Landmarks in Agriculture and Fertiliser in India

THE SUCCESS STORY OF A UTTARAKHAND FARMER

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Landmarks in agriculture and fertiliser are many. Some of them have made direct impact on agriculture and fertiliser use in the country, but a few could really sustain the impact on the farming community for a long. Many of the organizations are engaged in the welfare of the farming community. In this paper, an attempt has been made to highlight the spirit of farm management of a small farmer of Uttarakhand in spite of changed surroundings.

Many important and interesting events had taken place in the past which had greatly influenced the Indian agriculture in general and the soil fertility, fertiliser use research, education, extension and promotion in particular in the country. The informations in relation to the landmarks have been documented and are available in different publications (7,8,11). Some important landmarks have been mentioned in this paper for the ready reference of the readers. One of the most important landmarks that influenced the agricultural research, education and extension of the country to a great extent in 1960s has been positioned as the backdrop of a case study of a practising farmer who has been performing exceedingly well. For the convenience of presentation, land marks have been divided into two groups i.e. (i) events that happened before independence and (ii) events that happened after independence.

Landmarks that had taken place before independence have been mentioned in **Table 1**.

Agriculture research is as old as fertiliser industry in India. The first Agriculture Research Institute was established in old PUSA , Bihar in 1905 and the first fertiliser production unit was established in 1906 in Ranipet in Tamil Nadu **(Table 1)**. In the first 50 years of the last century, the fertiliser use was confined mainly to plantation crops in view of better crop response to fertilisers.

Table 1 - Some landmarks that took place before independence

Year	Landmarks	Remarks
1885	Long term fertiliser trials at Kanpur, Uttar Pradesh R B S College, Bichpuri, Agra, Uttar Pradesh	
1892	J W Leather became Imperial Chemist	
1905	Imperial Institute of Agricultural Research, PUSA Bihar	
1906	SSP unit Ranipet, Tamil Nadu	
1909	LTME, PUSA, Coimbatore etc	
1922	Rabindranath Tagore Experiment, Sriniketan, West Bengal	
1928	Royal Commission on Agriculture(RCA)	RCA recommended to establish Indian Council of Agricultural Research (ICAR)
1929	Imperial Council of Agricultural Research (ICAR)	
1933	Production of Ammonium Sulphate as by product of Steel Industry	
1941	Production of Ammonium Sulphate by using H_2SO_4	
1942	Grow More Food Campaign initiated	
1943	Soil map of India by Viswanath and Ukil All India Soil Survey Scheme launched	
1944	Central Fertiliser Pool initiated	
1947	A B Stewart submitted report on soil fertility investigation with reference to manuring to ICAR	

The tragic Bengal famine (1942-43) which took away the lives of millions forced the British Government to think seriously about the food security in the country. Grow More Food Campaign was launched. Central Rice Research Institute (CRRI) was established in Cuttack in Orissa in 1946. It may be mentioned that Rice Research Institute at Chinchura (West Bengal) and Rice Research Institute in Marutaru in Andhra Pradesh were already in existence. India became independent in 1947. In 1949, with the appointment of the Radhakrishnan University Education Commission, agricultural education through setting up of rural universities became a focal point.

Landmarks after Independence

For the convenience of presentation, the landmarks that took place after independence have been subdivided in stage I (1948-1967), stage II(1968-1990) and stage III (1991-2010). The first 20 years after independence were devoted to infrastructure development, creation of irrigation facilities, evaluation of soil fertility, production of fertilisers, improvement of crop varieties, and creation of facilities for research, education and extension though establishments of agricultural universities **(Table 2)**.

As rice was the staple food of the country,

the improvement in rice productivity was given due attention. Japanese method of rice cultivation was tested in the country. In some cases, the yield obtained was quite high, but the same was not sustained. Some NP varieties of wheat were developed at Indian Agricultural Research Institute, but these were not so input responsive.

"In 1954 an Indo-American team led by Dr K R Damle, arrived with the idea of establishing a Rural University on the land grant pattern of USA. As a consequence a contract between the Government of India, The Technical Cooperation Mission and some land grant universities of USA was signed to promote agricultural education in the country. The university of Tennessee, the Ohio State University, the Kansas State University, The University of Illiniois, The Pennsylvania State University and the University of Missouri were included in collaborative endeavourer. The task of assisting Uttar Pradesh in establishing an Agricultural University was assigned to the university of Illinois which signed a contract in 1959 to establish an agricultural University in UP. Dean, H. W. Hannah, of the Illinois prepared a blueprint for an Agricultural University to be set up at the Tarai State Farm in the district of Nainital. It is imperative to make mention here that in the initial stage, the University of Illinois also provided the services of its scientists and professors. Thus in 1960, the first agricultural university of India, UP Agricultural University , came into being, by an act of Legislation, UP Act XI-V of 1958. The University was dedicated to the nation by the first Prime Minister of India Pt Jawaharlal Nehru on 17 November, 1960. It was then renamed as Govind Ballabh Pant University of Agriculture and Technology in 1972 keeping in view the contribution of Pt G B Pant , the then the Chief Minister of UP.

The sound foundation of the University is rightly credited to the first Vice Chancellor, late Dr Kenneth Anthony Parker Stevenson (1/12/58 to 2/1/64) who kept people fruitfully engaged on the

Table 2 – Post Independence landmarks : Stage I (1948—1967)

Year	Landmarks
1948	Simple fertiliser trials (SFT) with N & P started in Bihar
1949	Dr S Radhakrishnan Commission on Education
1951	Sindri fertiliser factory set up by Fertiliser Corporation of India
	under - potash scheme, K trials on farmers fields started
1952	NP & NPK simple fertiliser trials in corn
1952	Simple fertiliser trials on Farmers Field and Model Agronomy Project started by ICAR
	Soil fertility and fertiliser use project with TMC assistance initiated
	National Extension Service started
1954	First Batch of 24 Soil Testing Laboratories set up
1955	The Fertiliser Association of India (FAI) was born
1956	Kisan Khad Scheme started for promotion of Calcium Ammonium Nitrate
	by European Industry
	Ist Soil test developed in India (N test by Subbiah and Asija)
1957	Ist All India Coordinated Crop Improvement Project on Maize
	FCO under Essential Commodoties Act came into existence
1958	Panchayati Raj System introduced
	CD blocks divided according to stage of development
1959	TV introduced
	Production of Urea, Ammonium Chloride, Ammonium Sulphate Nitrate started
	Extension education institute started
1960	Ist Agric university , U P Agriculture University at Pantnagar
	IADP programme initiated
1961	Ist maize hybrid released for cultivation, Production of CAN at Nangal started
	Japan Urea center started for urea promotion
	Centre for study of Nitrogen started by European N industry
1962	Production of ammonium phosphate started
1963	National Seeds Corporation set up
1964	First Krishi Vigyan Kendra was established in Pondichery
1965	Sivaraman Committee Report Submitted
	Production of Nitrophosphates at Trombay
	Reorganisation of ICAR and initiation of coordinated research projects
	HYV of rice introduced
	National Demonastration started with HYVs
	First generation TV service started on regular basis
	Village adoption programme started by Industry
1966	Fertiliser marketing liberalized as recommend by the Sivaraman Committee
	Rice variety IR8 released for general cultivation HYV programme started
	Farm and home unit started at radio stations
	Zn deficiency in rice reported by Prof Nene
1967	India bred HYVs of rice (Jaya, Padma) released

Table 3 – Post independence landmarks, Stage III (1968-1990)

1968	Wheat variety Kalyan Sona released
	Production of NPK complexes, TSP, Urea Ammonium Phosphate started.
	Farm service centres started by Industry (GSFC)
	A KVK started at R K Mission, Ranchi
1969	Coordinated research on soil test crop response correlation started
	Coordinated research on micronutrients started
	Central Soil Salinity Research Institute set up
	FAI started training of fertiliser personnel
	ANP promotion programme started
	First district-level soil fertility maps published by Ramamoorthy and Bajaj
	Production of phosphate rock started at Udaipur
	Fertiliser pilot schemes started in U.P. with United Kingdom assistance and in Maharashtra with Japanese assistance
1970	Agro service centres set up by agro industries
	Coordinated research on dryland agriculture started
	Coordinated research project on longterm fertiliser experiments started
	Area under HYVs crossed 10 million hectares
	Rice minikit programme started
	Fertiliser consumption crossed 2 million tonnes ($N+P_2O_5+K_2O$)

Continued.....

Table 3 – Post independence land marks, stage 11 (1968-1990) (Concluded)

1971	Development agencies for small and marginal farmers set up.
	Efficiency of neem cake in improving N-use : efficiency reported by Bains et.al.
	Green Revolution in India
1972	International Crops Research Institute for the Semi Arid Tropics (ICRISAT) set up near Hyderabad.
	Central scheme for development of pulses started.
1973	Global energy (oil) crisis.
	Block demonstration started in Karnataka by MCFL.
	Operational research projects (ORP) initiated by ICAR.
	Area under HYVs crossed 20 million ha.
1974	Fertiliser prices doubled in wake of global energy crisis
	Training and visit (T&V) system of extention introduced.
	Indo-German Fertiliser Educational Project launched.
	Establishment of farm science centres through KVKs by ICAR.
	Zinc sulphates, first micronutrient fertiliser brought into the Fertiliser (Control) Order.
	Command area development programme started
1975	Minimum support prices for crops introduced by government.
	Satellite Instructional Television (SITE) undertaken.
	Pilot project on rice and wheat initiated in Maharashtra.
1976	National Commission on Agriculture report submitted.
	Intensive fertiliser promotion campaign launched.
	FAO/UK/HFCL dryland farming educational programme started in MP
	Area under HYV crossed 30 million ha
1977	Marathe Committee Report on Fertiliser Pricing System submitted.
	Potash Research Institute of India established by IPL.
	Retention price formula for fertilisers introduced
	Fertiliser consumption crossed 3 million tonnes($N+P_2O_5+K_2O$).
1978	NCAER fertiliser demand survey showed that 45% farmers did not use fertiliser
	Multi agency system for handling imported fertilisers introduced.
	Oilseeds included in minimum support price programme.
	Fertiliser consumption crossed 4 million tonnes($N+P_2O_5+K_2O$).
	Number of fertiliser sale points exceeded.100,000
1979	Complex fertiliser also brought under retention price system,
	Production of supergranules (USG) for trial purposes started by IFFCO.
	Area under HYV_S crossed 40 million ha.
	Fertiliser consumption crossed 5 million tonnes($N+P_2O_5+K_2O$)
	ICAR, lab to land programme launched.
1980	New version of intensive fertiliser promotion campaign started.
	Urea ammonium nitrate solution produced for trail purpose by NFL.
	Block delivery scheme for fertilisers introduced.
1981	Indo British Fertiliser Education Project launched by HFC in 25 districts.
	Fertiliser consumption crossed 6 million tonnes($N+P_2O_5+K_2O$.)
1982	SSP brought under statutory price control.
	Indian Society of Soil Science hosted the 12th International Congress of Soil Science.
1983	Fertiliser consumption crossed 7 million tonnes ($N+P_2O_5+K_2O$)
1984	National agriculture input fortnights started.
	Special rice production programme started.
	Area under HYV_S crossed 50 million ha.
1985	Indo-EEC Fertiliser educational programme started in the northen-western and southern regions by FACT, NFL and RCF.
	National oilseed development project launched.
	Fertiliser consumption crossed 8 million tonnes ($N+P_2O_5+K_2O$)
1986	Technology mission on oilseeds set up.
	Polyphosphates produced for trial purpose at RCF.
	Lead Fertiliser suppliers(LFS) for districts and states identified.
1987	G.V.K Rao Committee Report on Fertiliser Consumer Prices submitted.
	Indian Institute of Soil Science established at Bhopal.
	FAO –Sulphur Net work Trail started
1988	Indo Canadian Agriculture Extension Project initiated by IPL in UP.
	National project on development of fertiliser use in rainfed low fertiliser consuming areas started.
1989	Potash and Phosphate Institute of Canada sets up an office in the country.
	Area under HYVs crossed 60 mha
1990	India crosses 11 million tonnes fertiliser nutrient consumption.
	Fortified fertiliser (Zincated urea, boronated SSP) and USG included in FCO

university farm, the labs, and the classrooms despite the fear of wild animals roaming the area. In the initial days, the university earned very good names. It attracted the student and staff from all over the country in addition to the foreign staff. In late 1960s, in a conference held in Delhi, the Dean of the University proudly declared " If any of our students fail to perform, we would withdraw his/her degree"

The university helped to establish more than 30 agricultural universities in the country. It played a key role in the development of the Green Revolution Techonogy in India. Khaira Disease (Zn deficiency disease) was discovered by Prof Nene **(Table 2)** of this university.

Rice production increased from 20.5 mt in 1950-51 to 43.2 mt in 1970-71 while wheat production increased from 6.4 mt to 23.8 mt during the same period. That means the wheat production increase was about 4 fold. This unprecedented increase in rice and wheat production is popularly known as Green Revolution **(Table 3)**. Sea change was seen in agriculture sector where fertiliser use has played a key role. Fertiliser consumption increased from 69.8 thousand tonnes in 1950-51 to 2.25mt in 1970-71.

The farmers of the nearby area of the university still remember the contribution made by the staff and students of the university in the transferring the technology to the their farms. Of late, however, the tempo of earlier days has become a history of the past. The university seems to have aged.

A SUCCESS STORY OF 70 YEARS OLD YOUNG FARMER

The 50 years old university looks very old while the farmers of the area ill afford to do so. The farmers whose main source of income is farming, have tried their best to improve their productivity and profitability. It is interesting to make a mention here that the farmer's yield is much higher than that of the state average

Table 4 – Post independence landmarks : Stage III (1991-2010)

1991	Dual Pricing. Decontrol of A/S, CAN and Ammonium Chloride.
1992	Joint (Parliamentary) Committee on Fertiliser Pricing. Decontrol of P&K fertilisers.
1993	Decanalisation of MOP.
1998	High Powered Fertilizer Pricing Policy Review Committee (HPC) (Hanumantha Rao Committee).
2001	Expert Committee on Reassessment. of Production Capacity. National Agriculture Policy Announced.
2003	Inclusion of Sulphur in FCO as plant Nutrient Establishment of Central Agricultural University. New Pricing Scheme for Urea units (NPS).
2005	Mahatma Gandhi National Rural Employment Guarantee Act. National Horticultural Mission.
2007	Rashtriya Krishi Vikas Yojana. National Food Security Mission. National Commission on Farmers.
2008	Subsidy on Sulphur in Complex fertiliser. Guidelines for production and use of Customized Fertilizers. Policy for encouraging production and availability for fortified and coated fertilisers.
2009	Revised policy for ad hoc concession for SSP. Certified Crop Advisor (India) by IRRI started.
2010	Nutrient based subsidy (NBS) on P& K fertilisers introduced w.e.f 1.4.2010 and for SSP w.e.f 1.5.2010 International Zinc Associations office in India Fertiliser consumption crossed 25 mt ($N+P_2O_5+K_2O$).

Table 5 – Crop productivity (t/ha) in long term fertiliser experiment at the university farm

Location	Crop	Treatment (100%NPK+FYM) Yield (t/ha)
Ludhiana		
	Maize	4.2
	Wheat	5.5
	Cowpea	5.2
Pantnagar		
	Rice	4.7
	Wheat	4.7
	Cowpea	1.0

Source : (10)

yield and also of the yield obtained by the university farm now **(Table 5)**.

State Yield

Uttarakhand the newly born state where the first agriculture university is now situated has little area under plain land. The major part of the state is hilly. And the hilly areas have serious problems of irrigation facilities, acidity, small and marginal farmers, marketing, availability of various inputs like good quality seeds, fertilisers, etc. That is why the crop productivity is low in the hilly tract of the state. On the other hand , the Tarai area of the state particularly the U S Nagar district is very productive. The input availability is not a problem in this district. Fertiliser consumption per ha is more than 350 kg. Crop productivity is also high. But the yield of the long term fertiliser trials located in the university is slightly better **(Table 5)**.

University Yield

Crop Productivty (t/ha) in long term fertiliser experiment in university farm is given in **Table 5**.

Farmer's Yield

The farmers of the U S Nagar are very innovative. A short account of such a small farmer having only 4 acres (16,000 sqm) find a place here. The name of the farmer is Shri Dharma Nand Nailwal. He belongs to village Chukati Devriah, PO Devriah, District U S Nagar, Uttarakhand. Shri Nailwal has three daughters and a son. All daughters are married and the son is in service. He is not English literate, but progresses profound knowledge and skill in agriculture. His day starts early. His farm land is about two km away from his residence. His morning walk cum regular field visits begin at about 8 AM. Regular field visit which is done religiously helps him to plan meticulously and perform the farm operation efficiently. At the age of 70, he is young at heart."One who works for salary only is a slave while one who loves to work is the Master" Shri Nailwal is the

master in real sense.

Master Nailwal has been practising various cropping systems, namely rice-wheat system, sugarcane system, mixed cropping of sugarcane and pea, mixed cropping of sugarcane and lahi, summer rice and animal husbandry system. In addition, he has some fruit crops (mango, guava, etc) which are used for domestic consumption. Master Nailwal is seen in his field **(Photographs)**.

Rice-Wheat

Rice-wheat cropping system occupies about 12.33 million hectare (mha) area in India of which about 10 mha lies in the Indo-Gangetic plains. Rice- wheat in Indo-Gangetic plains covers 75 % of the total rice and 63 % of the total wheat area of the country making it the most widely adopted and important cropping system of the region. Rice-wheat system has the great appetite for plant nutrients and has the yield potential of 8-12 t/ha/annum. This system has contributed to the lion's share of the Green Revolution in the country.

The rice and wheat yields that the farmer under reference obtained were 7.5 and 6.25 tonnes/ha respectively. These are very high compared to the national average yield and the Uttarakhand state yields. Organic manure was used in rice only. The fertiliser used in wheat was higher than that of rice. The net profit he obtained was higher in wheat (Rs 44813/ ha) than in rice (Rs.23828/ha). The total profit of rice–wheat amounts to be Rs 68641/ha **(Table 6)**. The cost benefit ratio is about 1.0 which is quite low. It may be mentioned here that the yield obtained by the farmer under discussion is much higher than the yield obtained by the farmers of western Uttar Pradesh (2).

Summer Rice

Master Nailwal has the experience of growing summer rice The yield he got was very high (12tonnes/ha). The manure and fertiliser use was high. Insect-pest infestation is relatively less. Price he obtained was higher. Therefore, net profit he got was also higher **(Table 7)**. The cost benefit ratio (2.49) was also more attractive Summer rice consumes higher amount of irrigation water. It is reported that 3000 to 5000 liters of water are needed to produce a kg of rice. Therefore, to reduce the water need of rice production, new rice culture technology called SRI may be adopted (5). It seems in Punjab summer rice cultivation has been banned. It may be banned in Uttarakhand also in years to come.

Table 6 – Economics of Rice and Wheat cultivation (Rs/ha)

Sl. No.	Particulars	Rice	Wheat	Remarks
1	Land preparation	12500.0	12500.0	
2	Seeds(50+125)	750.0	12500.0	
3	Manures	3000.0	nil	
4	Fertilisers	2297.0	3527.0	
5	Irrigation	7125.0	1710.0	
6	Plant protection	5000.0	375.0	
7	Weeding	3000.0	200.0	
8	Harvesting &Threshing	2500.0	2500.0	
9	Others			
10	Total cost	36172.0	23937.0	
11	Yield Tonnes/ha)	7.5	6.25	
12	Price(Rs/t)	8000.00	11000.0	
	Bhusa			
13	Income	60,000	68750.0	
14	Net profit	23828.0	44813.0	
15	System total			**68641.00**

Table 7 – Economics of sugarcane cultivation (Rs./ha)

Sl. No	Particulars	Planted	Ratoon	Remarks
1	Land preparation &planting	5000.0	nil	
2	Seeds	8505.0	nil	
3	Fertilisers	8739.0	796.0	
4	Manures	1800.0	nil	
5	Irrigation	6840.0	6840.0	
6	Plant protection	500.0	1500.0	
7	Weeding	2400.0	2400.0	
8	Tying	500.0	500.0	
9	Harvesting	750.0	6000.0	
10	Others			
11	Total cost	41034.0	18036.0	
12	Yield (T/acre)	45	40	
13	Price(Rs/t)	2400	2400	
14	Income (Rs/acre)	108000.0	96000.0	
15	Net profit (Rs/acre)	66966.0	77964.0	
16	Net Profit (Rs/ha)	167415.0	194910.0	
17	Total profit(Rs/ha)			**362325.0**

Cultivation of alternate crops/cropping systems therefore, need to be encouraged.

Sugarcane System

Sugarcane is also an important crop in this area. Sugarcane this year fetcheed very good price. The yield obtained was high (45t/acre-112.5t/ha). Money spent on manure and fertiliser use was higher (Rs10539/ha) in planted crop than the ratoon. Interestingly the net profit was higher in ratoon (Rs194910/ha) than planted crop (Rs167415/ha). The cost benefit ratio of the system was Rs.2.45 **(Table 8)**. This yield is comparable to the yield obtained by the prize winning farmers of the western Uttar Pradesh (4). This also indicates the fact that crop management is the key to high productivity.

Mixed Cropping Systems

Sugarcane + Pea

As sugarcane is relatively long duration crop, vegetable crop like pea can be conveniently grown in October planted sugarcane. Pea has a different kind of rooting system and being a legume, it is

capable of harvesting the legume effect. Therefore, its inclusion in the system, has an added advantage of improvement of soil fertility. It is appropriate to mention that it is economically more attractive than even the sugarcane cropping system **(Table 9)**. The total net profit generated was Rs 360665/ha wherein the contribution of pea was about 53 percent. After the emergence

Table 8 – Economics of a mixed crop of sugarcane (October planting) and pea (Rs/ha)

Sl. No	Particulars	Sugarcane	Pea	Remarks
1	Land preparation & planting	5000.0	nil	
2	Seed	8505.0	1200.0	
3	Fertilisers	8739.0		
4	Manures	1800.0		
5	Irrigation	6840.0	1000.0	
6	Plant protection	500.0	500.0	
7	Weeding	2400.0	1000.0	
8	Tying	500.0		
9	Harvesting	6750.0	3000.0	
10	Total cost	41034.0	6700.0	
11	Yield (t/ha)	45	12	
12	Price(Rs/t)	2400.0	7000.0	
13	Income (Rs/acre)	108000.0	84000.0	
14	Net profit(Rs/acre)	66966.0	77300.0	
15	Net profit (Rs/ha)	167415.0	193250.0	
16	Total net profit(Rs/ha)			360665.00

Table 9 – Economics of a mixed crop of sugarcane and lahi (Rs/ha)

Sl. No	Particulars	Sugarcane	Lahi	Remarks
1	Land preparation & planing	5000.0		
2	Seed	8505.0	60.0	
3	Fertilisers	8739.0		
4	Manures	1800.0		
5	Irrigation	6840.0	570.0	
6	Plant protection	500.0		
7	Weeding	2400.0		
8	Tying	500.0		
9	Harvesting	750.0	1000.0	
10	Total	41034.0	1630.0	
11	Yield(t/acre)	45	0.8	
12	Price (Rs/t)	2400.0	30000.0	
13	Income (Rs/acre)	108000.0	2400.0	
14	Net profit (Rs/acre)	66966.0	22370.0	
15	Net profit(Rs/ha)	167415.0	55925.0	
16	Total profit (Rs/ha)			223340.0

Table 10 – Economics of Summer rice cultivation (Rs/ha)

Sl. No	Particulars	Rice	Remarks
1	Land preparation & planting	12500.0	
2	Seed	750.0	
3	Fertilisers	3000.0	
4	Manures	3000.0	
5	Irrigation	7125.0	
6	Plant protection	1000.0	
7	Weeding	1000.0	
8	Harvesting& threshing combined	2550.0	
9	Total cost	30925.0	
10	Yield	12 t	
11	Price(Rs/t)	9000.0	
12	Income (Rs/ha)	108000.0	
13	Net profit (Rs/ha)	77,075.0	

Table 11 – Economics of animal husbandry (Rs/annum)

Sl. No	Particulars	Cows (3No)	Goats(4 No)	Remarks
1	Grains(2x3x9.4)	56.4		
2	Bhusa (10x3x2)	60.0		
3	Green (15x3x2)	90.0		
4	Mineral mixture	100.0		
5	Labour	200.0		
6	Total cost	506.0		
7	Yield (44liters/day)			
8	Price Rs 18/liters			
9	Income (Rs/day)	792.0		
10	Net profit (Rs/day)	286.0		
11	180x286	51570.0	43200.0	
12	179x34	6120.0		
13	3 calves	12000.0	19000.0	
14	Total	72690.0	62400.0	
15	Grand total			135090.0

of Uttarakhand a lot of industry has come up in the area . As a result, the demand for the vegetable has increased and price of vegetable is also quite high. Vegetable production has to be an integral part of the farming system(4)

Sugarcane +Lahi

Another important mixed crop of the area is sugarcane + lahi. Oilseed is very important crop in India because we are deficient in oilseeds production. The price of the crop is also very high. The net profit generated by the system is Rs.223340 wherein the contribution of lahi was about 25% **(Table 10)**. As the land availability for growing sole crop of oilseeds is a serious problem, this type of mixed crop with high value will go a long way in increasing oilseeds and the farm productivity.

Animal Husbandry System

Dairy

Animal husbandry has been always an integral part of agriculture. Cattle farming provides much needed milk and the valuable organic manure prepared from cattle dung and urine. Three cows generate a net profit of Rs 85721 per annum **(Table 11)**.

Goatary

Meat price is very high. Goat rearing is, therefore, becoming a very profitable venture. It also provides milk. Therefore, it is rightly called poor man's cow. Four goats generate a net profit of Rs.56960 which contributes about 40% of the total profit **(Table 11)**. The animal husbandry should form an integral part of the farming system (3).

Input Availability and Marketing Facility

All needed inputs like good quality seeds, fertilisers, irrigation facilities, plant protection materials are easily available at the affordable prices. Marketing of the produces is very easy. Produces like vegetable and others are sold at the farm itself. Cooperative societies are well developed . Government officials are also helpful.

CONCLUSION

Agriculture is very difficult and risky job. Though once upon a time our ancestors were farmers, but the farmers *(The Annadata)* are not properly honoured and cared. Therefore, the young generation not interested in farming.

Agricultural profession has no honour tag. It has very little demand in marriage market. Punjab and Haryana may be an exception. Majority of them feel proud to be farmers. This is a great quality. This is one of the main reasons of the agricultural progress in these states where governments are also pro-farmers.

Agriculture is now knowledge and skilled based Managerial skilled matters a lot. Master Nailwal loves farming from his core of heart . He is really a farmer. He hired needed labour who work under his direct supervision. When he has to be away far from his house, he normally does not hire any labour. It is seen that management is very crucial to get higher yield and profit. His total income from his small holding is quite high to run a comfortable and high quality life in nice and pollution free environment. India needs to have a large number of such farmers to maintain and sustain its food security. The example of Master Nailwal should act as a role model for the young practising farmers in the country.

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