

Table S1. Correlations of milk quantity produced with explanatory variables for differences in observed efficiency ($n = 147$).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Milk qty produced	1.000														
(2) Experience (years)	-0.062 (0.458)	1.000													
(3) Education (years)	0.145* (0.079)	-0.069 (0.410)	1.000												
(4) Total HH size	-0.007 (0.929)	0.082 (0.325)	-0.075 (0.368)	1.000											
(5) Total AWUs	0.013 (0.875)	0.321** (0.000)	-0.069 (0.403)	0.621** (0.000)	1.000										
(6) Off- farm income	0.113 (0.175)	-0.076 (0.358)	0.099 (0.232)	-0.044 (0.594)	0.063 (0.451)	1.000									
(7) Hired labour	0.407** (0.000)	-0.048 (0.565)	0.205** (0.013)	-0.049 (0.558)	0.016 (0.844)	0.009 (0.918)	1.000								
(8) Org member	0.319** (0.000)	0.016 (0.846)	0.133 (0.109)	0.050 (0.547)	0.081 (0.330)	0.141* (0.088)	0.066 (0.424)	1.000							
(9) Access to credit	-0.017 (0.838)	-0.113 (0.174)	0.227** (0.006)	0.023 (0.787)	0.024 (0.772)	0.234** (0.004)	0.082 (0.321)	0.227** (0.006)	1.000						
(10) Improve breed index	0.287** (0.000)	-0.039 (0.637)	0.174** (0.035)	-0.202** (0.014)	-0.118 (0.156)	0.426** (0.000)	0.076 (0.363)	0.209** (0.011)	0.292** (0.000)	1.000					
(11) Diversification index	0.045 (0.587)	0.147 (0.076)	-0.073 (0.380)	0.205** (0.013)	0.112 (0.177)	-0.129 (0.119)	-0.048 (0.564)	0.064 (0.444)	-0.050 (0.551)	-0.084 (0.310)	1.000				
(12) Road access	0.134 (0.105)	0.054 (0.513)	0.002 (0.980)	0.169** (0.041)	0.046 (0.578)	-0.137* (0.098)	0.077 (0.355)	0.002 (0.977)	-0.011 (0.895)	-0.234** (0.004)	0.151* (0.068)	1.000			
(13) Distance to market	-0.215** (0.009)	-0.071 (0.390)	-0.284** (0.000)	0.242** (0.003)	-0.012 (0.882)	-0.302** (0.000)	-0.087 (0.293)	-0.134 (0.105)	-0.096 (0.245)	-0.352** (0.000)	0.160* (0.053)	-0.054 (0.513)	1.000		
(14) Altitude	0.128 (0.121)	-0.065 (0.434)	0.005 (0.953)	-0.156* (0.059)	-0.178** (0.031)	0.149* (0.071)	0.001 (0.993)	0.053 (0.526)	-0.011 (0.896)	0.203** (0.014)	-0.147* (0.076)	0.197** (0.017)	-0.140* (0.092)	1.000	
(15) Milk zone integration	0.209** (0.011)	0.033 (0.694)	-0.026 (0.758)	0.125 (0.133)	0.200** (0.015)	0.254** (0.002)	0.006 (0.947)	0.100 (0.226)	0.182** (0.028)	0.129 (0.119)	0.133 (0.108)	0.079 (0.343)	-0.066 (0.424)	-0.503** (0.000)	1.000

** $prob \leq 0.05$; * $prob \leq 0.1$.

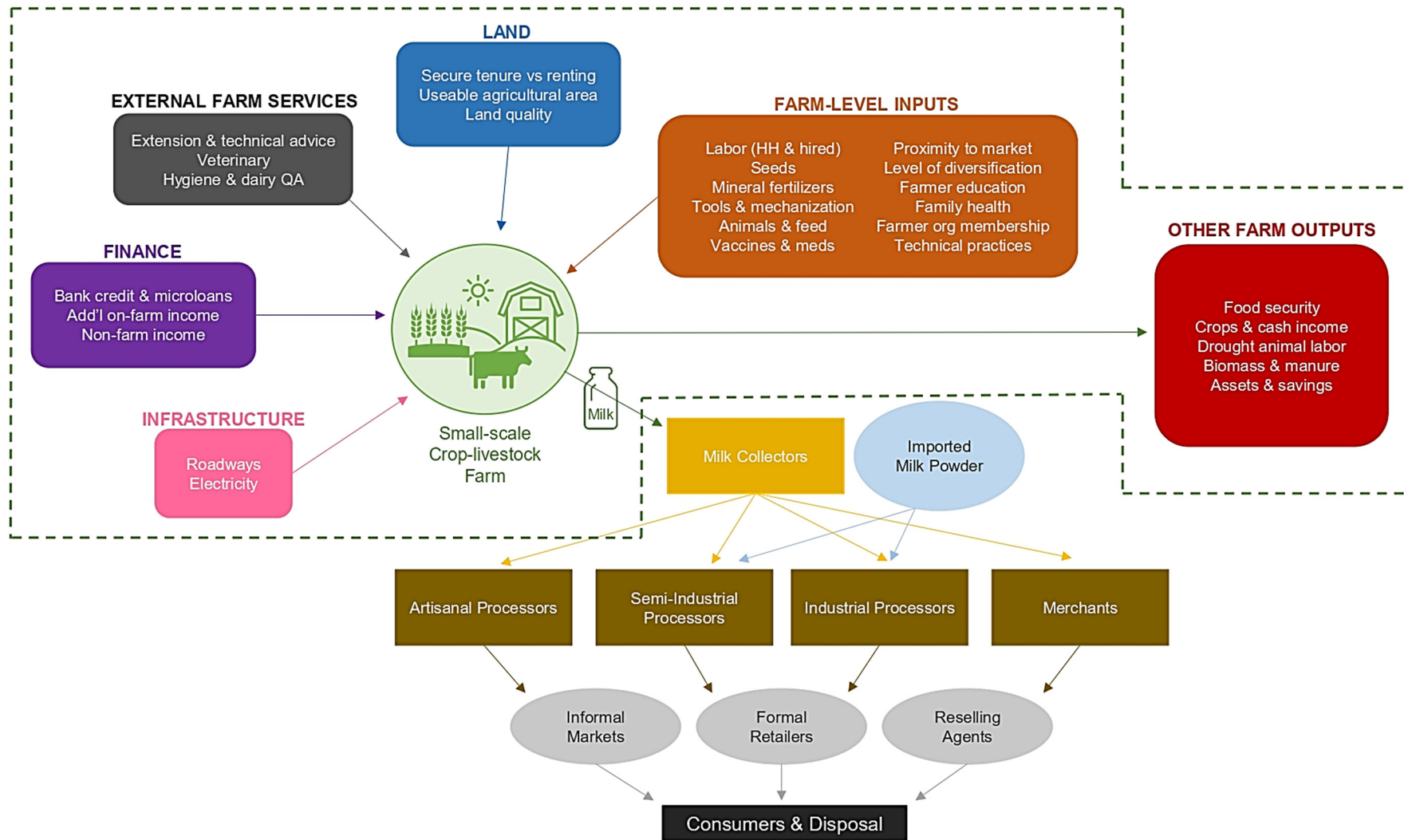


Figure S1. Diagram of typical small-scale crop-livestock milk production system (delineated by green dashed line) in Vakinankaratra, Madagascar.