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What is the Role of Crop Insurance for “Specialty” Crops?

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Specialty crops, a collection of crops such as fruits, tree nuts, vegetables and nursery, have long been a major contributor to U.S. crop revenue (31 percent in 2011) but have not been recipients of the standard government farm program subsidies. However, since 1990, the number of crops and regions covered by subsidized federal crop insurance has expanded rapidly. Insured liability of the specialty crops almost doubled in the last decade, with specialty crops now accounting for six percent of government premium subsidies offered for all crops in 2011 (Sumner and Zulauf; Shields). This share is expected to increase because insurance is nearing universal coverage for field crops and the U.S. Department of Agriculture (USDA) is encouraged by Congress to continue to expand crop coverage (Collins).

Because of the prevalence of specialty crops, this expansion of crop insurance is particularly important in the West. For example, specialty crops account for almost 90 percent of California crop revenue. With an emphasis on data from California and with some reference to specialty crops in Oregon, this report outlines the evolution of insurance availability and farmer participation over time and across crops and potential financial payoffs to insurance participation.

Growing Availability of and Participation in Crop Insurance for Specialty Crops

In 2012, Oregon had crop insurance available for 30 separate crops, including about 20 fruit, tree nut and vegetable crops. That said, field crops, especially wheat, account for the bulk of acreage covered by crop insurance in Oregon. The number of California crops covered under federal insurance has more than doubled from 23 to 52 since 1989 when the program became more accessible (Table 1). Most of this



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growth has been in specialty crops, with additions including fresh tomatoes, onions, apiculture, nursery products, citrus fruits, pecans and blueberries. The decision to offer crop insurance is made on a crop-by-crop and county-

by-county basis by the Risk Management Agency of the USDA, and crop insurance remains unavailable for many produce crops such as lettuce.

A host of insurance products, based on yield, revenue, or some other index, are offered in the market. With the exception of nursery crops, yield-based actual production history (APH) is most widely used for specialty crops. In 2011, APH (also referred to as multi-peril crop insurance, MPCl) accounted for over 70 percent of total liability in California, but only about 15 percent in Oregon, where field crops such as wheat comprise a larger share of the insured crop coverage.

Federal crop insurance provides two types of insurance plans: catastrophic and buy-up. Under MPCl, the catastrophic plan (CAT) insures eligible farms for 50 percent of yield at 55 percent of USDA-announced price and charges only a nominal processing fee (Lee et al.). Growers can also “buy up” additional coverage up to 85 percent of production per acre, with the value elected between 55 to 100 percent of a USDA price. With no organized futures markets for specialty crops, insurance prices for specialty crops are established annually by the USDA, referenced to a specified market price established for each crop and region. As shown in Table 2, the purchase of federal crop insurance by California farmers soared in 1995, when CAT was introduced. However, buy-up purchases have increased steadily, exceeding two-thirds of total insurance measured by liabilities in 2011.

In Oregon about 80 percent of the acreage of wheat, sugar beets and green peas is covered by crop insurance compared to less than ten percent of the acreage of stone fruits, mint and processing beans. About half the apple acreage is covered compared to about 20 percent for grapes. Crop insurance participation in California also differs widely across specialty crops (Figure 1). Since CAT sign-ups are almost free for participants, buy-up data are more relevant to describe the levels of participation. By 2010, buy-up insurance covered about 80 percent of processed tomato and prune acreage, about 40 percent of almond and wine grape acreage, but only 14 percent of walnut acreage and ten percent of avocado and onion acreage. The share of acreage covered under buy-up increased for all crops from 2005 to 2010 even as total acreage continued to expand for many specialty crops.

Table 1. Number of Crops Covered by Federal Crop Insurance in California, 1989–2011

	1989	1995	2000	2005	2011
Fruit and tree nuts	10	12	27	29	29
Field crops	12	13	16	16	17
Vegetables	1	2	2	3	3
Other ^a	0	1	1	1	3
Total	23	28	46	49	52

Source: Risk Management Agency (a).

^a Other includes apiculture, nursery products, and pasture and rangeland.

Table 2. California Crop Insurance Participation and Buy-Up Share, 1990–2011

	CAT and buy-up			Buy-up		
	Total policies sold	Net acres insured	Total liability	Share of policies	Share of acres	Share of liabilities
	<i>thousands</i>	<i>\$ millions</i>		<i>percent</i>		
1989	6.1	708	445	100.0	100.0	100.0
1995	36.1	4,475	1,735	22.6	15.1	37.3
2000	35.9	4,279	2,796	39.3	34.3	46.1
2005	32.9	3,819	3,318	47.3	37.6	50.0
2011	32.7	4,060	4,788	61.5	50.4	67.8

Source: Risk Management Agency (a).

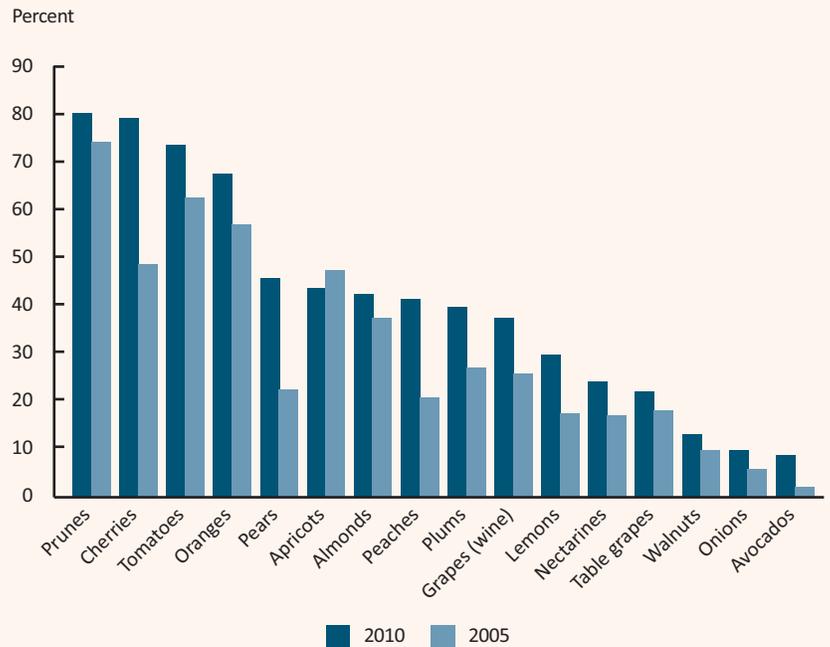
High value-per-acre crops make up most of California’s \$4.8 billion in crop insurance liabilities (Table 3). Fruits comprise 42 percent of liabilities and tree nuts comprise 23 percent. Grapes (including table, wine and raisin grapes) account for the largest share among fruits with 23 percent of total liabilities and almonds make up 20 percent of liabilities. Tomatoes, almost exclusively processing tomatoes, are the only significant insured vegetable with nine percent of California crop liabilities. Nursery crops makes up six percent of total liabilities. Field crops, which generate only 14 percent of crop revenue in California, comprise about 19 percent of crop insurance liabilities, which contrasts sharply with vegetables’ nine percent of liabilities and 23 percent of revenues.

Performance of Crop Insurance and Government Subsidies

In Oregon, the number of crop insurance policies and insured acreage has grown slowly if at all, but liabilities have expanded from \$138 million in 1997 to \$730 million in 2011. Premiums have grown rapidly as well, while the loss ratio (indemnities relative to premiums) have varied from year to year from over 3.0 in 2002, and about 2.0 in 2009 down to 0.15 in 2011. As coverage has expanded in California, the financial scope of the program has also grown (Figure 2). Crop insurance indemnities and premiums have grown from less than \$40 million 20 years ago (for a ratio of about 1.0), to total premiums of about \$240 million and indemnities of just over \$100 million in recent years (for a loss ratio of about 0.5). For several years during the 1990s, these overall loss ratios for California crops exceeded 1.00, but since 2000, the ratio has stayed below 1.00. The loss ratio for California using figures for the entire 23 year period (1989–2011) was 0.64, significantly lower than the national loss ratio of 0.82 for the same period.

In addition to almost free CAT coverage, the federal government subsidizes the buy-up premiums. Although crop

Figure 1. Ratio of Buy-Up Insured Acres to Harvested Acres for Selected California Specialty Crops, 2005 and 2010



Source: Risk Management Agency (a) and National Agricultural Statistics Service.

Table 3. Comparison Between Liability and Crop Revenue Shares by Commodity Group in California, 2011

Crop insurance liability share (revenue share)		
<i>percent</i>		
Fruit	42 (30)	Grapes 23 (12), Navel oranges 4 (2), Cherries 3 (<1), Lemons 2 (1), Mandarins 2 (<1)
Tree nuts	23 (19)	Almonds 20 (12), Walnuts 3 (4)
Field crops	19 (14)	Rice 7 (3), Cotton 6 (3), Wheat 2 (1), Corn 2 (<1)
Vegetables	9 (23)	Tomatoes 9 (3)
All other	7 (13)	Nursery 6 (9)

Source: Risk Management Agency (a).

insurance is sold by private firms, the policy and premium specifications which vary by crop and region are set by the USDA, and more than half of the premium is paid by the

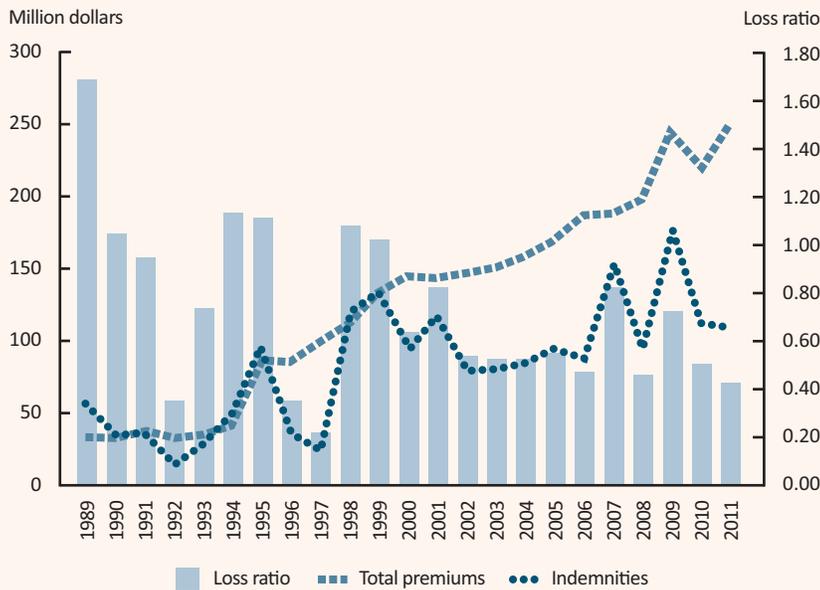
federal government. Further, the government reimburses insurance companies for administrative and operating cost, and covers any excess losses with reinsurance

subsidy. In recent years, crop insurance has comprised the largest farm subsidy program measured by federal outlays. Figure 3 shows the growth in federal outlays for crop insurance in California. The figure shows that premium subsidies account for the lion share of the total outlay and they have grown from about \$100 million to slightly over \$150 million over the past decade in nominal terms. This is a very modest growth compared to the national rate, which more than quadrupled from \$1.7 billion to \$7.4 billion for the same period.

Returns to Farmers from Crop Insurance

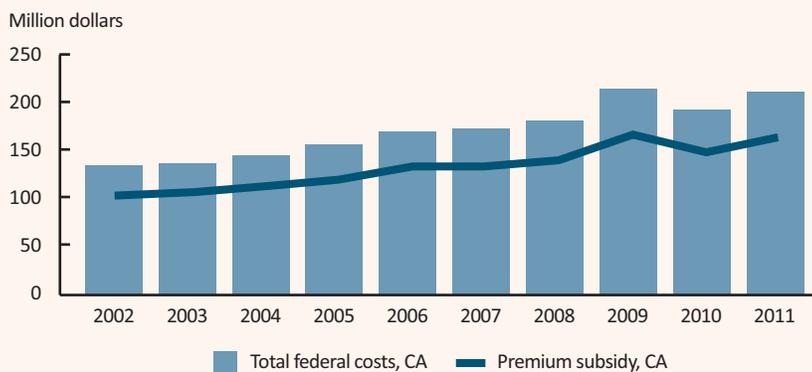
With indemnities fluctuating year to year, the net benefits to farmers from crop insurance—the indemnity minus farmer premium—also vary widely and can be either positive or negative in any single year depending on the weather and other factors affecting production. To examine the average crop insurance benefit in California, Figure 4 smoothes this year-to-year fluctuation by showing the nine-year average ratio of insurance gains to farmer premiums, which is roughly equivalent to the rate of return to an investment in crop insurance. Each of the four crops shown had a positive return to crop insurance. For almonds, investment of farmer premiums has returned a positive rate of return of one percent and for wine grapes the average return has been 20 percent. Cotton lint has the highest ratio, 3.3, meaning the investment (farmer premium) has yielded an average rate of return of 330 percent. Such a high rate of return indicates that for some farm commodities, crop insurance is used as an expensive income transfer from taxpayers.

Figure 2. California Crop Insurance Premiums, Indemnities and Loss Ratios, 1989–2011



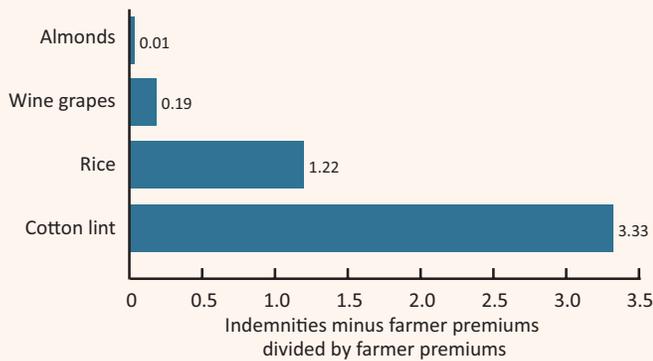
Source: Risk Management Agency (a).

Figure 3. Estimated Federal Costs of the U.S. Crop Insurance Program in California, 2002–2011



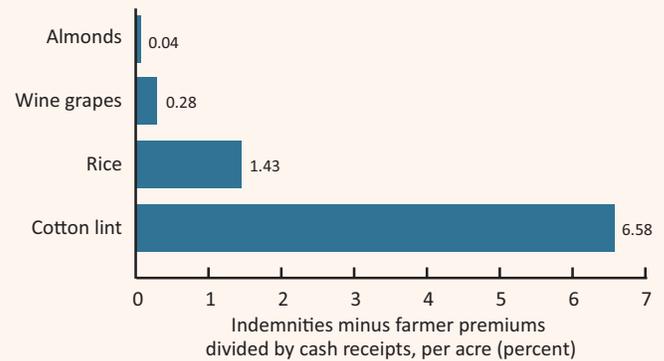
Note: Costs are in nominal current year dollars. Federal costs include premium subsidies and administrative and operation (A&O) expenses but do not include underwriting gains or losses. Sources: Risk Management Agency (a), Risk Management Agency (b), and authors' estimation of A&O.

Figure 4. Ratio of Buy-Up Indemnities Minus Farmer Premiums to Farmer Premiums in California, 10 Year Average (2002–2011)



Source: Authors' calculation using data from Risk Management Agency (a).

Figure 5. Farmer Net Benefit (Buy-Up Indemnities Minus Farmer Premiums) from Crop Insurance as a Share of Cash Receipts Per Acre in California, 2002–2010 Average



Source: Authors' calculation using data from Risk Management Agency (a) and National Agricultural Statistics Service.

Many growers see even subsidized premiums as expensive, given inherent problems of developing insurance products for agriculture. In particular, growers often know much more about the risk profile of a potential crop in their region than do the insurance company or government agency attempting to set actuarially sound premium rates. Those growers who know a crop is particularly risky in their locale or on their farm are more likely to purchase insurance. That means premiums must rise to account for this adverse self-selection of growers into a particular insurance program and growers with more typical risk profiles are priced out of the market. This issue is more important for specialty crops grown in regions with many micro-climates affecting yields or complicated price patterns or produced by relatively few growers. Similarly, agricultural risks may often be mitigated by grower practices. But, growers with insurance have less incentive to use costly mitigation practices and this 'moral hazard' problem also tends to raise insurance company costs and hence raise premiums.

To investigate the contribution of crop insurance benefit to farm income, Figure 5 further shows these net gains as a percent of crop revenue per acre basis. Benefits are only a tiny share of revenue for almond and wine grapes, about 1.5 percent for rice but more than 6.5 percent of revenue for cotton. In general, benefits as a share of revenue are much higher for field crops.

Our calculations shows that crop insurance benefit can be a significant share of net profit for some growers, and indicate why crop insurance participation is very high for cotton in California, even though the crop is universally irrigated. We would expect a high participation rate by almond and grape growers if net benefits from crop insurance participation for these crops were as high as they are for cotton.

Summary and Implications

The crop insurance loss ratios have been considerably lower in California than nationally, indicating that California growers have had less frequent crop failure and have claimed insurance payments much less frequently. Of course, the rate of crop losses varies across crops. In some extreme case, as shown earlier, indemnity collections by cotton growers have been more than three times their premium payments.

Data generally show lower indemnity collection by specialty crop growers than by field crop growers compared to the premium, and this drives lower participation rates. Field crops, particularly those grown without irrigation, tend to be exposed to more risk than specialty crops relative to the premiums charged. Furthermore, yield insur-

ance predominates for specialty crops, revenue insurance predominates for field crops, and revenue insurance programs tend to trigger payments more readily than yield insurance. While more research is needed to explore these ideas, we note that a lower probability of triggering indemnity, for whatever reason, would be reflected in lower premiums in a market-based system.

There are many challenges facing attempts to make crop insurance into a more effective risk management tool for specialty crops. There are inherent difficulties in developing and pricing revenue insurance. With a lack of futures markets, it is difficult to project prices required to protect revenue (Collins). Also, for many specialty crops, there are wide variations in product quality, and prices vary widely in systematic, but complex ways over the season. If the insurance program expands without managing these challenges effectively, the result will be more adverse selection and moral hazard.

Budget costs for federally subsidized crop insurance through the Risk Management Agency of the USDA have risen substantially over past decade and are likely to set new records, exceeding \$12 billion for the 2012 crop year. Relatively little of these costs fund programs for specialty crops. Crop insurance is much less used by specialty crops growers, and, while 60 percent premium subsidies are standard, loss ratios have generally been low. For example, although the annual subsidy for crop insurance in California, including that for field crops, is about \$200 million, crop revenue totals close to \$30 billion, for a ratio of less than one percent. Thus, if budget pressures impose substantial cuts in federal subsidies for crop insurance, the impacts would be relatively small for most of specialty crop agriculture. ■



FOR FURTHER READING

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