

Mechanization increases farming systems efficiency and timeliness of operations

Various farm mechanization systems and technologies are available from the simplest manually operated to the hi-tech automated and computer-controlled technologies. The decision as to which system and technology to use is critical to a successful mechanization. The following facts are hereby presented to aid farmers in their critical decision-making process.



Farm power									
	Size (hp)	Speed (km/h)	Fuel (\$/hr)	Labor (\$/hr)	Repair (\$/hr)	Operating Cost (\$/hr)	Purchase price (\$)	Capital (\$/hr)	Total cost (\$/hr)
Animal	0.5 - 1	2 - 3	0.02-0.05	0.15-0.35	0.15-0.35	0.32-0.75	500 (per pair)	0.20	0.45 - 0.95 (0.70)
2-wheel tractor	8 - 15	3 - 4	0.40-0.75	0.25-0.50	0.50-1.00	1.15-2.25	750 - 2,000	0.50-1.00	1.75 - 3.25 (2.50)
4-wheel tractor	15 - 80	3 - 8	1.00-4.50	0.40-0.80	0.50-1.00	1.90-6.30	3,000-30,000	3.00 - 6.00	4.90 - 12.30 (8.60)

Note: Fuel costs at \$US 0.35/liter; labor cost from \$US 1/day to \$US 5/day



Land preparation										
	Width (m)	Speed	hrs/ha	Fuel (\$/ha)	Labor (\$/ha)	Repair (\$/ha)	Operating (\$/ha)	Purchase price (\$)	Capital (\$/ha)	Total (\$/ha)
Human	-	-	200	-	30.00	-	30.00	-	-	30.00
Animal moldboard	0.2 - 0.3	1.0	60	1.80	15.00	15.00	31.80	500+50	12.00	43.80
Animal harrows	1-1.5	2	30	0.90	7.50	7.50	15.90	500+50	6.00	21.90
2-Wheel tractor moldboard	0.2-0.5	3	8	4.40	3.20	6.00	13.60	1300+750	6.00	19.60
2-Wheel tractor disc	0.2 - 0.5	3	8	4.40	3.20	6.00	13.60	50 - 100	6.00	19.60
2-Wheel tractor harrow	1.5	4	5	2.75	2.00	3.65	8.40	25 - 50	3.65	12.05
4-Wheel tractor moldboard	0.5 - 1.5	3 - 6	2.5	6.88	1.50	1.87	10.25	11,000+ 3,500	5.84	16.09
4-Wheel tractor one-way disc	0.5 - 1.5	4 - 7	2.0	5.50	1.20	1.50	8.20	2,500	9	17.20
4-Wheel tractor chisel	1.5 - 3.0	6 - 8	1.0	2.75	0.60	0.75	4.10	3,000	4.50	8.60
4-Wheel tractor offset disc	1.5 - 2.5	6 - 8	1.5	4.10	0.90	1.10	6.10	5,000	6.75	12.85
4-Wheel tractor rotovator	1.0 - 2.0	3 - 5	2.5	6.90	1.50	1.90	10.30	6,000	11.15	21.45
4-Wheel tractor disc harrows	2.0 - 3.0	6 - 8	0.7	1.95	0.45	0.50	2.90	3,000	3.20	6.10
4-Wheel tractor tine harrows	2.0 - 4.0	6 - 8	0.6	1.65	0.35	0.45	2.45	1,500	2.70	5.15



For more information:
Joseph F. Rickman
E-mail Address: J.Rickman@cgiar.org
DAPO 7777 Metro Manila, Philippines
Agricultural Engineering Unit

IRRI
International Rice Research Institute