

THE ECONOMICS OF LEVELED
RICE FIELDS WITH PARALLEL LEVEES
AND ROAD PAD BORDERS

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Number of Crop Years to Amortize Costs for
Establishing Parallel Levees from Increased Income and Reduced Costs

Crop Year	Cost of Leveling	Interest-8%	Total Annual Cost	Economic Advantages		Total	Net Costs
				Increased Income	Reduced Costs		
1978	\$217.49	\$17.40	\$234.89	\$50.00	\$5.65	\$55.65	\$179.24
1979	179.24	14.34	193.58	50.00	5.65	55.65	137.93
1980	137.93	11.00	148.93	50.00	5.65	55.65	93.28
1981	93.28	7.46	100.74	50.00	5.65	55.65	45.09
1982	45.09	3.53	48.62	50.00	5.65	55.65	- 7.03
1983							
1984							

*If money is borrowed on today's market a higher interest would be required

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In Butte County, rice has historically been grown on land comparatively level. Some fields required grading to remove hummocks and fill hollows and sloughs. Earth levees were constructed on natural contour intervals with 0.2-0.3 foot fall between the levees to maintain a uniform water depth. Constructing the levees on a natural contour when fields were even slightly rolling resulted in a serpentine pattern. All tillage and harvest operations were confined to the irregular-shaped areas between the levees. Through the years rice growers continued to smooth their fields with the final objective being parallel levees.

The investment in grade staking, leveling, establishing parallel levees (0.22-0.24 foot fall between levees) and road pad borders for rice production in Butte County is directly related to expected economic savings from more efficient tillage and harvest practices and increased rice yields.

Growers who have produced rice in fields with parallel levees have found that the efficiency in use of their equipment has increased 12-15 percent. Recent cost studies indicate about the following cash costs of operation per acre:

Tillage Practices:	Plow	\$6.25
	Disc 2X	7.00
	Float	2.65
	Incorporate Fertilizer	3.15
Harvest:		<u>28.00</u>
		\$47.00

A 12 percent saving in total tillage and harvest costs would be \$5.65. This does not include savings that result from reduced wear due to turning the equipment less often and other intangible economic savings.

Research data indicates that continuous shallow water management (clods covered) increases rice yields an average 8 cwt per acre. Using a 10 percent increase over 56 cwt per acre, or 6 cwt at \$8.25 per cwt, would provide approximately \$50.00 increased income per acre.

Uniform water depth has always been very important in rice stand establishment. The recently released short stature rice varieties will require critical water management (2-6 inches) for optimum plant density and yields.

Total water requirements are reduced due to more uniform distribution during initial flooding and reduced spill when water depth is stabilized. Road pads around the field reduce water seepage and allow better observation during the growing season.

Total tillable area within the field is increased when waste areas are eliminated and the number or length of levees is reduced. When the number or length of levees is reduced there is a corresponding reduction in maintenance, time and costs. Parallel levees also facilitate ground application of fertilizer and pest control materials.

Customary fertilizer practices will need to be adjusted depending on the amount of cut and fill material necessary to establish parallel levees. Most growers feel it will take several seasons to redevelop their fertilizer experience after leveling a rice field to grade.

Overall, the land increases in value although it is non-productive for one summer unless the usual rotation includes a fallow operation. Management options that may be considered by the grower include fall establishment of the levees and planting rice the following spring or plant grain in the fall, check leveling job following grain harvest in the spring, correct any low or high areas during the summer, establish levees in the fall and plant rice the second spring.

It is not unusual to encounter deeper mud in the fill areas if wet conditions occur during spring and fall operations. When a rice field has been leveled to grade, a follow-up leveling program is required to maintain a uniform fall between levees due to changes in the cut and fill areas and tillage operations. Fields with .22-.24 foot fall between levees are limited where irrigated alternate crops are concerned. Row crops require 0.1-0.3 foot fall per 100 feet to facilitate irrigation practices. When waste areas are eliminated during the leveling operation, a reduction in wildlife habitat occurs. Where multiple land use is practiced it will be necessary to make special efforts such as releasing pen-raised birds and developing isolated protected wildlife habitat areas.

Estimated Costs of Establishing Parallel Levees

Hypothetical 70 Acre rice field,
smoothed but not leveled to grade,
with 3½-4 miles of levees on the
natural contour

Labor \$5.50 per hour includes: Cash wages,
compensation insurance, social security, super-
vision, recordkeeping, and any other benefit that
the growers may provide

	Total Hours	Labor	Fuel and Repair	Total Cost	Cost per Acre
<u>Spring</u>					
Remove established levees	4	\$22.00	\$44.00	\$66.00	\$.94
Dozer Blade 95 HP ¾ hour/ mile of levee	2			70.00	1.00
Work ground					
Plow or disc	23	129.50	308.00	437.50	6.25
Land plane 4x (90') 125 HP	70			2800.00	40.00
<u>Summer</u>					
Engineering	200				
stake (50' stations)					
read stakes					
prepare cut and fill map					
mark stakes (cut-fill-ok)					
Move Soil					
Land Plane 2x Tri-plane					
between stakes 95 HP				1050.00	15.00
2x (90') 125 HP				2800.00	40.00
Recheck stakes					
Move soil					
Remove stakes and islands	(Land Plane				
Land Plane 2x (90') 125 HP	Total 6x)				
Chisel	100	77.00	224.00	301.00	4.30
					\$217.49

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