

The Economics of Farming Walnuts on Small Acreage

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Sample costs to produce English walnuts on 100, 20, and 5 acres of production in Sutter and Yuba counties are presented. The five and 20 acre farms are contiguous and referred to as homesites or ranchettes. These sites are priced per site rather than per acre as is done for farm land. The 100 acre farm may be contiguous or non-contiguous consisting of various sized blocks. Production operations in this study are based on the 2002 study, *Sample Costs to Establish a Walnut Orchard and Produce Walnuts, Sacramento Valley* by the University of California Cooperative Extension <http://coststudies.ucdavis.edu>. Additional information was collected from small growers (those owning and producing walnuts on 20 acres of land or less), custom equipment operators, farm managers/consultants, handlers, and processors. Interviews were conducted by telephone with approximately twenty individuals in these groups. Another ten were contacted but were not available at the time or did not return the calls. Most of the sources wanted to remain anonymous. Growers contacted were from Sutter and Yuba Counties. Handlers, processors and custom operators contacted were from Sutter and Yuba Counties, the Central Coast, and the northern San Joaquin Valley.

The question presented to the small growers of 20 acres and less was “Who does your orchard work?” All of the small growers interviewed stated that the farm was not their main source of income but the work on the farm was primarily done by the grower and/or the family. The growers were either retired or had full time off-farm jobs. In cases where the grower may be getting behind, local or contract labor may be hired for a few days. One of the reasons stated for not having direct hired labor is to avoid workman’s compensation costs. Operations normally done by the small grower (20 acres or less) are planting, pruning, hauling the prunings out of the orchard and burning, weed spraying by hand or with a homemade or purchased weed sprayer. Otherwise, operations are coordinated with a neighbor (larger farmer) and done by borrowing the neighbor’s equipment or hiring the neighbor to do the job. Some small growers may have an old tractor and a few implements to do a few cultural operations, but most do not have spray or harvest equipment. Therefore, pesticide spraying and harvesting are commonly coordinated with the neighbor who has spray and maybe harvest equipment. If the neighbor uses custom operators for services such as spraying and harvesting, the small grower or the spraying and/or harvesting company coordinates the operations with the neighbor. A couple of growers, having approximately 20 acres, purchased used equipment, to do their cultural operations, including spraying.

The differences in costs per acre attributable to size are related to fertility analysis, weed control, insect and disease control, harvest, and marketing. As mentioned above, small growers tend to apply herbicides themselves using an ATV with sprayer while a larger grower uses a tractor and sprayer. A small operator will custom hire the mowing while a larger grower will have his own equipment. A minimum charge of \$500 per mowing and five mowings for a total minimum charge of \$2,500 per farm was used in the study. This results in additional costs of \$89 per acre for the 20 acre grower and \$464 per acre for the 5 acre grower compared to the 100 acre grower. Similarly, for

insect and disease control, the smaller growers custom hire the applications while the larger growers own their own equipment. In this study we used a minimum charge of \$500 per application for three applications for insects and mites and another three applications for disease was used. We assumed that the cost of materials and the materials used were identical in all situations. The difference in application costs resulted in an additional cost per acre of \$150 for the 20 acre grower and \$540 per acre for the 5 acre grower. The total additional cultural costs in comparison to the 100 acre grower were \$379 per acre for the 20 acre operation and \$1,035 per acre for the 5 acre operation.

We assumed custom harvest for all three size operations. Custom charges for harvest appeared to be more variable than for cultural operations. For shaking, sweeping and pickup we assumed a cost of \$193 per acre with a minimum charge of \$1,500. This results in an additional cost per acre of \$109 for the 5 acre operation. Hand raking was assumed to be the same for all size operations. Hulling and drying costs were assumed to be \$110 per ton for 100 acres, \$115 per ton for 20 acres, and \$120 per ton for 5 acres. At the assumed yield of 2.5 tons per acre, this results in only a slight difference in cost; \$13 per acre for the 20 acre operation and \$25 per acre for the 5 acre operation. The total difference in harvest cost is only \$13 per acre for the 20 acre operation and \$134 per acre for the 5 acre operation.

Many small farms have been around a long time and the custom operators, handlers, and processors are willing to continue working with these growers, but refuse new five acre growers. The operators, handlers, and processors indicate that it is not profitable for them to deal with the five acre grower. For 20 acre growers, the problems are pretty similar as the five acre, except that the handler or processor in most cases will review each situation separately. The grower with average or above yields and well maintained orchards has a good chance to be accepted by the handler. Some of the concerns or issues with the small grower are that the grower is depending upon others for services; therefore, the orchard is not taken care of properly, resulting in many sticks in the harvested nuts, decreased yields, high cleanout because of poor quality, and extra handling. The orchard may not be of primary concern because it doesn't provide the grower's main income. A common issue expressed by the custom sprayers, custom harvesters, and those doing cultural operations, is that these farms usually do not have enough open space for turning the equipment around in the yard or row ends, loading and unloading the equipment (tractors, sprayers, mowers, shakers, etc.), parking and loading the bulk trailers for harvesting, and for general equipment movement. The trees may be planted too close to a fence or building to work around.

Handlers, processors, and custom operators maintain certain standards for accepting growers based on economic considerations. Most will continue to deal with long time small growers, but prefer or will not accept work from a new five acre grower. Currently, the 20 acre grower is a case by case basis. Also, most custom operators have a minimum charge for the operation, which can be prohibitive to a small grower including the 20 acre grower. In addition to minimum charges, some have a minimum acreage limitation. For the custom operator, there is the cost to deliver and setup the equipment, application or operation and cleanup time. Handlers, because of the extra work in dealing

with small lots, typically charge a higher fee for small acreage and/or low total farm tonnage. Each handler had their own pricing structure for this situation.

Values for bare land (vegetable and field crop land) ranges from \$2,500 to \$6,500 per acre. For this study, the land value used for the 100 acre farm is \$3,250 per acre. Rural residential ranged from \$200,000 to \$500,000 per site. A 20 acre site at \$350,000 per site equals \$17,500 per acre and a five acre site at \$250,000 per site equals \$50,000 per acre. Five acre sites are not zoned in Sutter or Yuba counties, so no official prices are available (per real estate agent). Liability insurance, property insurance and property taxes are based on land values and therefore are higher on a per acre basis for the small landowner. Based on our assumed land values, the difference in these overhead costs for the 20 acre producer compared to 100 acres of production is an additional \$142 per acre and for the 5 acre producer is \$656 per acre.

As explained above, the small operations do not own their own tractor or sprayer which means that they also do not have a storage building, shop, or above ground fuel tanks. Therefore, the total investment other than land is actually lower than for the 100 acre operation but on a per acre basis is about the same. But the additional land values assumed result in an additional land payment of \$891 per acre for the 20 acre operator and \$2,922 per acre for the 5 acre operation.

The bottom line is that under the assumptions of this study including a gross return of \$3,050 per acre (a yield of 2.5 tons per acre at \$.61 per pound) the 100 acre operation shows a net return over all costs of \$877 per acre or \$87,700 per year for the farm. The 20 acre operation covers all cash costs with a net return above cash costs of \$762 per acre although the net return is \$553 per acre lower than the 100 acre operation. However, once land payments of \$1,094 per acre are taken into account along with other capital investment costs (irrigation system, equipment, and tools) the 20 acre operation shows a loss of \$554 per acre. In contrast, the 5 acre operation shows a positive net return above cultural and harvest costs of \$269 per acre but this is not enough to cover the cash overhead costs of taxes and insurance. Again, these costs are tied to the value of land. Adding the cash overhead costs of \$313 per acre land payment cost of \$3,125 per acre for the 5 acre operation, the 5 acre operation shows a loss of \$3,918 per acre.

It appears that as new small growers come on line, the economics to own equipment, hire custom work, and market their product through processors will be nearly impossible. The minimum charges for custom work and the refusal by handlers and processors to accept their product may make it impossible to have a viable economic unit of 20 acres or less. Different custom operators have different minimums; some base it on minimum charges only and some on a combination of minimum charges and minimum acreage. Minimum acreages mentioned in this survey were 25 acres and 35 acres. One handler even mentioned that 50 acres was considered small, but did not list it as a minimum. Success will depend in large part on the ability to work in cooperation with neighboring farms.

**WALNUT PRODUCTION COSTS AND RETURNS PER ACRE
FOR 100, 20 and 5 ACRE FARMS**

Sutter and Yuba Counties 2006

	Producing acres::	100	20	5
Walnuts: Returns 5,000 lbs x \$0.61		3,050	3,050	3,050
Cultural costs:			\$/acre	
Prune: Alternate Years 1/2 cost		101	207	207
Brush Disposal		18	45	45
Weed: Mow Tree Row Middles 5X		36	125	500
Disease: Spray Walnut Blight 3X		156	232	427
Insect: Spray Codling Moth 2X		63	112	242
Fertilize: Leaf Analysis		2	3	9
Weed: Spray Tree Row (in season)		13	11	11
Insect/Mite: Miscellaneous		51	76	141
Harvest Aide: Spray 50% of orchard		25		
Pickup Business Use		82	115	
SUBTOTAL DIFFERENT CULTURAL COSTS		547	926	1,582
ATV Miscellaneous Use		56	56	56
Rodents: Gopher Control		3	3	3
Irrigate: (water & labor)		206	206	206
Fertilize: Nitrogen		100	100	100
Weed: Spray Tree Row (dormant season)		59	59	59
PCA Service		30	30	30
SUBTOTAL IDENTICAL CULTURAL COSTS		454	454	454
TOTAL CULTURAL COSTS		1,001	1,379	2,036
Harvest: Shake, Sweep, Pickup		192	192	301
Harvest: Haul		38	38	38
Harvest: Hand Rake		16	16	16
Harvest: Dry, Hull		275	288	300
TOTAL HARVEST		521	534	655
Interest on Operating Capital @ 9.25%		42	62	90
TOTAL OPERATING COSTS/ACRE		1,564	1,975	2,781
Cash Overhead:				
Office Expense		50	75	200
Liability Insurance		5	21	86
Property Taxes		46	188	513
Property Insurance		9	9	9
Investment Repairs		61	20	19
TOTAL CASH OVERHEAD COSTS/ACRE		171	313	827
TOTAL CASH COSTS PER ACRE		1,735	2,288	3,608
NET RETURNS PER ACRE ABOVE CASH COSTS		1,315	762	-558
Non-Cash Overhead:				
Buildings 2,400 square feet		71		
Fuel Tanks Above Ground		5		
Shop/Field Tools		16	26	21
Micro Sprinkler Irrigation System		56	60	60
Land		203	1,094	3,125
Equipment		87	136	154
TOTAL NON-CASH OVERHEAD COSTS		438	1,316	3,360
TOTAL COSTS PER ACRE		2,173	3,604	6,968
NET RETURNS PER ACRE ABOVE TOTAL COSTS		877	-554	-3,918

