

THE FARM BILL AND THE WESTERN HAY INDUSTRY

Daniel A. Sumner and William Matthews¹

ABSTRACT

Farm subsidies have been a part of U.S. agriculture for eight decades. The 2014 farm bill changed the form of some subsidies by focusing more on payments in response to revenue shortfalls, including with crop insurance subsidies. Western hay operates outside the farm subsidy programs but is affected because industries that compete for land, water and other resources are subsidized. Moreover, the dairy industry, which demands much of the hay (and silage) does receive program payments and regulated prices.

Key Words: farm bill, crop insurance, subsidies, market impacts

INTRODUCTION

U.S. farm commodity subsidies have been in place since Roosevelt's New Deal of the 1930s. Over this eight-decade period agriculture in the United States has changed radically and the form of subsidy programs have changed from reliance on government-set minimum prices, stock accumulation and mandatory land idling to payments based on prices or revenue below government set norms, including payments tied to purchase of highly subsidized crop insurance. Despite changes farm subsidies still focus government outlays on a handful of commodities including cotton, grains and oilseed crops and on dairy among the livestock industries. A partial exception is the spread of subsidized crop insurance to additional crops, including fruits, tree nuts, and field-crop vegetables. Indeed, alfalfa and other forage crops, are the only major field crops left out of this subsidy framework.

Although not covered by the major farm subsidies there are three reasons the hay industry should be aware of farm bill subsidy programs. First, crop subsidies including crop insurance influence land rental rates and the allocation of crop acreage and thereby affect the supply side of alfalfa and other hay markets. More subsidy for the other crops reduces acreage of forage crops. Second, dairy subsidies tend to maintain a larger milk industry and thereby increase the demand for dairy feed including alfalfa and other forage crops. The wrinkle is that dairy subsidies are higher for the small dairy farms in the East that also tend to buy less hay. This works to reduce the demand for hay for in Western markets. Third, after eight decades there is no evidence that government subsidies act to the long-term benefit of subsidized industries. The alfalfa and other forage crop industries should be aware farm subsidy programs have not solved economic troubles experienced by other farm industries and there should be no expectation that subsidies would have lasting benefit to forage industries.

¹Daniel A. Sumner (dasumner@ucdavis.edu), Director, University of California Agricultural Issues Center (AIC); and Frank H. Buck, Jr. Professor, Department of Agricultural and Resource Economics, UC Davis.; William A. Matthews (wamatthews@ucdavis.edu), Project Scientist, AIC. In: Proceedings, 2017 Western Alfalfa and Forage Symposium, Reno, NV, Nov 28-30. UC Cooperative Extension, Plant Sciences Department, University of California, Davis, CA 95616. (See <http://alfalfa.ucdavis.edu> for this and other alfalfa conference Proceedings.)

CURRENT AND PROSPECTIVE FARM SUBSIDY PROGRAM FOR FIELD CROPS

The Agricultural Act of 2014 eliminated major commodity programs, added risk management programs, and enhanced the existing federal crop insurance program. Farm subsidies remain a significant share of farm revenue for a few crops as shown in Figure 1. In recent years as cotton and rice subsidies declined with program changes and higher world prices, peanuts emerged with the highest rate of subsidy (leaving aside sugar, which is subsidized through trade barriers and resulting high US prices.) Data for 2014 and 2015 estimate more recent subsidies, which have increased in 2016 and 2017 as commodity prices have fallen. We will discuss this a bit more after providing some background on the programs themselves.

Title 1 of the Agricultural Act of 2014 includes two main alternative farm commodity subsidies for which “program crops” are eligible. The first is the Price Loss Coverage (PLC) under which farms receive payments that are triggered by prices that are below legislated target prices. Wheat and rice farms tended to enroll in the PLC because expected prices tended to be below the target prices. The second main subsidy program is the Agricultural Risk Coverage (ARC), under which payments are triggered when commodity revenue falls below a specified projected revenue. Feed grains and oilseed commodities have tended to be enrolled in the ARC because their prices were not low enough to expect payments under the PLC and because they did expect payments under the rules of the ARC. Under both programs payments are calculated based on a share of the recent historical average area and yields of each covered commodity for the farm. Babcock (2017) explains that these programs have had higher government outlays than built into the government budget projections in 2014.

We can gauge the operation of these programs by considering the case of California japonica rice which has participated almost exclusively in the PLC. Japonica rice prices were high enough in 2014 and 2015 that no payments were triggered. But a decline of rice prices in 2016 triggered payments of about \$2.60 per hundredweight (or more than 15 percent of revenue) and about \$130 million for the California industry (Table 1). The payments are distributed across the industry roughly in proportion to production because the payment base and current production are highly correlated.

The ARC program has a moving-average revenue that links recent annual revenue for farms in counties producing a covered commodity. ARC payments were high for corn and soybeans because these crops had experienced high annual revenues leading into the 2014 farm bill years. But this high-revenue legacy has dissipated and these crops are likely to move toward the PLC unless the 2018 farm bill increases payment rates for the ARC.

CROP INSURANCE

Crop insurance provides more farm subsidy than the ARC and PLC combined. That is partly because more crops are covered and partly because, even though farms pay part of the premium, the subsidy rates are very high. The U.S. federal crop insurance program expanded rapidly in the

last three decades, with substantial increases in insured acres, liability and insurance subsidies (Glauber 2013). The total crop insurance premium subsidy increased from \$205 million in 1989 to \$6.2 billion in 2014 (RMA 2015). Since the mid-1990's total crop insurance premiums has increased five-fold from just below \$2 billion to almost \$12 billion (Figure 2). The majority of this increase is from increases in premium subsidies with the remainder paid by growers. Table 2 shows the recent crop insurance data with indemnities exceeding \$100 billion and total government outlays around \$10 billion even in years with no major crop revenue shortfalls.

A new cotton program called the Stacked Income Protection Plan (STAX for short), a subsidized revenue insurance plan with indemnities triggered by county revenue shortfalls, was also introduced in the 2014 farm bill. In the first two years of the program, cotton yields and harvest prices were projected to be and were too high to trigger substantial income transfers. Since farmers can gauge reasonably well the likely payoff of the program, they are only likely to enroll and pay the premium in years for which the program is likely to pay.

The direct implications of these crop subsidies for the hay industry relate mainly to how they affect the ability of other industries to compete for land and other resources. Hay is produced using land and water that might be used for other crops. In regions where that other crop may be cotton, rice or wheat, subsidies from farm programs reduce land that would otherwise be available for alfalfa, for example. Crop insurance subsidies encourage additional acreage of tree and vine crops at the expense of hay acreage. For example, almonds acreage is eligible for highly subsidized yield insurance with typical coverage of 75%. Almonds acreage is also eligible for catastrophic loss coverage with no premium and only a nominal sign up fee. Similar coverage is available and increasingly used for other tree crops.

Figure 3 shows projections of farm subsidies for the next decade under the assumption that the next farm bills continue on same path and the 2014 law. USDA projects that crop insurance will remain the largest source of farm subsidy accounting for roughly 65-70 percent of farm subsidy outlays. ARC payments will diminish in importance, with a larger portion of overall farm subsidy outlays made through the PLCs over the next decade.

Yu, Smith and Sumner (2017) apply econometric estimation to a sample of 170,000 data points on acreage and crop insurance subsidy for US counties that have grown any of 7 field crops over the past 25 years. They find that more crop insurance subsidy significantly and substantially increases acreage of the more highly subsidized crops and has changed the pattern of acreage across crops. Since alfalfa is the main widely planted field crop without substantial crop insurance or other subsidy it is the crop most disadvantaged in the current system of farm subsidies for other crops. Of course, producers who chose hay in this economic setting, gain in higher market prices by reducing quantity supplied from acreage that would have otherwise grown hay. No one has yet estimated the magnitude of these impacts.

DAIRY PROGRAMS

The long standing but ineffective milk price support program was suspended by the Agricultural Act of 2014 as were dairy payment programs. In their place a new Margin Protection Program

(MPP) provides payments to milk producers who have enrolled whenever the margin between milk prices and feed costs fall below a trigger. Farmers pay a premium (more highly subsidized for those enrolling small quantities) for margin coverage between \$8 per hundredweight and \$4 per hundredweight. Historically there have been very few recent periods when the margin has fallen below \$4 and even an \$8 margin is relatively rare. So even though milk prices have been fairly low for the past few years there have been no significant outlays as most farmers have not enrolled (Table 3) and those that have selected the largest margins so that their payoff is small.

One issue about the MPP is that it uses national milk and feed prices to calculate margins. For feed, only corn, soybean and alfalfa hay are used in the margin calculations. That means, for example, that dairy farms in California facing relatively high feed prices and relatively low milk prices may have low margins but still do not receive any benefits because the national index margin is still above the trigger. This also means, for example, that the program provides no protection against local movements in prices of feed or milk. If the Western alfalfa price were to rise it may have little affect on the nationally calculated margin. And, of course, if silage becomes expensive or unavailable, say during a drought, that would have no role in the index.

More than 90 percent of the milk produced in the United States is produced under federal or state milk marketing orders that specify minimum prices that buyers must pay for raw milk based on what the raw milk components will be used to produce. Some minimum prices are well above what the market price would otherwise be. Farms are paid an average price for milk that is based on the average prices paid for each of the components. The system raises that average price of milk that farmers receive and thus raises milk production and lowers the market prices for the lowest priced components that tend to be exported.

The dairy industry is so important to the forage industry that any factor affecting the milk industry is crucial for hay and silage. In the short term dairy subsidies may increase the demand for feed inputs, but in the longer term subsidies have not been a major force in determining the health of the dairy industry. Some of the most vibrant parts of the dairy industry, for example in New Mexico and Idaho, have been among the least subsidized in the country.

CONCLUDING REMARKS

Hay and other forage is less directly connected to farm bill subsidies than any other major field crop. Nonetheless, farm bill subsidies for other feed crops affect the supply and demand for hay and other forages. Furthermore crop insurance subsidies increase planting of fruit, tree nut and some vegetable crops that compete with forage crops for land and water. On the demand side subsidy programs for milk production affect forage demand in simple and complex ways. In the short term more subsidy means more revenue and more demand for feed. But, the dairy programs are biased to provide larger subsidy to the smaller operations to the east. This means that impacts on the demand for Western alfalfa and other forage is moderated by regional competition in national and international dairy product markets.

Finally, a broader policy connection should be recognized. The more governments focus on subsidy the less attention and funds available to the sorts of activities that create economic

flourishing. Innovation is the source of agricultural prosperity and some of that innovation can be enhanced by government investment in research, development and education.

Glauber, J.W. 2013. The Growth of the Federal Crop Insurance Program, 1990-2011. *American Journal of Agricultural Economics* 95(2): 482-488.

Hendricks, N.P., A. Smith, and D.A. Sumner. 2014. Crop Supply Dynamics and the Illusion of Partial Adjustment. *American Journal of Agricultural Economics*. 96 (5): 1469-1491.

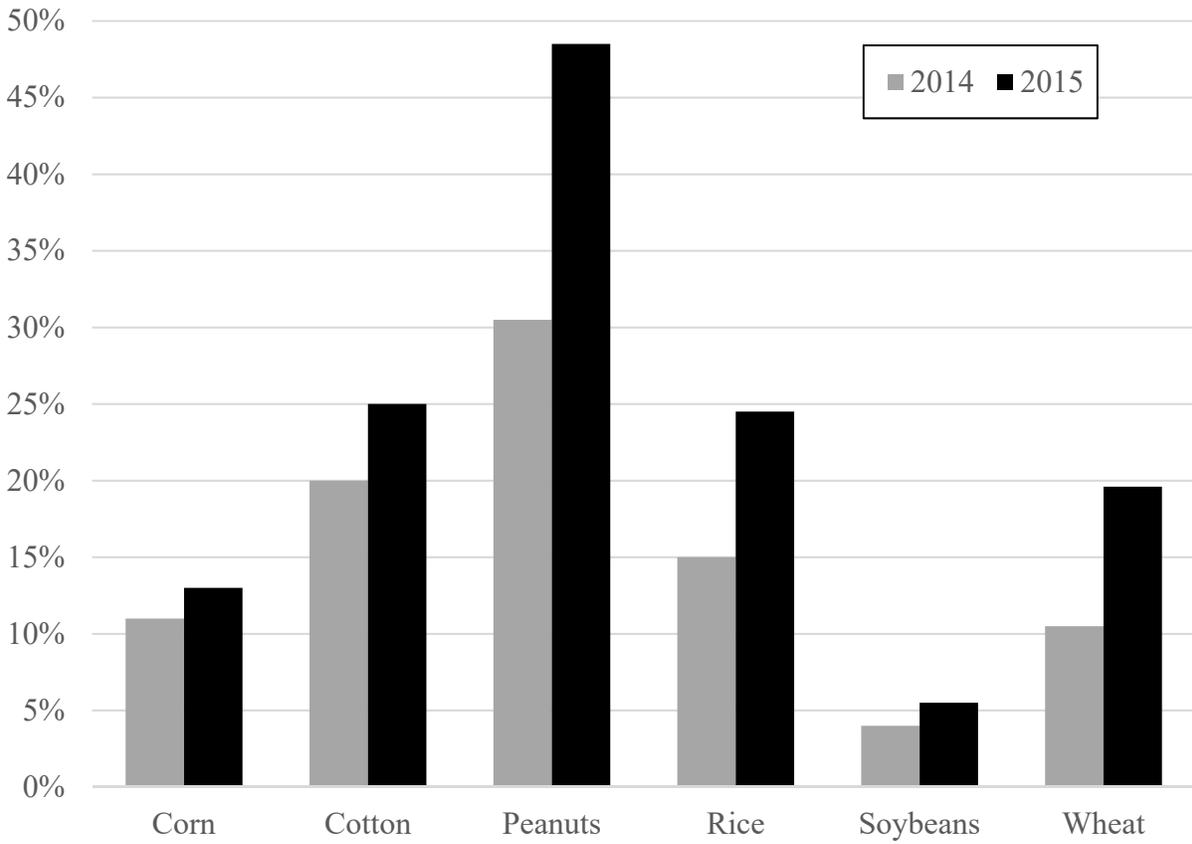
McDonald, J.D. and D.A. Sumner. 2003. The Influence of Commodity Programs on Acreage Response to Market Price: With an Illustration Concerning Rice Policy in the United States. *American Journal of Agricultural Economics*. 85(4): 857-871.

Smith, V.H., J.W. Glauber, B.K. Goodwin and D.A. Sumner. 2017. Agricultural Policy in Disarray; Reforming the Farm Bill, an Overview. *American Enterprise Institute*. Washington D.C., <http://www.aei.org/publication/agricultural-policy-in-disarray-reforming-the-farm-bill-an-overview/>

Sumner, D.A., J.M. Alston and J.W. Glauber. 2010. Evolution of the Economics of Agricultural Policy. *American Journal of Agricultural Economics*. 92(2): 403-423.

Yu, J., A. Smith and D.A. Sumner. 2017. Effects of crop insurance premium subsidies on crop acreage. *American Journal of Agricultural Economics*. forthcoming

Figure 1. Farm Subsidies as a Percent of Production Value



Source: USDA FSA, RMS, NASS

Note: Subsidies considered includes crop insurance premiums, ARC/PLC payments, marketing assistance loans, storage fees and interest payments.

Table 1. California Rice Subsidies by County

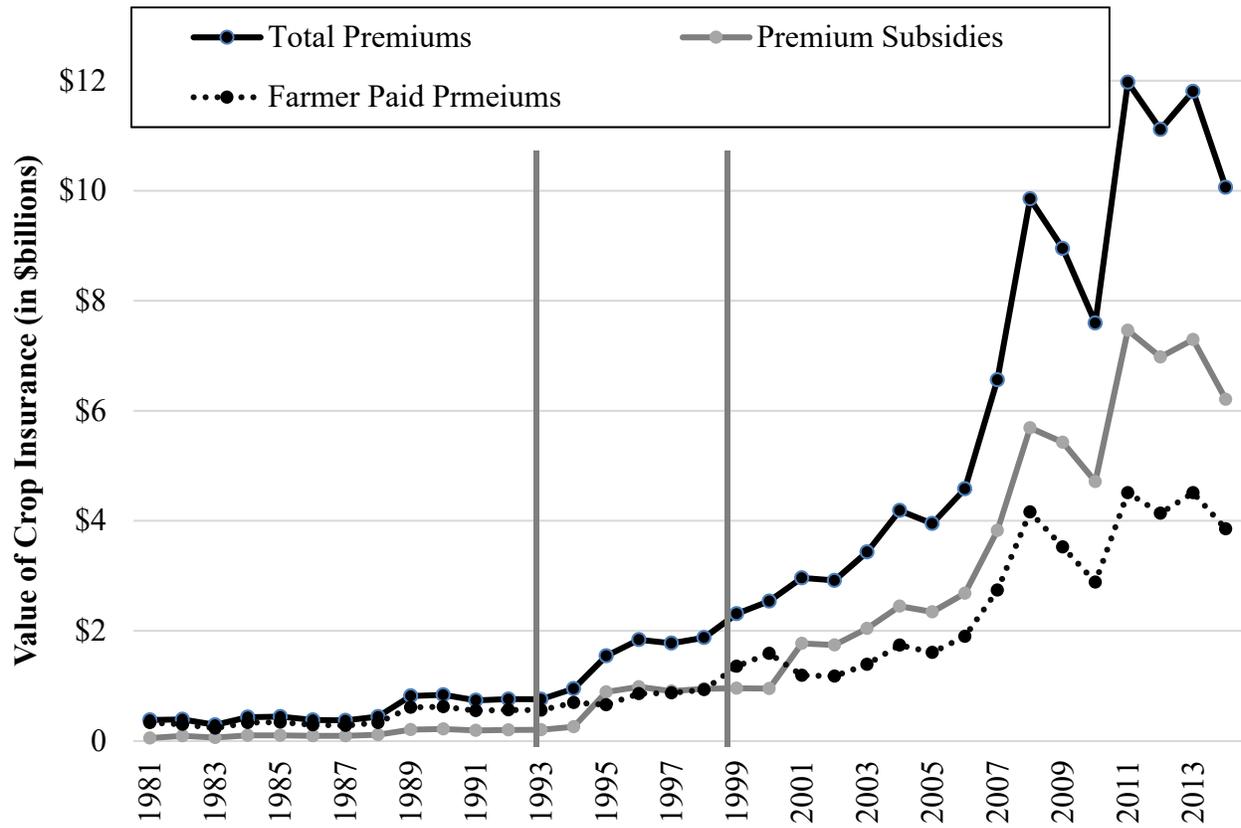
| County | Enrolled Base Acres | Base Yield (CWT) | Base Production (Million CWT) | Projected payment (2016) at \$2.6/cwt (in \$millions) |
|--------|------------------------|---------------------|----------------------------------|--|
| Colusa | 167,185 | 78 | 13.1 | 34 |
| Sutter | 129,458 | 76 | 9.8 | 26 |
| Butte | 110,479 | 80 | 8.8 | 23 |
| Glenn | 93,001 | 79 | 7.4 | 19 |
| Yolo | 50,149 | 70 | 3.5 | 9 |

Source: USDA FSA

Table 2. Federal Crop Insurance Information

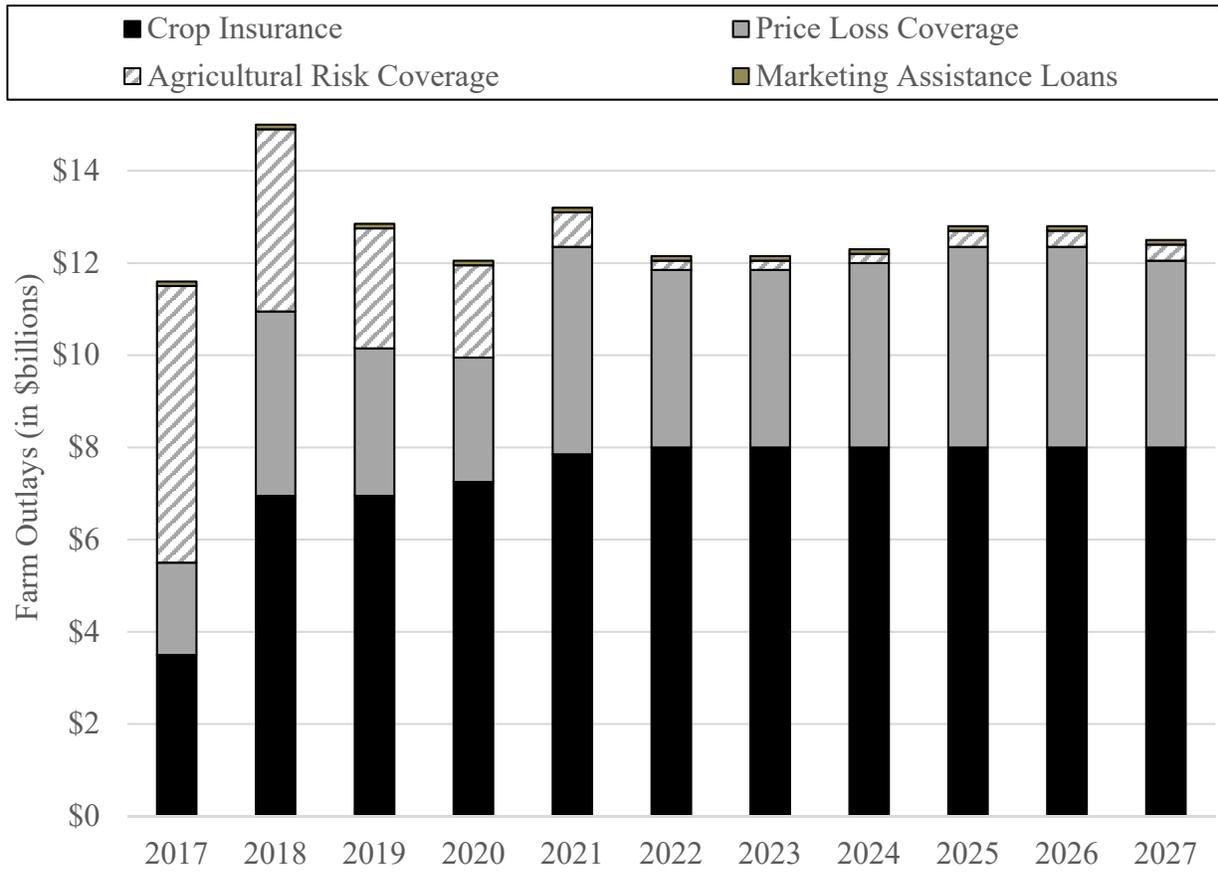
| Program Category | 2015 | 2016 | 2017 |
|------------------|---------|------------------|--------|
| | | In million acres | |
| Insured Acres | 295 | 295 | 295 |
| | | In \$million | |
| Liability | 100,622 | 94,414 | 95,390 |
| Premium Subsidy | 3,593 | 3,361 | 3,386 |
| Total Outlays | 7,273 | 7,246 | 8,817 |

Figure 2. U.S. Crop Insurance Program: Premiums, Premium Subsidy, and Farmer-Paid Premiums



Source: USDA RMA website.

Figure 3. Projected Farm Outlays Under Current Baseline, Selected Programs



Source: U.S. Congressional Budget Office, June 2017

Table 3. Margin Protection Program (MPP) Participation Rates for 2015 and 2016

| | 2015 | 2016 |
|---|------|------|
| Share of milk production covered by MPP | 69% | 69% |
| Share of farmers who took \$4.00 coverage with free premium | 42% | 61% |
| Share of dairy farms enrolled in MPP | 55% | 51% |