

Case 28

Olives in Your Backyard

by

Daniel Franchi and Lee McFarland

*California Polytechnic State University – San Luis
Obispo*

You may buy an olive farm, where the olives will be sold as olives or olive oil. The trees are planted on 15 acres of the 40-acre parcel. The farm's cost is \$500,000, which includes the following assets:

- 3000 olive trees, approximately 4 years old, value = \$50 per tree
- 2 wells, value = \$12,000 per well
- 1 solar powered pumping system, value = \$4000
- 1 large barn and one small out building, value = \$65,000
- About 3 miles of fencing, valued at \$4 per foot
- About 2 miles of dirt roads, worth \$10,000
- 5 gates, worth \$1000 each
- 20,000 feet of irrigation hose, at \$.20 per foot
- Underground piping for 15 acres, worth \$15,000
- Storage tank valued at \$3000

For this analysis assume that all depreciable assets (including future purchases) have 7 year recovery periods for MACRS. Assume that existing assets are depreciated from their initial basis over the full-recovery period. Note: the value of the raw land, net after subtracting the value of above assets, is **not** depreciable. Additional investments (assume EOY for analysis purposes) include:

- Year 1: tractor at \$25,000 and storage bins at \$5000.
- Year 2: fencing at \$8000 and \$10,000 to connect to local electrical grid with electrical operating expenses of \$1200 per year.
- Year 3: added water storage at \$9000.

Assume well repairs of \$1000 will be necessary every year. Annual operating and maintenance expenses for the orchard are about \$20,000, but could vary by up to 25% in either direction. Picking costs are about \$500 per ton. Once the olives are picked, they must be pressed into oil. The olives must be transported to a press, at the cost of \$100 per ton. Charges for the use of the press are \$250 per hour, and the press can handle $\frac{1}{2}$ ton per hour.

Expected production output is about 5 tons of olives per acre. Production will ramp up from 30% of output in year 1, to 60% in year 2, to 100% in year 3 as the olive trees mature. Depending on rainfall, production can vary from 50% to 125% of the expected yield.

The olive crop may be sold either as olives or as oil. For purposes of this analysis, assume that the olives will be pressed into oil. The pressing process yields about 50 gallons of extra virgin oil per ton of olives. Extra virgin olive oil wholesales for about \$50/gallon. The price range in the past year has been from \$40 to \$60. About 20% of it can be retailed at farmer's markets for about \$20 per $\frac{1}{2}$ quart. These sales have expenses of \$6/bottle plus olive oil.

The income tax rate is 30%. The farm is expected to sell for \$800,000 in 10 years (after all depreciation recapture and capital gain taxes.) You are uncertain of the exact interest rate that should be used, but 10% sounds like a good starting point.

Deliverables. Recommendation with engineering economic analysis, any suggested alternatives, assumptions made, and risks considered. At a minimum, it should include:

- 10-year cash flow projection, utilizing sensitivity analysis for prices, costs, and yields
- Calculate an internal rate of return before and after taxes
- Any risks associated with the salvage value assumption
- Graph of present worth versus three important uncertainties, such as price, production, salvage value, etc.

Option

Use more realistic and detailed recovery periods (tractors are 5-year property, trees are 10-year, roads are 15-year, and farm buildings are 20-year). Assume that the appraised and sale value of the land with trees and the property increase to \$700,000 and \$950,000 respectively before taxes, that the capital gains rate is $\frac{1}{2}$ the normal tax rate, and that depreciation recapture is computed assuming that the value of depreciable assets equals the sales price minus the land's appraised value.