

# PRODUCING EUCALYPTUS FOR FIREWOOD IN GLENN COUNTY

## Establishment and Production Costs

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Although Eucalyptus has been grown in California for many years the production of Eucalyptus for energy is a new industry which has recently received much attention.

Potentially Eucalyptus has many markets, including pulpwood for paper and chips to fire biomass generators. The economics of these uses are currently limited by transportation costs to facilities. At this time the most profitable market for Eucalyptus is firewood and this is what this study is based on.

Because of the newness of the industry, much of what is presented here are estimates of what would be the best management practices gathered from people involved in the industry. These may or may not be born out by experience, but can be used as a starting point for comparing this venture with other possible land uses. You can adjust the costs where you think yours will differ from the ones we have used. We have tried to present estimates of costs, yields and returns as realistically as possible. This is not intended to imply that these costs and management priorities are optimum inputs. This information will have to come from local observations and assessments of the yield response from different cultural inputs.

Returns are based on what can be earned today. We have no way of knowing what prices will be in five or six years when the trees are harvested. It is likely that energy prices will increase.

The study is based on a small acreage (5 acres) because most of the requests we have received for information have come from people interested in small acreages. For this reason most operations which would require expensive equipment were figured at custom rates.

One of the largest costs in this study is the opportunity cost of the land. This represents an estimate of what could be earned with the money invested in the land if it was invested in another enterprise. The cost we have used for land is fairly low (\$2,500 per acre). This is because we are thinking of "marginal" land or land which may not be adaptable to much else. Eucalyptus are quite adaptable and may do well where other crops would not. Examples might include areas with high water tables or alkaline soils.

ASSUMPTIONS:

1. Land - \$2,500 per acre. A 20 year mortgage at 10% interest.
2. Labor - \$6.50 per hour
3. Spacing - 6x6 foot square spacing resulting in 1210 trees per acre
4. Nitrogen application

1st year - 50 lb/acre	50
2nd year - 75 lb/acre	75
3rd year - 100 lb/acre	100
4th year - 150 lb/acre	150

and on -
5. Irrigation - flood irrigation at a cost of \$200 per acre. 20 year life.  
6 hours of labor per year
 

1st year - 2 acre ft
2nd year - life of stand - 3 acre ft
6. Interest - Interest is charged on the establishment years on the accumulated cultural costs at 10% per year. This figure is an estimate of the opportunity cost of keeping cash tied up in the stand.  
Interest on land is also considered an opportunity cost.

COMMENTS:

1. On the production cost study, the costs are per rotation. That is, for a five year production period. So the depreciation and interest figures are for five years.
2. The first six years are considered establishment years. In the sixth year there is a cutting and this is treated as a credit to the establishment costs. The total establishment cost is then divided equally among the next three rotations and appears in the cost study as depreciation on trees.
3. The interest on the cultural costs for the production study is calculated as follows:

YEAR	1	2	3	4	5
Accumulated Cultural Cost	\$123.00	\$246.00	\$369.00	\$492.00	\$615.00
Interest at 10%	\$ 12.30	\$ 24.60	\$ 36.90	\$ 49.20	\$ 61.50

For a total cost of \$184.50 in interest.

4. The biggest factor in the costs is the land opportunity cost. Without any charge to land the total cost is \$4,059 per acre or \$113 per cord at a 36 cord yield.

SAMPLE COSTS TO ESTABLISH EUCALYPTUS

GLENN COUNTY - 1983

OPERATION	Hrs/ Acre	Cost per year					
		1st	2nd	3rd	4th	5th	6th
Ripping-2way (custom)		\$100					
Disking & smoothing (custom)		50					
Pre-emergence herbicide application		7	7				
materials		20	20				
Spot herbicide application	.1	1	1				
material		20	20				
Layout	3.2	21					
Planting							
labor	12	78					
trees - 1210 @ \$.40 ea		484					
Fertilize							
application	.5	3	3	3	3	3	3
nitrogen		18	26	35	52	52	52
Irrigation							
labor	6	39	39	39	39	39	39
district water		16	24	24	24	24	24
Misc. labor	2.1	15	15	15	15	15	15
<b>TOTAL CULTURAL COST</b>		<b>\$872</b>	<b>\$155</b>	<b>\$116</b>	<b>\$133</b>	<b>\$133</b>	<b>\$133</b>
<b>ACCUMULATED NET COST</b>		<b>\$872</b>	<b>\$1,027</b>	<b>\$1,143</b>	<b>\$1,276</b>	<b>\$1,409</b>	<b>\$1,542</b>
<b>HARVEST COSTS</b>							
Cut & Haul							
36 cords @ \$35/cord							\$1,260
Cash Overhead							
office, misc.		15	15	15	15	15	15
taxes		27	27	27	27	27	27
<b>TOTAL CASH OVERHEAD</b>		<b>\$ 42</b>	<b>\$ 42</b>	<b>\$ 42</b>	<b>\$ 42</b>	<b>\$ 42</b>	<b>\$ 42</b>
Depreciation:							
irrigation system		10	10	10	10	10	10
equipment		13	13	13	13	13	13
<b>TOTAL DEPRECIATION</b>		<b>\$ 23</b>	<b>\$ 23</b>	<b>\$ 23</b>	<b>\$ 23</b>	<b>\$ 23</b>	<b>\$ 23</b>
Interest on Investment @ 10%							
irrigation system		10	10	10	10	10	10
equipment		7	7	7	7	7	7
land		250	250	250	250	250	250
accumulated cultural costs		87	103	114	128	141	154
<b>TOTAL INTEREST</b>		<b>\$354</b>	<b>\$370</b>	<b>\$381</b>	<b>\$395</b>	<b>\$408</b>	<b>\$421</b>
<b>TOTAL ANNUAL COST</b>		<b>\$1,291</b>	<b>\$590</b>	<b>\$562</b>	<b>\$593</b>	<b>\$606</b>	<b>\$ 879</b>
<b>INCOME FOR WOOD \$80/cord for 36 cords</b>							<b>\$2,880</b>
<b>ACCUMULATED NET COST</b>		<b>\$1,291</b>	<b>\$1,881</b>	<b>\$2,443</b>	<b>\$3,036</b>	<b>\$3,642</b>	<b>\$2,641</b>

3/20/83

SAMPLE COSTS TO PRODUCE EUCALYPTUS

1983

Glenn County

Based on 6 x 6 square spacing, 1210 trees/acre on 5 acres. Labor \$6.50/hr flood irrigation. Costs for a five year rotation.

Operation	Hrs. per Acre/Yr.	Annual Cash and Labor Cost per acre				Total per Rotation	Your Cost
		Labor	Materials Description	Cost	Total		
Irrigation	6.0	\$39	3 ac.ft. water @ \$8/ac.ft.	\$24	\$58	\$ 315	
Fertilizer	.5	3	150 lbs. N @ \$.35/lb	\$52	55	275	
Misc. Labor	2.1	15			15	75	
Interest @ 10% for 5 years						184	
Total Operating Costs						\$ 849	
Harvest Costs							
Cut and haul to landing - 36 cords @ \$35/cord (not delivered)						\$1,260	
Cash overhead							
Misc., office, etc. \$15/year for 5 years						\$ 75	
Taxes \$25/year for 5 years						125	
Total Cash Overhead						\$ 200	
Total Cash Cost						\$2,309	
Cash Cost per cord at 36/cord yield						\$ 64	
Investment Cost							
	per acre	Cost per rotation					
		depreciation	interest @ 10%				
Land	\$2,500		1,125				
Trees	2,641	880	660				
Irrigation system	200	50	50				
Equipment	130	75	35				
Total	\$5,471	\$1,005	\$1,870			\$2,875	
Total Cost/Acre						\$5,184	
Cost per cord @ 36/cord						\$ 144	



