COMPARATIVE STUDIES ON THE CULTIVATION OF KOUNA AND PADDY PLANT: AN EMPERICAL INVESTIGATION ON COST OF CULTIVATION AND PRODUCTION

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Abstract:

Kouna is a local name used for making of mats and other artistic items and for medicinal herb. **Schoenoplectus Lacustries (Linn) Pala** is the Botanical name and **Cyperacia** is the family of the plant. Paddy is worldwide well-known plant and staple food in India. The primary purpose of the study is to examine and explain the difference of the cost of expenditure in cultivation and outcomes between kouna and paddy plant. For this purpose, qualitative and quantitative approach is applied. The present study is based on fully the primary sources of data to carry out with intensive fieldwork and interaction with peasants of the study area. A stratified random sampling was undertook 100 houses from four leading areas of Kouna and paddy plant growing villages in Thoubal districts of, Imphal west, Bishnupur and Imphal East,Manipur. Kouna is a sustainable plant, once planted it can be produces more than 30-35 years, if properly managed; requires less investment and labour besides less fertilizer. On the other hand, the longevity of paddy plant is one year and requires regular fertilizers, expensive labours and it is seasonal crop, Rabbi and kharif. Annual cost and outcome of kouna is more profitable than paddy plant.

Keywords: Eco-friendly, Less- expenditure, Conservation, Easy earning, Profitable

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Introduction:

The plant is stout perennial aquatic herb containing creeping rhizomes, erect leafless with numerous dark green, cylindrical, soft, spongy glabrous stem. The mature plants appear small flowers of white-yellowish enchanting colour and small triangular nut containing single. Resources development and environmental change are the burning issues concerned with the developing countries like India's rapid and sustainable development in the present scenario. Cultivation of kouna is not only promoting the economy of the area, but helps in conservation of wetlands too. Utilization of natural resources judiciously is a great importance to meet the requirement of sound economy. Agriculture is the vital sources of economy of Manipur, which provides about 70 per cent of the total working forces. The agriculture economy in the state is so important that the estimate of the state Net Domestic Product (NDP) fluctuate sharply from the year to year according to the success or failure of the crops. Owing to lack of irrigation facilities, the valuable and resourceful fields in the last 60 years of independence of our country, the state is still awaiting for economic development. Most of our agricultural lands have remains unused like wastelands for about six months.

The growth of agriculture in the state, particularly rice cultivation has been quite uneven and unsatisfactory for the reason that its production still depends on nature. No doubt, rice cultivation is the only attractive and basic agriculture of the state. Rice constitutes the most important component of food in Manipur and every year the state imports rice and other agricultural crops from other states.

Kouna is the indigenous plant and is sustainable, once planted it can be produced its products 30-35 years, if properly managed; requires less investment and labours besides uses less fertilizers. On the other hand, cultivation of paddy requires regular fertilizers, labours, expensive and it is seasonal in the state. Kouna can harvest thrice a year and production is satisfaction. Production of this ha^{-1} yr^{-1} in the same year of plantation is less and can earned Rs.1, 15,500 by selling fresh and Rs. 1, 78,500 by selling of dry. The annual turnovers of kouna plantation increased from the subsequent years of plantation and satisfactorily touch the mark of Rs.5, 11,500 by selling fresh and Rs. 7, 90,500 by selling of dry kouna bundles (Table No.1).

On the other hand, one hactre of paddy (2.471 acres) field regularly produces 90 mds. of paddy and annual turnover from single cropping comes 54,800 . If the paddy cultivation is applying double cropping, the production may be increased to about 180 mds.(7200 kg.) of paddy in a year. The detail comparative studies of cost of cultivation and return of kouna and paddy plantation are as shown in table 3.

Objectives

The main objectives of the present study are:

- To examine the cost investment and annual turnover in between the cultivation of kouna and paddy plant in the study area.
- To analyse the annual income and expenditure of kouna and paddy cultivation.

Database and methodology

The present study is purely based on primary data collected from personal investigation with the peasants who are practically involved both in kouna plantation as professional and in paddy cultivation for livelihood. The collected information has compiled and prepared the tables and charts. A sampling survey has taken from 100 cultivators out of which 50 are kouna and another 50 from paddy farmers.

Cost of cultivation and income of kouna:

The cost of cultivation of kouna and its income are much depends on the nature of plots. Natural marshy lands are less expenditure of digging and easy available of water whereas, cultural or new constructed plots are expensive. As already stated in the previous chapter, plots can be categorised as follows:-

i) Marshy lands (low-lying trenches, wetlands).

ii) Artificial plots (Prepared trenches).

Natural kouna plot

Artificial kouna plot.

The following table will show, in detail, the necessary costs are required in the same period for cultivating a hectare of land at Khangabok village and surrounding villages, where farmer is very familiar.

Price of Fresh and Dry Kouna

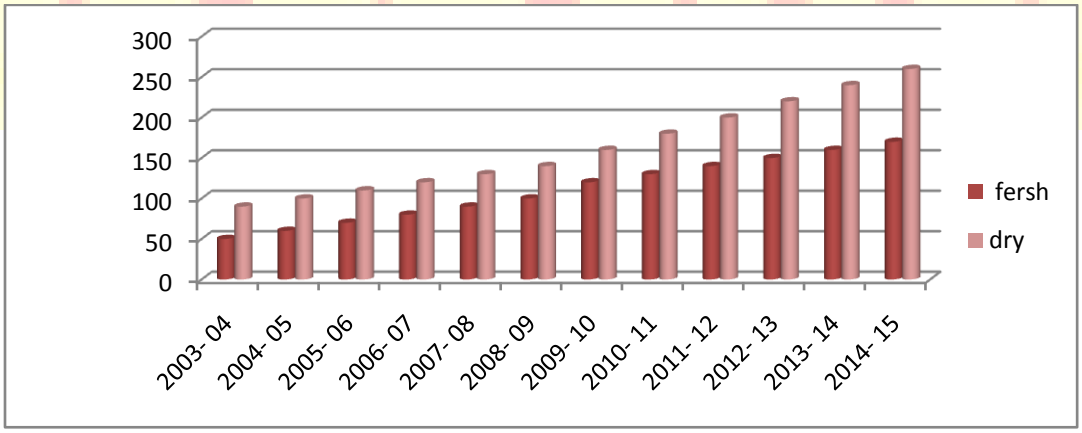


Fig-1

Findings

Manipur is economically very backward state, agriculture is the single largest source of livelihood of about 80 per cent of the population, and it is the mainstay of the state's economy. The valley has an average altitude of 872 meters above MSL and the climate is subtropical and warm in the summer season. This part is the "rice bowl" of the state. The state has distinct winter, warm humid and rainy seasons. The average rainfall is 1482 mm with heavy precipitation during the months of June, July and August. There is post and pre-monsoon shower during October and February. The state is very small but the agro-climatic conditions are different from one place to another because of the different elevations. No doubt, production of paddy in the state has been remained shortage for years and highly needed to improve the alternative arrangements to source of incomes to maintain the state's economy. In fact, the state remains under the category of "No industries District" by all India standards (1997). Manipur, since immemorial time, the traditional cottage industries and a few small-scale industries denote the industrial activity. Agricultural based industries are the major activity in Manipur and sources of state's income is primarily depends on it. Nevertheless, unfortunately the agriculture of the state is the gamble to climate. The basic issue is therefore to improve upon the economic position of the state. This can uplift by improving the production and productivity of primary sector based on agricultural raw materials; no large or medium size manufacturing has developed so far. Production of rice in the state was 3600 kg. per hectare in 2014- 2015 i.e., about 90 mds. of paddy (from single cropping) Rs. 54,800 as annual turnover, annual investment of Rs. 2,49,942 and Rs. -1,95,142 as annual profit. Altogether, the profit to turnover is -3.56%, return over investment is very high (-78.07%) and return over fixed capital coast is -16.15% (Table-3). The above stated amount will comes to Rs.1,09,600 as annual turnover, annual investment Rs. 3,10,494 and annual profit Rs. -2,61,334. Profit to turnover (-1.83%), return over (-64.70%) and return over fixed capital (-1.03%) respectively if double cropping system applied (Table-5).

Fig.2:
Sale of Fresh/Wet & Dry bundles of kouna and paddy with single crop in the first year of plantation

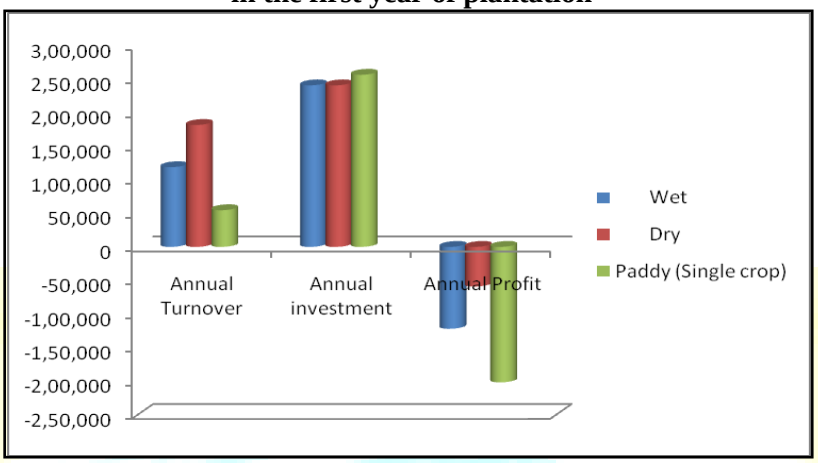
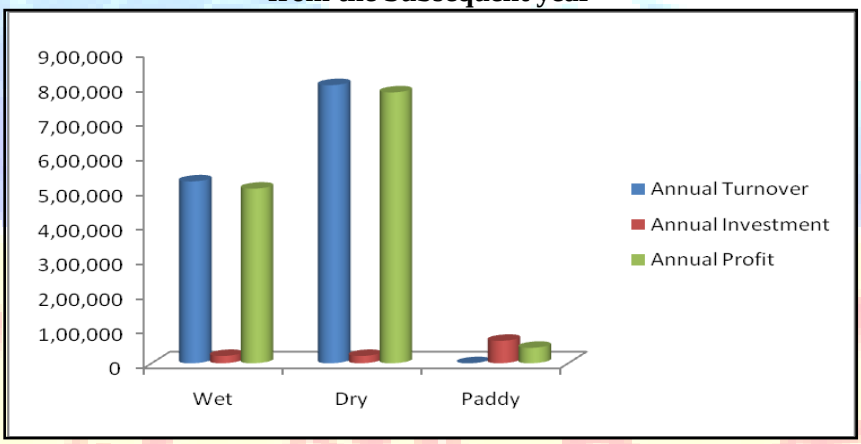


Fig.3
Sale of Fresh/wet & Dry bundles of kouna and paddy with double crops, from the Subsequent year



On the other hand, it can be emphasize that kouna is a natural gift and once planted; it can be produce more than three decades and can be harvest thrice a year. One hectare of kouna field can earned an annual profit from selling of fresh kouna is Rs.-1,34,879 and Rs. -71,879 from selling dry kouna in the first year of plantation. Annual profit of Rs. 2, 61,121 and 5, 40,121 can be easily earn from the subsequent years of plantation by selling of fresh and dry kouna bundles respectively.

The annual profits to turnover: The annual profits to turn over are Rs.-116.77%, and Rs.-40.26% (Sale of fresh and dry kouna in the first year of plantation);from the subsequent years of plantation Rs.51.05% and Rs.68.32% selling of fresh and dry (Table-1).

Annual return over investment: Return over investment in the first year of cultivation of kouna are Rs.51.05% (sale of fresh) and Rs. 68.32% (selling of dry kouna).Rs.-53.86% and Rs.-29.70 (sale of fresh and dry in the same year of plantation) (Table-I). The return over investment from the subsequent year is Rs. 104.2% and Rs. 215.72 respectively selling of wet and dry kouna.

Return on fixed capital for sale of wet and dry kouna: On the same year of plantation of kouna earn Rs.-9.55percentage and Rs.-5.09percentage sale of wet and dry respectively. The total annual returned in the first year of plantation comes around Rs. 18.49% and Rs. 38.25% from the subsequent years.

CONCLUSION

It is observed that the cultivation of kouna requires less expenditure, infrastructure of its variable items and highly profitable. Once planted, it can produce its products more than 30-35 years, if properly managed. It is eco-friendly, needs less infrastructures, inexpensive and flow resource. This water herb can harvest 3 times in a year and manufacturing works of its variable artistic items can be done whole the year. The different kinds of materials, infrastructure and other valuable decorative items that are made of kouna are comfortable, inexpensive, durability and fine to look at. Though agriculture is the prime occupation of the state, the products of rice cannot meet the requirement of the state due to uncertainty of its products. The cultivation of rice is high investment (Rs.2,49,942), low annual turnover(Rs.54,800) from single cropping and negative annual profit (Rs.-1,95,142) as compared to annual turnover of kouna (Rs.5,11,500),annual investment of Rs. 2,50,379 and very high Profit (Rs.2,61,121) for selling of fresh kouna sticks. Selling of Dry kouna bundles can easily earned annual turnover of Rs.7,90,500 and profit of Rs. 5,40,121 in a year without an compromise. About 80% of the state's total population is engaged in agriculture and allied activity.. The present form of land utilization for paddy cultivation at any purpose by the people of the state is in the category of 'unorganized' without any scientific manner and majority of the farmers in the state still did not get the opportunity of crop rotation for enhancing soil fertility as well as economic security due to lack of irrigation facilities. Therefore most of our fertile agricultural lands have remained unused like waste lands for about six months in a year, waiting for monsoon.

Cultivation of paddy in the state is so fluctuate that annual yield from all sources of agricultural products are depends on seasonal rainfall. Moreover, cultivation of paddy requires regular fertilizers, labours, expensive and seasonal in the state.

SUGGESTIONS:

It is interesting to note that kouna, no doubt, a fibre and water-loving plant was growing as well water herb in the *pant* areas. The products of kouna made items are also very limited and a few people knew its utilization. Today as the buyers are, well known and having had much experienced of its durability and comfortable in use, the products made-up of kouna artistic items are highly demands to the world markets.

To meet the need of such raw material to manufacturing of variable artistic items, kouna is required planted in order to increase the production. For income generation to the village workers, pisciculture in the same plot of kouna field can earn more income in the state where industrially and economically backward. Besides, paddy cultivation is the mainstays of the people, owning to lack of irrigation facilities, the vast fertile fields are remain dry for about six months to wait for the uncertain summer monsoon. Government should encouraging the people about the essence of polyculture of fish and kouna plantation will earned more income than cultivation of paddy in some specific areas.

At the same time, job opportunities to the rural educated and unemployed shall be generated income for their livelihood earning. The most interesting fact to be noted here is that the kouna made-up items are highly demands and profitable. Though the development of cottage and small-scale industries in the state has been primary objectives of the Government, yet its contribution to the state economy has not made any notable improvement. Moreover, most of the people in the villages are landless labours, marginal farmers and BPL families, so it will be quite helpful in providing opportunities to improve the income levels and expand self-employment of the weaker section. Consequently, this endeavour itself is innovative and may it is sure that they can earn money very easily round the year and raised the state and National income as there is no heavy and large scale industries in the state.

Referances

- Singh, N.P.,Singh, D.P. and Jamir, N.S. (1996): "Sustainable Agriculture Development Strategy for North -East hill Region of "India in Shukla, S.P. and Sharma, N. (Eds.), Pub. Mittal Publication, New Delhi, pp.346-51.
- Economic Survey Manipur, (2014-15): Directorate of Economics & Statistics, Government of Manipur p.71
- State Remote Sensing Centre, Imphal (1990): "Report on land-use Survey Project of Manipur, Directorate of Science, Technology and Environment, Govrenment of Manipur.
- Singh, N.P.,Singh, D.P. and Jamir, N.S. (1996): "Sustainable Agriculture Development Strategy for North -East hill Region of "India in Shukla, S.P. and Sharma, N. (Eds.), Pub.Mittal Publication, New Delhi, pp.346-51.

Table-1: Production and Cost of Kouna $Ha^{-1}yr^{-1}$

Year.	Production (in bundles)	Price per bundle.	
		Fresh (Rs.)	Dry (Rs.)
2003- 04	Average 700 in the same year of plantation. Average 3,100 from the subsequent years of P lantation.	50	90
2004- 05		60	100
2005- 06		70	110
2006- 07		80	120
2007- 08		90	130
2008- 09		100	140
2009- 10		120	160
2010- 11		130	180
2011- 12		140	200
2012- 13		150	220
2013- 14		160	240
2014- 15		170	260

Sources: Babu Mangang, National Awardee (Kouna) Crafts, 2004

Table-2: Production of paddy and price (As on 2014)

Year	Yield* (Kg/ha.)	Mds./ha (Calculated.	Local price ** (in Rs./Md)	Selling Price ** (In Rs).
2000-2001	2431.77	61	215	13,115
2001-2002	2382.11	60	215	12,900
2002-2003	2192.35	55	220	12,110
2003-2004	2415.51	60.4	230	13,892
2004-2005	2472.52	62	230	14,260
2005-2006	2322.09	58	270	15,660
2006-2007	2353.33	59	320	18,880
2007-2008	NA	80	420	33,600
2008-2009	NA	85	450	38,250
#2014-2015	3600.00	90	600	54,000

Sources: * Directorate of Economics & Statistics, Govt. of Manipur, 2007

** Findings from local mills.

Primary data reported by the local farmers.

Table -3:- Comparative Studies of Costs of Kouna and Paddy Crop Cultivation ha^{-1} ya^{-1}

(As on 2014)

Costs of Kouna Cultivation ha^{-1} ya^{-1}				Costs of Paddy Cultivation ha^{-1} ya^{-1}	
Sl. No	Items	Actual Costs (Rs)	Interest Rs. 16%p.a	Actual Costs (Rs)	Interest @ Rs. 16% p.a
I	**Fixed Capital Costs:**			12,00,000	1,92,000
	Costs of Land :	12,00,000	1,92,000		
	Digging of plot :	32,000	5,120		
	Costs of ploughing- 4 plough (criss-cross)@ Rs.2000/ plough :	2,000	320		

	Composed Cow dung-2 tones @Rs. 800/ load of tractor :	1,600	256		
	Labour charge for distributing composed Cow dung -3 man-day @ Rs. 200/labour.:	600	96		
	Costs of 46,000 Kouna sucker with Rhizomes @ Rs.1.50/plant. :	69,000	11,040		
	Transplantation charges of new plant @ Rs, 1.00/plant.:	46,000	7,360		
	Total (I)	Rs.13,51,200	Rs.2,16,192	Rs.12.00.000	Rs.1,92,000

Kouna plantation ha^{-1} ya^{-1}			Paddy Plantation ha^{-1} ya^{-1}	
Sl. No	Items	Actual costs (Rs)	Items	Interest @ Rs. 16% p.a
II	***Variable operation* Costs**		***Variable operational Cost***	
	a)Weed out-8 Workers @ Rs. 200/worker.	1,600	a) Pluoghing -3 plough (dry-cris-cross) & 2 plough (wet crass-cross) @ Rs. 2000 with puddle of harrowing. :	10,000
	b) Cutting (harvesting) of Kouna-30 man days @ Rs.200/worker for 3 times.:	18,000	b) Seed-2 mnds @ Rs.600/mnd.	1.200
	c) Pesticide & insecticides (very hard case).	-	c) Preparation of lands-6 man-day @Rs.200/labour.:	1,600
	d) Transportational Charge.	1,500	d) Abstraction of seeding plant-man-day @ Rs.200/labour. :	1,600
			e) Transplantation of Paddy Plant-40 women labour @ Rs.150/labour.:	6,000
			Costs of Fertilizers:	
			i) Urea-4 bags @Rs.470/bag :	1,880
			ii) Potash-1 bag @Rs.1330/bag:	1,330

			iii)DAP (Parash)-2 bags @Rs.1785/bag :	3,570
			iv)Labour-6 man-days @Rs.200/labour :	1,200
			v)Purchase of pesticides, weedicids, insecticides etc Reed -off weed-20 women labours @Rs.150/lab :	3,000
			Harvesting:	
			a)Reaping-40 man-day @Rs.200/labour :	8,000
			b) Treashing-40 man-day @Rs.250/labour and 20 women labours @Rs.200 :	14,000
			c) Transportation Charge :	1,500
	Total-II	21,500	Total-II	55,980

Sl. No	Items	Actual Costs (Rs)	Items	Interest @ Rs. 16% p.a
III	**Annual Investments:**		**Annual Investment(Single Cropping):-**	
	a)Annual Interest @Rs.16% p.a on fixed Capital	2,16,196	a)Annual Interest @Rs.16% P.a on fixed capital. :	1,92,000
	b)Variable Operational Costs	21,500	b)Variable Operational Costs :	55,980
	c)Annual interest on working capital @Rs.16% for Rs.21,500.	3,440	c)Annual Interest on working capital @Rs.16% for Rs.55,980:	8,956
	Total (a+b+c)	**Rs.2,41,132**	**Total (a+b+c)**	**2,56,936**
IV	**Annual Turnover:**		**Annual Turnover (Single cropping):**	
	First year of plantation			
	a)Sale of 700 fresh budles @Rs.170 bundle (Table- 1):	1,19,000	a)Sale of 90 mnds of Paddy (Table-2) :	54,000
	b)Sale 0f 700 dry bundles @Rs.260 bundles/Table.:	1,82,000	b)Sale of 800 straw bundles @Rs1/bundles.(Table-3/IV)	800
	Total	**3,01,000**		**54,800**
	From the subsequent years		a) Single cropping (Table-2) :	62,000
	a)Sale of 3,100 fresh bundles of Kouna (Table-1) @Rs.170/ bundle. :	5,27,000	b) Double Cropping (Table-2) :	1,24,400
	b) Sale of 3,100 dry bundles of Kouna (Table-1) @Rs.260/ bundle.	8,06,000		
	Total	**13,33,000**		**Rs. 1,86,000**

Kouna Cultivation ha^{-1} ya^{-1}				Paddy Cultivation ha^{-1} ya^{-1}		
V	**Summary:** (*First year of plantation*)	Sale of fresh (Rs)	Sale of dry (Rs)	**Summary (*Single Cropping*)**		Sale of paddy (Rs)
	a) Annual Turnover:	1,19,000	1,82,000	a)Annual Turnover	:	62,000
	b) Annual Investment:	2,41,132	2,41,132	b)Annual Investment	:	2,65,710
	c) Annual Profit(a-b):	-1,22,132	-59,132	c)Annual Profit (a-b)	:	- 1,94,936
	(*From the Subsequent* year)			***(From double cropping)***		
	a) Annual Turnover:	5,27,000	8,06,000	a)Annual Turnover	:	1,24,000
	b) Annual Investment:			b)Annual Investment	:	3,13,916
	c) Annual Profit:	2,85,868	5,64,868	c)Annual Profit	:	-1 ,88,916
VI	**Profit to turnover(%)** (*In the first year of plantation*)			**Profit to turnover(%)**		
	a)Sale of fresh : $\frac{At - Ai \times 100}{At}$		-12.63%	Single Cropping : $\frac{At - Ai \times 100}{At}$		-328.56%
	b)Sale of dry : $\frac{At - Ai \times 100}{At}$		-32.49%	Double Cropping: $\frac{At - Ai \times 100}{At}$		-152.35%
	(*From the Subsequent year*)					
	a)Sale of fresh : $\frac{At - Ai \times 100}{At}$		54..2%			
	b)Sale of dry : $\frac{At - Ai \times 100}{At}$		70.08%			
VII	**Return over Investment** *A* (*First year of plantation*)			**Return over Investment**		
	i)Sale of fresh: $\frac{At - Ai \times 100}{Ai}$		-50.64%	Single Cropping : $\frac{At - Ai \times 100}{Ai}$		-76.66%
	ii)Sale of dry: $\frac{At - Ai \times 100}{Ai}$		-24.52%	Double Cropping : $\frac{At - Ai \times 100}{Ai}$		-60.37%
	B (From the Subsequent years)					
	i)Sale of fresh: $\frac{At - Ai \times 100}{Ai}$		118.55%			
	ii)Sale of dry: $\frac{At - Ai \times 100}{Ai}$		234.25%			

VIII	**Return on fixed Capital (%)** A (First year of Plantation)		**Return on fixed Capital (%)**		
	i)Sale of fresh: $\frac{At - Ai \times 100}{C.P}$	-9.03%	Single Cropping : $\frac{At - Ai \times 100}{C.P}$		-16.97%
	ii)Sale of dry: $\frac{At - Ai \times 100}{C.P}$	-4.378%	Double Cropping: $\frac{At - Ai \times 100}{C.P}$		-15.74%
	B (From the Subsequent year				
	i)Sale of fresh :	21.15%			
	ii)Sale of dry :	41.80%			