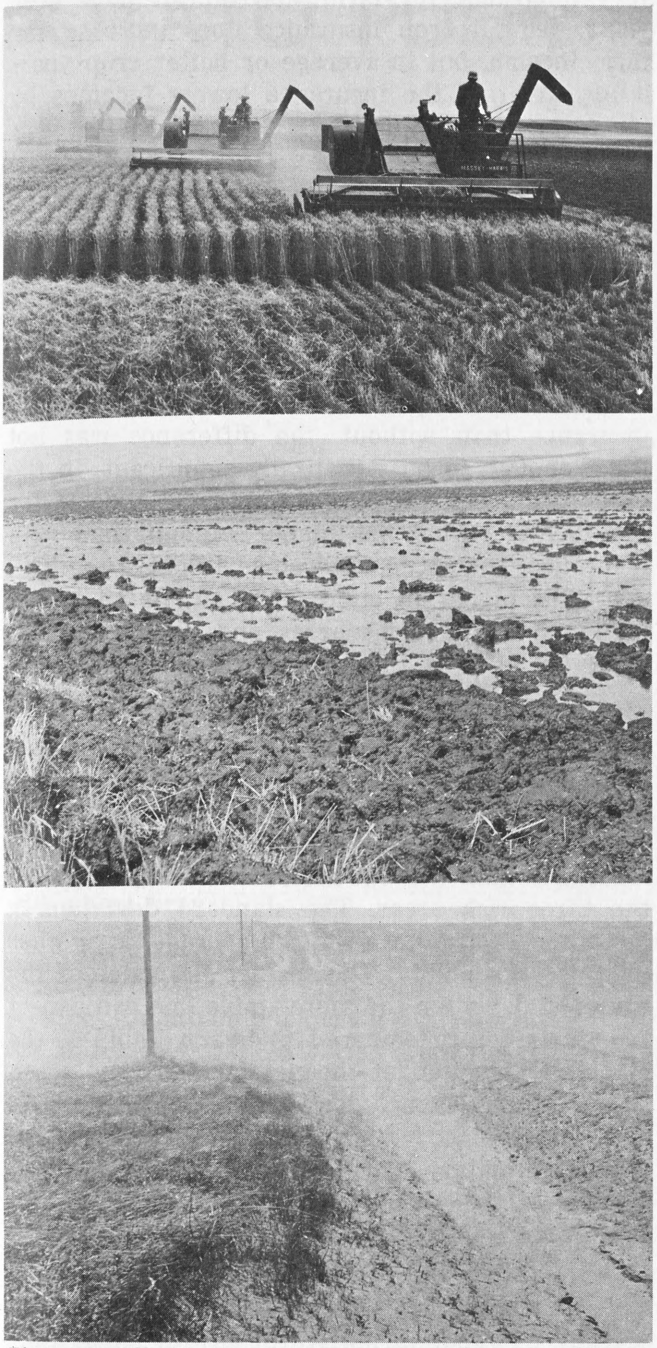

Figure 1. All-risk crop insurance can reduce the chances of very low farm income in years of unfavorable weather conditions.

Income from farming in North Dakota fluctuates widely from year to year because of variations in weather and prices. One objective of most farm operators is to organize their farm resources in a manner that will keep the variability of farm income at a minimum.

Farm firm survival from year to year is necessary for a farm family to achieve its long-run goals. If the farm firm does not survive in the short-run, the long-run goals will not be met. Farming is a business that requires large amounts of capital, most of it provided by the farm operator. Low returns can cause business failures, particularly in the years when the farm operator is getting started.

Some of the strategies farmers use to reduce the risk of low income and resulting business failure include stored grain and feed, cash reserves, stocks and bonds, reducing operating and living expenses, off-farm jobs, credit reserves and crop insurance. For the beginning farmer, some of these strategies are not available because he has not

Schaffner is assistant professor, Dr. Olson is assistant professor and Powell is a former graduate student, Department of Agricultural Economics.

Table 1. Summary of budgeting typical farms with and without Federal Crop Insurance, 1955 to 1964 averages.

Item	Unit	With	Without	With	Without	With	Without
Typical Farm							
Total Size	Acres	742	742	730	730	376	376
Cropland	Acres	342	342	559	559	334	334
Net Income, 1955 to 1964							
Average	Dollars	3,746	3,729	3,657	3,759	4,360	4,480
Low	Dollars	-704	-1,536	-2,315	-3,333	447	-66
High	Dollars	9,436	9,721	10,307	10,545	9,554	9,807
Standard Deviation	Dollars	2,250	2,529	3,012	3,186	2,129	2,258

been able to build up physical and monetary reserves and he is probably using maximum credit for the collateral he has to offer.

The risk aversion strategy this article is concerned with is the all-risk crop insurance program offered by the Federal Crop Insurance Corporation. The all-risk crop insurance program insures against unavoidable losses from natural hazards. The Federal Crop Insurance Act limits coverage to an amount representing not more than 75 per cent of the average yield of any crop in the area of the insured farm.

The objectives of the study from which the data for this article were taken were:[1]

1. To determine the effects of participation in the Federal Crop Insurance Corporation program on the level of income each year and over a period of years.

2. To determine the effects of federal crop insurance on stabilizing farm income for a given year and over a period of years.

Budget analysis of typical farms was the major analytical tool used. The state was divided into three risk areas, a high-risk area represented by Morton County, a medium-risk area represented by McHenry County, and a low-risk area represented by Traill County.

Acres and yields of crops were obtained from a sample of farmers in each of the three counties for a 10-year period, 1955 to 1964. Farm income for each year was calculated, based on the yields, acreages, and prices for each of the 10 years. To determine the effect of all-risk crop insurance upon the level and stability of farm income, a typical farm in each county was budgeted with and without federal crop insurance. Statistical tests were employed to determine if there were significant differences in the level of income with and without all-risk crop insurance.

Results were similar in the three risk areas studied. Statistical techniques used indicated that federal crop insurance did not affect the level of the average net farm income over the 10-year period. However, federal crop insurance did appear to reduce the chances of very low incomes in years of unfavorable weather conditions, which may be very important for farm survival. In poor crop years, federal crop insurance does increase net farm income, but in average or better crop years it appears that the insurance lowers incomes by the cost of the premium.

Table 1 shows a summary of the budgeting of a typical farm in each of the risk areas of the state. In Morton County, a high-risk area, the average net farm income for the 10-year period, 1955 to 1964, was just about the same with and without insurance. Even though the average net income for the 10-year period was $17.00 higher with insurance than without, the difference was not great enough to be statistically significant. In the other two areas, the average net farm income for the 10-year period was higher without than with insurance. The net farm income without crop insurance was higher in eight years out of 10 in the high and medium-risk areas and higher in nine years out of 10 in the low-risk area.

Table 1 shows that all-risk federal crop insurance did increase the stability of farm income over the 10-year period tested. The range in income, between low and high, is less with crop insurance than without insurance. This is true for the three risk areas. The standard deviation, a measure of variation from the average, is another measure of stability. The smaller the value of the standard deviation the more stable one can expect the items being compared to be. In Table 1, the standard deviation of the net farm income when crop insurance is included is lower in all-risk areas than the standard deviation of net farm income without crop insurance. The stabilizing effect is greater in the high-risk area than in the lower-risk area. Size of farm had no effect on level of yields, so only one farm size was used in each of the risk areas.

The results of the study indicate that federal all-risk crop insurance can be a very important tool or strategy to use in aiding farm firm survival by reducing the probability of low net farm income in good crop years as well as bad. In a business with high capital requirements, such as farming, it may be very important for the farm firm to attempt to guarantee itself an income that will enable it to maintain its capital position, a strategy particularly important in the short-run for beginning farmers. Federal all-risk crop insurance appears to be a strategy that can be used for assuring short-run farm firm survival.

[1]Powell, Dennis L., **Effects of All-Risk Crop Insurance on Farm Business Survival,** Unpublished M. S. Thesis, Agricultural Economics Department, North Dakota State University, Fargo, North Dakota, May, 1967.