

Table 1. The economics of crops in rainfed fields^a in Yilong County, Sichuan (in yuan).

	Cotton ^b	SP	Wheat	Maize	Vegetables ^c	Peanut ^d	Total
Total cost	96	89	212	146	44	9	596
Gross value	173	309	461	519	256	21	1,738
Cost per ha	3,354	900	3,397	1,556	421	92	1,758
Net value per ha	2,508	2,171	2,683	3,580	3,315	115	10,423

^a The land area of rainfed fields on average = .105 ha. per household (HH), or .021ha. per person.

^b The land area of cotton fields on average = .032 ha. per HH.

^c The estimation of the production of vegetables is not as accurate as for the other crops because vegetable production is, in general, not commercial-oriented; therefore, most of the figures were estimated by the farmers themselves.

^d Peanut is not an important crop and only five sampled households cultivated it .

Table 2. The economics of crops in irrigated fields^a in Yilong County, Sichuan (in yuan).

	Rice	Wheat	Rape seed	Water cost ^b	Total
Total cost	359	33	27	61	480
Gross value	1,587	93	76	865	1,657
Cost per ha	3,608	294	248	--	4,149
Net value per ha	10,417	456	388	--	10,641

^a The land area of irrigated fields on average = .12 ha. per HH, or .023ha. per person.

^b Most households have no direct access to water and need to pay to pump water into the fields.

Table 3. The various characteristics of the two pig-raising systems: traditional and mixed-feeding.

Type of household	Number (no.)			Final destination of pigs: for sale in market or consumed at home (per HH)				
	# HH	# Pigs/HH	# Months to finish	Weight/pig (kg)	Pig sales (yuan)	Eaten (yuan)	HH (%) Sold pigs	HH (%) Ate pigs
Traditional	17	3.1	12	95	847	1,661	59	94
Mixed-feed	10	4.8	10.6	88	2,040	716	100	70

Type of household	Feed Costs/pig (yuan)				Vegetable	Labour ^a Costs (yuan)	Shots and medicine use	
	Comm. Feed	SP	Maize	Bran			Costs (yuan)	HH use it (%)
Traditional	0	110	113	77	68	299	5	47
Mixed-feed	50	47	132	44	49	180	12	80

^a Labor cost = Y8/8 hours (day) x 2 hours x (# months x 30 days)

Table 4. The costs, gross value, net value, and profit ration of raising pigs based on two types of calculation: 1) all pork value calculated by market price, and 2) pork value calculated by market value when sold to the market plus consumption value when consumed at home (no labour cost included) (yuan).

Type of HH	All Pork Value based on Market Price				Various Pork Prices: Market & Consumption			
	Costs/ Pig	Pork value/ pig	Net value/ pig ^a	Profit ratio ^b	Costs/ pig	Pork value/ Pig	Net value/ Pig ^a	Profit ratio
Tradition	558	524	60	.32	558	833	369	.88
Mixed	440	481	125	.33	440	557	208	.5

^a Net value/pig = net pork value/pig + fertilizer value/pig (=Y8/month/pig)

^b To take into account the economics of time, profit ratio = net value/pig ÷ costs/pig ÷ (# of days/365 days).
The higher the profit ratio, the higher the profit.

Table 5. Average total and net income^a from each component of the farming and non-farming activities of each household (yuan).

	Farming Activities					Non-Farming Activities ^b		TOTAL
	Rainfed Field	Irrigated Field	Pig Raising	Seri- culture	Poultry & Fish ^b	Local Non-farm	Migration Labour	
Gross income	1,738	1,657	2,937	309				
Net income ^a	1,142	1,177	1,205	123	165	2,579	1,305	7,696
% of total net income	14.8	15.3	15.7	1.6	2.1	33.5	17	(1,539) ^c

^a Net income = gross income - material input costs. Family labour was not included as costs.

^b Poultry and fish are minor economic activities with insignificant costs. Costs of non-farming activities are not calculated.

^c Per capita net income = total net income/5 (average size of household).

Table 6. Household incomes organized by the level of local non-farming income (yuan).

Non-farm Income	% HH	Local Non- farm	Migration Labour	Rainfed Field	Irrigated Field	Pig Raising	Seri- culture	TOTAL ^a
>1,000	54	4,708	1,567	1,557	1,648	1,674	165	11,318 (A) ^b
1 - 1,000	38	319	1,420	731	994	738	38	4,240 (B)
0	18	0	744	498	633	466	4	2,346 (B)

^a Averages of total incomes of individual households belong to the same category.

^b P = .0007, the model is significant at $\alpha = .01$ level. At this level, A is significantly higher than B.

Table 7. Household incomes organized by the level of migration income (yuan).

Migration Income	% HH	Migration Labour	Rainfed Field	Irrigated Field	Pig Raising	Seri-culture	Local Non-farm	TOTAL
>1,000	32	3,689	1,048	1,319	937	82	1,195	8,270 (A) ^a
0 - 1,000	21	558	587	581	262	-16	50	2,022 (B)
0	47	0	1,387	1,492	1,732	159	4,705	9,475 (A)

^a P = .04, the model is significant at $\alpha = .05$ level. At this level, A is significantly higher than B.

Table 8. Profit ratios per pig of pig-raising under different treatments^a (all in yuan, except days and profit ratio).

Treat-ments ^b	Wt & Cost	Piglet cost	Protein Suppl	SP roots	Maize	Bran ^c	Lab-our ^d	Day	Total Costs	Total Value ^e	Profit Ratio
Modi-fied	kg yuan	65	5.87 40	274 54.8	35.8 61	58 34.8	75	133	330.6	392.5	.51
Tradi-tional	kg yuan	113	--	552 110	66 113	145	299	354	857.7	619	-.134
Mixed-feeding	kg yuan	103	50	232 47	77.5 132	93	180	318	620	566	-.065

^a Labour cost included, all based on market value, with no home-consumption value

^b Treatments: The pig trial conducted in Vietnam April - September 1997 compared Traditional and Mixed-feeding, assuming: 1) all pigs sold in the market and 2) 4 pigs per household.

^c Rice and/or wheat bran.

^d Labour cost = Y2/day/4 pigs = Y.5/pig, if raw sweet potato is fed (cooking time) and labour cost = Y1.67/4 pigs = Y.42/pig, if no sweet potato, assuming raising 4 pigs at a time.

^e Total value = market value + fertilizer value (=Y8/month/pig)

Table 9. The estimated feed and cost of the balanced feed produced by the Yilong County Livestock Station: four types of balanced feed for various sizes of pigs.

Pig wt.	Feed/day (kg)	Feed cost (Y/kg)	Cost/day (Yuan)	# of Days	Feed cost (Yuan)	Labour Cost (Yuan) ^a	Total Value ^b	Profit Ratio ^c
10-20	.2	2.56	.51	37.5	19.2			
20-30	.38	2.48	.93	22.5	20.9			
30-60	.75	2.04	1.53	37.5	57.4			
60-90	1.25	1.88	2.35	75	176.3			
Total	137.93			172.5	273.8	43	541	1.5

^a Labour cost = (Y8/8 hours * 1 hour (gather and cut vegetables and grass))/4 pigs * 172.5 days

^b Total net value = (90 kg * Y5.5/kg) + (Y8/month manure * (172.5 day/30day) month)

^c Profit ratio = (total net value - total cost)/total cost/(172.5/365)

Table 10. The estimated costs and sales of processing one ton of sweetpotato starch in Yilong.

		10% conversion rate ^a			13.1% conversion rate ^b		
Costs and Sales ^c		Quantity	Cost/ unit ^c (Y)	Total (yuan)	Quantity	Cost/ Unit ^c (Y)	Total (yuan)
Variable							
Cost							
	Fresh roots (ton)	1	200	200	1	200	200
Starch	Electricity (Kw)	.73	1	.73	11.77	1	11.77
process	Diesel (l)	1.71	1.9	3.25	--	--	--
	Water (m ³)	6.36	.3	1.91	5.32	.3	1.6
	Labour (man day)	5.13	8	41.04	.88	8	7.02
Fixed cost				18.6			
Total Costs				265.6	237.0		
Starch	Starch ^d (ton)	.1	2,900	290	.131	2,900	379.9
Sales	Wet residue (ton)	.77	20	15.4	.625	20	12.5
Total Sales				305.4	392.4		
Net Profit				39.8	155.5		

^a Based on Wheatley et al. (in press), small-scale processor in Santai County yielded 10% conversion rate.

^b Based on Wheatley et al. (in press), medium-scale processor in Santai yielded 13.1% conversion rate.

^c Amount of electricity, diesel, water, and labour necessary for processing one tons of sweetpotato based on Wheatley et al. (in press).

^d Fresh root, electricity, and labour costs are based on prices in Yilong; diesel and water, and wet residue uses prices from Santai.

Table 11. Costs, sales, and profits from sweetpotato noodle processing.

		10% conversion rate			13.1% conversion rate		
		Quantity	Unit Price (yuan)	Price (yuan)	Quantity	Unit Price (yuan)	Price (yuan)
Variable cost		Starch process		265.6			237
	Gelatine	.349 kg ⁻¹	2.8	.98	.608	2.8	1.7
	Electricity	29.94 Kwh	.029	8.68	52.10	.29	15.1
Sub-total	Labour	2.49 manday	30	74.7	4.34	30	130.2
				350.0	384		
Fixed cost		Land rental		1.7			2.9
Sub-total	Extruder			6.7			11.6
				8.4	14.5		
Total cost				358.4	398.5		
Sales	Noodle	166.32 kg	4.0	665.3	289.44 kg	4.0	1157.8
Net profit				306.9	759.3		

Table 12. The net profit from using one ton of sweetpotato for pig raising, starch or noodle processing, or home consumption/fresh market.

	Sweetpotato-pig (based on market value)			Starch processing		Noodle processing		Home
	Tradi- tional ^a	Calcu- labor ^b	Modi- fied ^c	Small (10%) ^d	Medium (13.1%) ^e	Small	Medium	Fresh Market ^f
Net Profit (yuan)								
Direct activity	109	-432	225.9	39.8	155.5	306.9	759.3	200
Secondary activity				67	54.6			
Total	109	-432	225.9	106.8	210.1	306.9	759.3	200

^a Traditional = (1,000 kg/552 kg per pig) * Y60 (net profit/pig) (see Table 4).

^b Labour calculated = (1,000 kg/552 kg per pig) * Y-238.7 (net profit/pig) (see Table 8).

^c Modified = (1,000 kg/274 kg per pig) * Y149.4 (net profit/pig) (see Table 8).

^d Small starch processing profit (see Table 10) + feeding processing residue to pigs
(.77 ton/3 ton per pig) * Y262 (net profit/pig) (adapted from CIAD 1995) = Y67

^e Medium-size starch processing profit (see Table 10) + feeding processing residue to pigs
(.625 ton/3) * Y262 = Y54.6

^f Fresh market = home consumption = 1,000 * Y.2/kg = Y200

Table 13. Potential income increase for farmer households engaged in various sweetpotato processing or modified pig-raising activities, compared with the current pig-raising income (in yuan).

	Current pig-raising	Modified pig-raising	Small-scale starch	Medium- scale starch	Small-scale noodle	Medium- scale noodle
1.5 ton SP value	192	338.9	160.2	315.2	460.4	1,139
Labour value		273	61.6	10.5	173.6	205.8
Total value	192	611.9	221.8	325.7	634	1,344.8
Increased value		420	30	134	442	1,153

Table 14. The contribution of value increased from alternative use of sweetpotato to the percent increase in household economy, on the basis of migration income level (%).

Migration income level	HH income (yuan)	% HH income from migration	Modified pig-raising	Small-scale Starch	Medium- scale starch	Small-scale noodle	Medium- scale noodle
>1,000	8,270	45	5.1	.4	1.6	5.3	13.9
0 - 1,000	2,022	28	20.8	1.5	6.6	21.9	57.0

0 9,475 0 4.4 .3 1.4 4.7 12.2