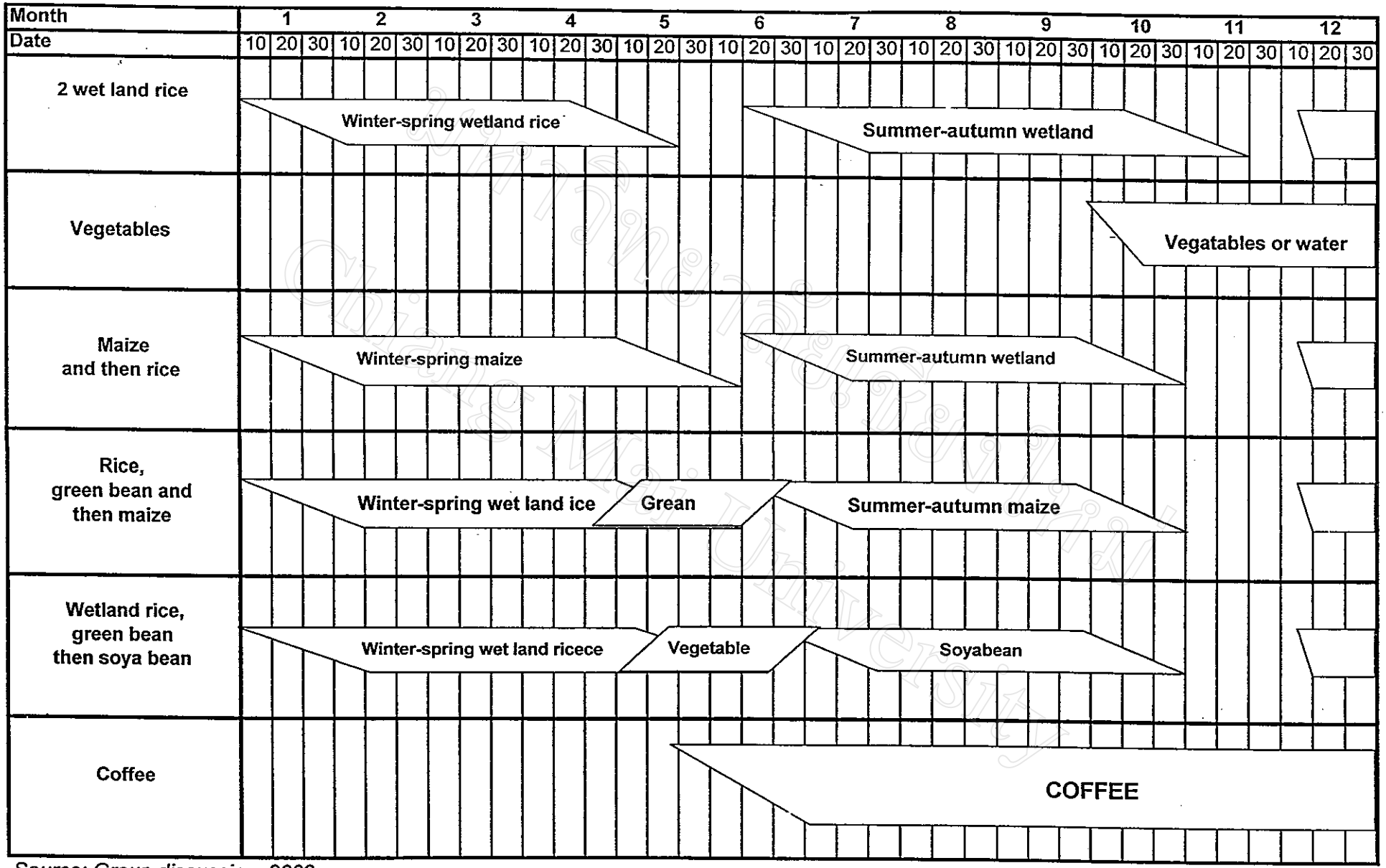
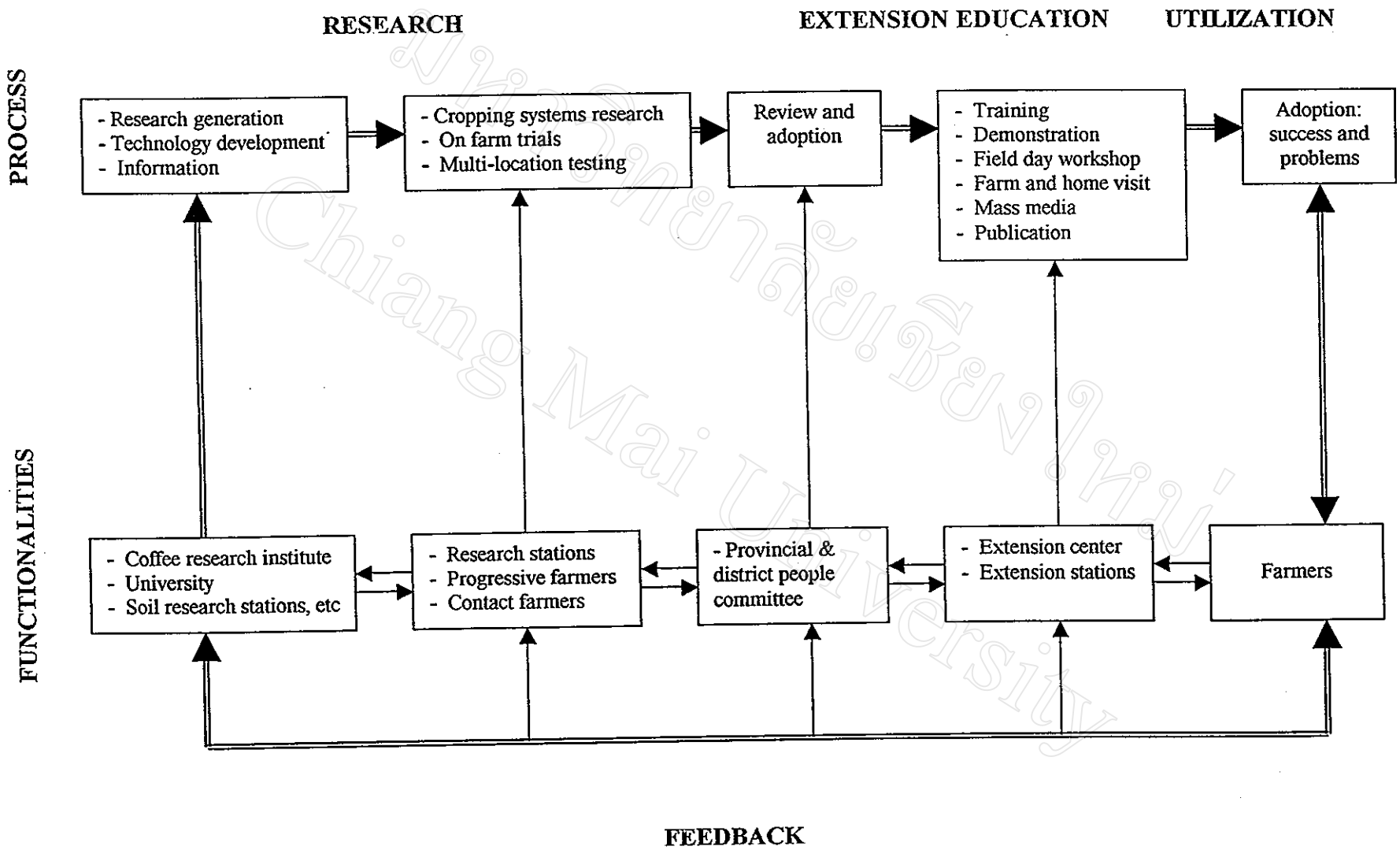
Appendix I. Cropping calender of Cu Sue commune



Source: Group discussion, 2002

Appendix II. Schematic model for research-extension linkage



Appendix III. Analytic Hierarchy Process (Example for one criteria - interactive)

Step 1. Pair-wise comparison matrix judgment

Interactive	Demon-stration	Class room	Farmer-led approach	Mass Media	T & V approach	Row Sum
Demonstration	1.00	3.00	0.50	4.00	1.00	1.21
Class room	0.33	1.00	0.25	1.25	0.50	0.47
Participatory	2.00	4.00	1.00	3.00	1.50	1.75
Mass media	0.25	0.80	0.33	1.00	0.25	0.38
T & V appr.	1.00	2.00	0.67	4.00	1.00	1.18
Column Total	4.58	10.80	2.75	13.25	4.25	5.00

Step 2. Normalize matrix = Cell/Column total

Interactive	Demonstration	Class room	Farmer-led	Mass Media	T & V approach
Demonstration	0.22	0.28	0.18	0.30	0.24
Class room	0.07	0.09	0.09	0.09	0.12
Farmer-led	0.44	0.37	0.36	0.23	0.35
Mass media	0.05	0.07	0.12	0.08	0.06
T & V appr.	0.22	0.19	0.24	0.30	0.24

Step 3. Weight = Comparison matrix X average row sum or priority vector

Interactive	Demon-stration	Class room	Farmer-led approach	Mass Media	T & V approach		Priority vector
Demonstration	1.00	3.00	0.50	4.00	1.00		0.243
Class room	0.25	1.00	0.75	0.25	0.25	X	0.094
Farmer-led	2.00	4.00	1.00	4.00	1.50		0.350
Mass media	0.25	0.80	0.33	1.00	0.25		0.077
T & V appr.	0.50	2.00	1.50	4.00	1.00		0.237

Interactive	Demon-stration	Class room	Farmer-led Approach	Mass Media	T & V approach	Row sum total
Demonstration	0.243	0.281	0.175	0.307	0.237	1.2427
Class room	0.061	0.094	0.262	0.019	0.059	0.4951
Farmer-led	0.486	0.374	0.350	0.307	0.355	1.8726
Mass media	0.061	0.075	0.117	0.077	0.059	0.3882
T & V appr.	0.121	0.187	0.525	0.307	0.237	1.3775

Step 4. Determining λmax by dividing all the elements of the weighted sum matrices or row sum total by their respectively priority vector (λmax = 5.326) called eigenvalue.

Step 5. Calculate consistency index, $CI = \frac{\lambda max - n}{n - 1} = 0.081$, sample size (n = 5)

Step 6. Calculating consistency ratio, CR = CI/RI = 0.073, RI = 1.12.

Appendix IV. t-Test on mean of inputs, farm performance indicators of two groups

Table 1 t-Test of two sample means of coffee yield, ton ha^{-1} $year^{-1}$

Statistics	Contact farmers	Non-contact farmers
Mean	3.3	2.8
Variance	0.11	0.02
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	6.41	
P(T<=t) one-tail	1.23	
t Critical one-tail	1.69	
P(T<=t) two-tail	2.47	
t Critical two-tail	2.03	

Table 2 t-Test of two sample means of nitrogen, kg ha^{-1} $year^{-1}$

Statistics	Contact farmers	Non-contact farmers
Mean	341.58	375.05
Variance	999.78	1,193.10
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	-4.87	
P(T<=t) one-tail	4.92	
t Critical one-tail	1.67	
P(T<=t) two-tail	9.84	
t Critical two-tail	2.00	

Table 3 t-Test of two sample means of phosphorous, kg ha^{-1} $year^{-1}$

Statistics	Contact farmers	Non-contact farmers
Mean	134.35	238.01
Variance	952.90	1,582.13
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	-14.87	
P(T<=t) one-tail	9.61	
t Critical one-tail	1.66	
P(T<=t) two-tail	1.92	
t Critical two-tail	1.99	

Table 4 t-Test of two sample means of potassium, kg ha^{-1} $year^{-1}$

Statistics	Contact farmers	Non-contact farmers
Mean	243.70	199.97
Variance	826.61	3310.12
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	5.64	
P(T<=t) one-tail	7.47	
t Critical one-tail	1.65	
P(T<=t) two-tail	1.49	
t Critical two-tail	1.98	

Table 5 t-Test of two samples on ratio of nitrogen and potassium

Statistics	Contact farmers	Non-contact farmers
Mean	1.41	1.92
Variance	0.02	0.45
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	-8.44	
P(T<=t) one-tail	3.22	
t Critical one-tail	1.65	
P(T<=t) two-tail	6.45	
t Critical two-tail	1.97	

Table 6 t-Test of two sample means of bio-fertilizer, US $ ha^{-1} $year^{-1}$

Statistics	Contact farmers	Non-contact farmers
Mean	46.32	27.88
Variance	644.80	680.39
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	3.50	
P(T<=t) one-tail	0.0	
t Critical one-tail	1.67	
P(T<=t) two-tail	0.00	
t Critical two-tail	2.00	

Table 7 t-Test of two sample means of manure, US $ ha^{-1} year^{-1}

Statistics	Contact farmers	Non-contact farmers
Mean	24.62	14.22
Variance	623.28	310.44
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	2.15	
P(T<=t) one-tail	0.01	
t Critical one-tail	1.68	
P(T<=t) two-tail	0.03	
t Critical two-tail	2.02	

Table 8 t-Test of two sample means of irrigation cost, US $, ha^{-1} year^{-1}

Statistics	Contact farmers	Non-contact farmers
Mean	205.98	228.75
Variance	142.97	400.89
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	-7.73	
P(T<=t) one-tail	9.03	
t Critical one-tail	3.18	
P(T<=t) two-tail	1.81	
t Critical two-tail	3.40	

Table 9 t-Test of two sample means of total chemical fertilizer, US $, ha^{-1} year^{-1}

Statistics	Contact farmers	Non-contact farmers
Mean	230.06	299.06
Variance	362.04	837.35
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	-6.01	
P(T<=t) one-tail	2.81	
t Critical one-tail	1.66	
P(T<=t) two-tail	5.61	
t Critical two-tail	1.99	

Table 10 t-Test of two sample means of pest control, US $, ha^{-1} year^{-1}

Statistics	Contact farmers	Non-contact farmers
Mean	18.66	33.92
Variance	16.04	26.88
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	-17.17	
P(T<=t) one-tail	5.97	
t Critical one-tail	1.66	
P(T<=t) two-tail	1.19	
t Critical two-tail	1.99	

Table 11 t-Test of two sample means of labor, US $, ha^{-1} year^{-1}

Statistics	Contact farmers	Non-contact farmers
Mean	436.50	357.82
Variance	889.00	742.84
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	13.08	
P(T<=t) one-tail	1.40	
t Critical one-tail	3.27	
P(T<=t) two-tail	2.81	
t Critical two-tail	3.50	

Table 12 t-Test of two sample means of intercropped products, US $, ha^{-1} year^{-1}

Statistics	Contact farmers	Non-contact farmers
Mean	211.10	111.67
Variance	9,076.899	1,0889.73
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	4.95	
P(T<=t) one-tail	3.77	
t Critical one-tail	3.24	
P(T<=t) two-tail	7.54	
t Critical two-tail	3.47	

Table 13 t-Test of two sample means of total variable cost, US $, ha^{-1} year^{-1}

Statistics	Contact farmers	Non-contact farmers
Mean	525.66	603.85
Variance	2142.66	1,661.93
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	-3.90	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.67	
P(T<=t) two-tail	0.00	
t Critical two-tail	2.01	

Table 14 t-Test of two sample means of total gross return, US $ ha^{-1} year^{-1}

Statistics	Contact farmers	Non-contact farmers
Mean	2,366.57	1,940.78
Variance	48,025.38	25,097.01
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	10.02	
P(T<=t) one-tail	8.90	
t Critical one-tail	1.68	
P(T<=t) two-tail	1.78	
t Critical two-tail	2.02	

Table 15 t-Test of two sample means of gross margin, US $ ha^{-1} year^{-1}

Statistics	Contact farmers	Non-contact farmers
Mean	1840.61	1336.24
Variance	50,775.94	26,289.90
Observations	31	99
Hypothesized Mean Difference	0	
t Stat	43.83	
P(T<=t) one-tail	4.60	
t Critical one-tail	1.69	
P(T<=t) two-tail	9.21	
t Critical two-tail	2.04	

Curriculum Vitae

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1991–1996 B.S. Agricultural Science
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2001–2003 M.S. Agriculture (Agricultural Systems)
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1996–1997 Technical staff for Department of Agriculture & Rural Development, DakLak province, Vietnam.

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