X. FARM PLAN MODELS

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The choice of inter/mixed crop primarily depends on its acceptability to the grower. A crop that is a staple food for the family would always get preference. Tapioca, in Kerala, is a typical example. A rational cropping pattern should include a few crops rather than a single inter crop over the entire holding. The crops may be selected in such a way that the cultivation expenses and labour employment are distributed evenly through out the year. Also the time of sowing/planting could be so adjusted that a satisfactory margin between receipts and expenditure shall be maintained, even during the fertiliser application period for coconut.

The total cost of establishing a coconut plantation upto the steady bearing stage (12 years) would be about Rs 30,000 excluding cost of land and interest on capital (Nair, 1976). Although the first harvest would become available in the seventh year, steady bearing would commence in the tenth to twelfth year. Under rainfed conditions, the mean yield of nuts per palm, per year is expected to be 60 nuts; while under irrigated condition, it would be over 100 nuts.

The cost of cultivation, net returns, labour requirement and crop production of some of the profitable intercrops in coconut garden are furnished in Table 31. A few farm plan models for one hectare holding of coconut are presented in Table 31A to E (Krishnaji et al., 1976). In developing the models the feasibility and economics including employment opportunities and the size of the holdings have been taken into account. Under rainfed conditions tuber crops, pineapple and banana are suggested. Where summer irrigation facilities exist mixed cropping with perennials like cacao, pineapple, and pepper can be adopted with advantage (Table 31B). A model for partially irrigated and partially rainfed farm is also given in Table 31C.

The tables were prepared based on the data collected for several years at CPCRI, from experimental plots of size ranging from 0.1 ha to 0.4 ha and hence should be valid for most purpose on small and marginal holdings. The projections, when made for larger holdings, should deviate only within reasonable limits, as the data collection was made on the experimental farm. In the case of holdings of 0.1 ha and less the input strategy can be adjusted to take advantage of the idle labour. The owners in this case, will be mostly agricultural labourers and as such may have quite a few partially employed and idle days which can be most profitably utilised on their farms. For such farms the stress should be on human energy and organic manures, with corresponding reduction in chemical energy and cash input. The cash input can thus be brought down considerably.

It is preferable to have a fairly large sized plot under model B where cacao is raised as a mixed crop. Rodent damage will be more severe when cacao is raised

Table 31. *Net returns per annum from one hectare of garden land under optimal conditions of spacing (for plantations above 20 years in age) Rs/ha*
(Krishnaji et al., 1976)

Intercrop	Cost of cultivation of intercrops and mixed crops	Value of intercrop output	Net returns		Additional employment		Additional output of intercrops (t)
			From intercrops or mixed crop	Total including coconuts	Man days	Woman days	
1. Elephant yam	3246	6425	3179	7246	123	8	12.85
2. Tapioca	2122	4204	2082	6149	93	12	10.51
3. Sweet potato	2055	3335	1280	5347	56	26	9.53
4. Ginger (Rio-de-Janeiro)	4730	14420	9690	13757	108	24	11.57
5. Turmeric (Armour)	4568	5162	594	4661	108	24	12.93
6. Chinese potato (Coleus)	2035	4800	2765	6832	92	23	6.00
7. Yam (*Dioscorea alata*)	2827	6360	3533	7600	64	12	12.72
8. Lesser Yam (*Dioscorea esculenta*)	2827	5400	2573	6640	64	12	9.00
9. Banana	7272	11000	3728	7795	170	—	20.00
(A) 50% of area for tapioca and the rest for other intercrops							
1. Elephant yam	2684	5314	2630	6697	108	10	
2. Sweet potato	2088	3770	1682	5719	74	19	
3. Yam	2474	5282	2808	6875	79	12	
4. Banana	4696	7602	2905	6972	132	6	
(B) Mixed cropping with pepper, cacao, and pineapple (Suitable for irrigated holdings larger than 0.40 ha)							
	3979	11800	7821	15661	142	21	
(C) Mixed cropping with pepper and pineapple only							
	3695	6400	2705	6772	189	20	
(D) 50% area under Model (B) and the rest under intercrops							
1. Tapioca	3051	8002	4951	10905	118	17	
2. Elephant yam	3613	9112	5499	11453	132	15	
3. Sweet potato	3017	7568	4551	10504	99	24	
4. Yam	3403	9080	5677	11631	103	17	
(E) 50% area under Model (C) and the rest under intercrops							
1. Tapioca	2908	5302	2394	6461	141	16	
2. Elephant yam	3470	6412	2942	7009	156	14	
3. Sweet potato	2875	4868	1993	6060	122	23	
4. Yam	3261	6380	3119	7186	127	16	

Table 32. *Monthly expenditure and returns per ha of gardenland in rupees (Nair, 1976)*

Crop/Crops	Particulars	January	February	March	April	May	June	July	August	September	October	November	December	Total
Coconut (Rainfed)	Cost of maintenance	50	50	70	40	440	30	30	345	750	450	95	50	2400
	Value of produce	420	600	702	840	672	546	516	474	420	366	348	396	6300
Coconut (Irri.)	Cost of maintenance	264	265	285	155	440	30	30	345	750	450	95	168	3268
	Value of produce	695	997	1142	1393	1159	898	855	789	723	614	568	667	10500
Coconut +Cacao	Cost of maintenance	295	805	315	593	918	70	50	895	614	470	850	325	6200
	Value of produce	1220	1800	2100	2660	3030	2320	1020	950	860	1240	2600	1900	21600
Multistoreyed Cropping	Cost of maintenance	315	895	375	673	1158	100	300	905	694	940	860	345	7520
	Value of produce	1620	2340	3130	4190	3680	2320	1020	950	860	1240	2600	2300	26250

in isolated small pockets and marketing opportunities are better for larger quantity of produce. Also under conditions prevailing in most parts of Kerala, irrigation is a must for cacao and it may not be economical to put up irrigation installations for small plots.

Ginger is the most remunerative inter crop as seen from Table 31. However, it is highly susceptible to the disease *soft rot* which can devastate the entire crop. The incidence is more when the crop is raised consecutively in the same area. Hence, ginger is not included in the farm plan models. Sweet potato can be followed by a pulse crop like horse gram, black gram, green gram or cowpea in years when the north-east monsoon rains are favourable; this possibility is not shown in the models.

Under rainfed conditions and good management coconut is expected to give a mean annual yield of 60 nuts/palm; while it would go up to 100 nuts/palm if irrigation is provided. The prices and costs prevailing in June 1976 was utilised for working out the returns and expenses. The net return per ha under multistoreyed cropping consisting of coconut, cacao, pepper, and pineapple is around Rs 15,600 per annum which is the highest. As the most remunerative intercrop under rainfed conditions ginger gives a combined net return of nearly Rs 13,700. Tubers and banana give net returns ranging between Rs 6000 and Rs 8,000/year (including that from coconut). Thus, one-hectare of coconut garden with adult bearing palms under intensive cropping programme, can sustain a medium sized family on average standards; while under high intensity cropping programme with irrigation facilities half hectare would be sufficient for the purpose.

The monthly break-up of expenditure and income from one-hectare coconut garden under different cropping patterns is given in Table 32 (Nair, 1976). When family labour is employed, there will be proportionate reduction in expenses. It may be noted that in August, September and October, the margin of net income is low or the expenses are more than receipts. This can be checked by suitably adjusting the time of sowing/planting of intercrops, so as to have the harvest of these crops during the above months and thus bridge the gap.

Rural credit

The annual outlay for good management of one hectare coconut garden of 175 adult bearing palms would be around Rs 2,233. The subsidiary crops would need another 2,055 to 7,272 rupees per year depending upon the crops grown. Therefore, the annual requirement of credit towards the inputs for intensive cropping programme ranges between Rs 5,500–9,500 per annum. Of this outlay, the investment on the intercrop alone becomes recoverable during the course of the year, as the response to inputs for coconut start accruing only from the third year. This would mean that the credit facilities, needed for the successful implementation of this intensive cropping programmes and realisation of enhanced agricultural production, should have two components, viz., short-term and medium-term loans. If irrigation system is to be developed, especially, when mixed or multistoreyed cropping is adoped, a third component namely long-term loan also may be required which may be around Rs 5,000/ha.

References

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