



SCENARIO 4A (FULL YEAR) – ORG. STRAWBERRIES

This scenario considers planting a cover crop and maintaining it over an eight-month period before terminating it and prepping the ground for the next commercial crop. The total lost opportunity of commercial production is represented by certified organic (COG) strawberry production over a one-year period. The distinction between this scenario and Scenario 5 is the COG certification.

FOREGONE REVENUE ASSUMPTIONS

The primary cost to the grower of cover cropping is the foregone revenue from strawberry production, as shown in the table below.

Per-Acre Net Returns of Foregone Crops – Scenario 4a

	COG Strawberry
Yield	4,330 - 4,940 trays
Price	\$12.40 - \$15.00 / tray
Gross Returns	\$59,400 - \$67,600
Seeding / Transplant	\$2,740
Fertility	\$1,890 - \$2,080
Labor (non-harvest, \$16.10 / hr)	\$7,740
Harvest (labor & mat.)	\$32,200 - \$34,100
Water (acin: 28)	\$580
Other Operating Costs	\$3,750
Total Operating Costs	\$49,000 - \$50,800
Land Rent	\$1,600 - \$4,200
Other Cash Overhead	\$2,670
Total Cash Overhead	\$5,000 - \$6,300
Non-Cash Overhead	\$1,300
Total Costs	\$55,600 - \$58,000
Net Returns by Crop	\$2,900 - \$10,500
Total Annual Foregone Revenue	\$2,900 - \$10,500

Based on these cost and return estimates, in planting a cover crop instead of an organic strawberry commercial crop, **growers would most likely be foregoing \$6,635** per acre with a potential range (80 percent chance) of foregoing between \$2,900 and \$10,500 per acre over the year.

COVER CROP COSTS

Growers would also incur costs to establish, maintain and incorporate the cover crop during the eight-month period. Growers could either establish one cover crop and let it go to seed, or incorporate the first cover crop before it goes to seed and establish a second cover crop. These activities would most likely cost \$300 per acre with a potential range (80 percent chance) of between \$166 and \$465 per acre.

TOTAL COSTS TO GROWER

Combining the cover crop cost with the foregone revenue costs, total costs to the grower are most likely \$6,935 with the range between \$3,400 and \$10,500 per acre per year. Note that the most likely value is approximately the sum of the most likely cover crop cost and the most likely foregone revenue cost, but that the range is not the sum of the lowest and highest values, as it is unlikely that any individual grower in a given year would experience together the lowest (or highest) foregone revenue *and* the lowest (or highest) cover cropping costs.

POTENTIAL YIELD IMPROVEMENTS – PRIVATE BENEFITS

Literature suggests that cover cropping can influence the yields of subsequent crops by affecting: pest cycles and disease pressure, short-term nitrogen availability (especially for nitrogen-fixing cover crops), long-term soil texture and fertility (especially for crops with



high carbon-nitrogen ratios), soil loss, and other factors. Studies suggest that the potential short-term adverse yield impact of cover cropping may be up to a 19 percent yield reduction, from cover crops with a high carbon-nitrogen ratio taking an extended period of time to break down in the soil. Literature also suggests the longer term impact of cover cropping is a yield increase, potentially up to nearly 90 percent (Burket, 1997) (Ngouajio, 2003) (Seigies, 2006). However, there is uncertainty what the specific yield benefits would be in the Pajaro Valley under current management practices. As such, we cap the positive impact of cover cropping at the maximum yields that UCCE publications suggest are attainable (high-end of their yield sensitivity tables). This is up a 12 percent yield increase for strawberries, resulting in an increase of approximately \$750 per acre per year that could partially offset the costs to the grower.

WATER SAVINGS & RELATIVE COSTS PER UNIT

Water use for the organic strawberry crop, based on UCCE publication (Bolda, 2014), as well as discussions with growers (Lebow, 2016) and PVWMA, is estimated at 28 inches. While the cover crop is not expected to use water in the most likely situation for this scenario, it is modeled to use up to eight inches at most. In total, this scenario would likely save 26.5 acre-inches of water per acre, or 2.3 acre feet. Based on the total costs presented above, this scenario would be equivalent to a **most likely water value savings of \$3,150 per acre-foot**, with a range of \$1,470 to \$4,525 per acre-foot.

SUMMARY PER ACRE COSTS AND BENEFITS

Value Type	Foregone Crop Revenue	Cover Crop Cost	Total Cost	Water Savings (AF)	Value Per AF
Range (80% Chance)	\$2,900 - \$10,500	\$166 - \$465	\$3,400 - \$10,500	2.0 – 2.3	\$1,470 - \$4,525
Most Likely	\$6,635	\$300	\$6,935	2.2	\$3,150

REFERENCES

- Bolda, M. a. (2014). *Sample Costs to Produce Organic Strawberries*. University of California Cooperative Extension.
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- Ngouajio, M. M. (2003). Effect of Cover Crop and Mangement System on Weed Populations in Lettuce. *Crop Protection*, 57-64.
- Seigies, A. T. (2006). Cover Crop Rotations alter soil microbiology and reduce replant disorders in strawberry. *Hort Science*.