MEDWIN PUBLISHERS
Committed to Create Value for Researchers

Journal of Ecology and Natural Resources
ISSN: 2578-4994

Traditional crops as source of Agri-Entrepreneurship in Chakrata block of Dehradun District (Uttarakhand)

Chauhan PS[1]* and Negi VS[2]

[1]Department of Botany, VSKC Govt. PG College, India

[2]Department of Commerce, VSKC Govt. PG College, India

Corresponding author: Chauhan PS, Department of Botany, VSKC Govt. PG College, Dakpathar, Dehradun, Uttarakhand, India, E-mail: drpschauhan17@gmail.com

Research article

Volume 7 Issue 3

Received Date: August 15, 2023

Published Date: August 30, 2023

DOI: 10.23880/jenr-16000344

Abstract

Traditional crops are being cultivated since ancient times in the hilly areas of Uttarakhand state. After the green revolution in India, the rate of crop production has increased but the farming system of traditional crops were reduced. Due to the use of more chemicals fertilizers in modern crops, on the one hand, the fertility of the soil has decreased, on the other hand, due to the consumption of these products; various types of diseases have arisen in the human body. Keeping in view the above problems, now again the people are promoting traditional crops and it is getting positive results too. From nutritional point of view traditional crops and pure organic products are proving to be a boon in human life. Ten families from 10 villages of Chakrata block, district Dehradun were selected for present investigation to find out per year productivity rate and income of local people. The outline of the present work was prepared on questionnaire basis. Study showed that the income of each family is getting higher as compared to those in government jobs. It was also observed that women are becoming self-reliant by earning from traditional crops and it is necessary to cultivate such type of crops for entrepreneurship.

Keywords: Traditional Crops; Productivity; Entrepreneurship; Income; Self-reliant

Introduction

Due to non-irrigation of agricultural land in hilly areas of Uttarakhand, crop production is low in most of the areas. Because of which it has a bad effect on the livelihood and people used to migrate from hilly areas for employment. But due to the use of modern technology of agricultural, now people are adopting farming system and earn money. Crop production system need to be modified to decrease the impact of crop production on the environment and for sustaining heightened levels of food production [1]. All living beings require energy and we get energy from various foods. For its supply, man has been dependent on plants since time immemorial. Keeping in view the high production and quality, man is using modern agricultural techniques. As a result of which man is producing desired crops. Agriculture is a key activity of human being since it provides basic needs such as food, clothing and shelter. It has been demonstrated that every 1% increase in agricultural yield translates into a 0.6–1.2% decrease in the numbers of absolute poor households in the world [2]. In an agricultural sense, soil is simply the medium in which most of our food is grown, as well as the food we provide for livestock. The sustainable intensification of agriculture through technologies that rely on substantial investment in inputs has been seriously hampered by poorly developed input and output markets [3]. Reliable forecasts at higher spatial resolution help explain yield variability at coarser levels and also provide information to adapt agricultural policies to more specific areas [4]. The main objective of this study is to find out the actual production of

various crops and the income received from them in the hilly areas of Uttarakhand state. So that new techniques can be developed for more production of crops and stop migration.

Material and Methods

Ten villages i.e. Fanaar, Chousal, Bastil, Booth, Atal, Anu, Mundhol, Raddu, Raigi and Bagi and ten families from each village were selected for present investigation. Each village was visited in different seasons regarding per year crop production and income received from them. The centre of the survey was made at the Department of Botany and Commerce, Veer Shaheed Keshari Chand Government Post Graduate College, Dakpathar, Dehradun. A special team of experienced workers was formed for the survey, which was regulated and controlled by experts appointed at the centre. A questionnaire was made to get concrete information, under which about 35 questions were asked. The main questions like local name of the crop, sowing and harvesting time, total production and income from each crops etc. were asked. The survey team was visited during harvesting time of crops. Each selected family was provided with a questionnaire and asked to submit it within 20 days. After collecting questionnaire from selected villages, all data tabulated and analysed statistically. Different crops seeds were also collected as samples during survey for further investigation. This investigation ran for almost a year.

Results and Discussion

The production rate of crops and the income received from them have been shown in Table-1. In places where the temperature was low, more production of apple, peas, walnuts and kidney beans was recorded, while in places with low temperature, the production of crops like tomato, capsicum, cabbage and peas etc. was recorded. On the basis of average production rate per 10 families, maximum 25 quintals of apple production was recorded in Fannar, Booth and Anu villages. In all the surveyed villages, the production of apple and peas was recorded higher than other crops. In the villages where tomato is cultivated, the production rate was recorded almost the same. The production rate of walnut was low in all villages in comparison to other crops.

Similarity was observed in the production rate of crops in most of the villages. But inequality was noticed in the income received from them. The main reason for this is that the rates of crops were fixed according to the villagers. The highest production rate of tomato was recorded in Anu village at 25 quintals, while the income from tomatoes also showed variation in others villages. On an average, Fannar, Booth and Anu villages received maximum Rs. 2.5 lacks rupees from apple crop, while the villagers of Mundaul and Raddu villages have received the lowest amount of Rs 2.0 thousand rupees from walnut crop. The average production rate per 10 families from various crops and the average income received from production are shown in Fig. 1 in all the surveyed villages. If we look at the total average production rate of different crops per 10 families of each village and the income received from crops, the highest average production of 59.7 quintals was recorded in Raddu village. While the highest average income was recorded in Fannar village at Rs.3.59 lacks. The production rate and income of crops were recorded almost same in Fannar, Chausal and Bastil villages. Compared to other villages, the lowest production of 16.5 quintals and income of Rs 2.6 (lack) was recorded in Anu village. Various types of crops are mainly produced commercially in Chakrata block block. The crops which are grown prominently are shown in Table- 2. Altogether 21 cash crops belong to 12 families are produced in different villages of the region. Apple and Rajma dal of this region are very famous all over the country. The cultivators here are earning very good profits in every season from different crops. Soil plays a significant role to provide nutrients and promote more production of various crops. Peoples are using organic farming system in hills to maintained mineral contents. While nitrogen fertilizer can increase corn yield and soil organic carbon levels, over-fertilization adds more nitrogen to the soil than can be broken down via natural biogeochemical processing [5]. Therefore, maintaining sustainable yields will require proper management of soil organic matter reserves. Organic matter is directly linked to soil moisture and so the similarity in trends between these two variables is not unexpected [6]. Low production of crops is serious issue in hills due to the disturbance of geochemical cycle. It is observed that sometimes it does not rain on time. Therefore, sometimes cultivated crops totally damaged and low production rate obtained. As a consequence, less of the crop produce is directly used for human consumption and more cereal-based products are needed for feeding the growing animal industry [7]. Due to more fertile soil in most places, an increase in the production rate of crops was recorded, while the place where the quality of the soil was low, there was a decrease in the production rate. Stork and Eggleton [8], Blanchart [9] has also observed that analyzing physical and chemical soil characteristics is one way of understanding soil health; however macro invertebrates and nematodes are also excellent indicators of soil quality and plant productivity. These crop landraces have developed mostly in environments with low nutrient availability and represent a potential source of a genetic variation for breeding to varieties adapted to poor soil nutrient status [10]. People in hilly areas use pure organic farming but production depends on rain. Schipanski [11] suggested that when struggling with rising functioning costs and fluctuating prices in the face of large-scale conventional agriculture, farmers are often forced or choose to forgo sustainable options and make decisions based on short-term

profitability. Stress the importance of developing general principles, like best farming practices, saving land and a zero carbon balance, in developing guidelines for certifying biodiversity-friendly agricultural practices [12]. Farmers have to make hard decisions, balancing economic realities with sustainability and definite short-term gains with possible long-term losses. Crops, with their own resource demands impacted by weather and management, find the soil in one condition, and leave it in another condition for the next crop [13]. It has been suggested that nitrate levels are susceptible to climatic variation. Specifically, they tend to be higher under drought conditions and lower under conditions of high rainfall [14].

S.N.	Village	Crops	Av. Production (Qutl.) (1 Q.=100 Kg)	Av. Income (Rupees)
1	Fanaar	Apple	25± 1.65	2.50±.068
		Walnut	0.7±.05	0.04±.002
		Pea	15 ±.98	0.70±.021
		Rajama	10.5±.65	0.35±.010
2	Chousal	Apple	24 ±1.42	2.20±.061
		Walnut	0.6±.04	0.03±.001
		Pea	10.5±.65	0.07±.002
		Rajama	7.5 ±.43	0.08±.005
3	Bastil	Apple	23±1.11	2.10±.034
		Walnut	0.5±.03	0.02±.001
		Pea	10±.63	0.04±.002
		Rajama	10±.63	0.04±.002
4	Booth	Apple	25 ±1.65	2.50±.068
		Walnut	0.7±.05	0.02±.001
		Pea	15 ±.98	0.06±.002
		Rajama	7±.40	0.07±.004
5	Ataal	Tomato	20± 1.21	0.30±.010
		Cauliflower	15 ±.98	0.03±.002
		Pea	15.5±.99	0.70±.004
		Capsicum	12.5±.82	0.40±.002
6	Anu	Tomato	25±1.65	2.50±.068
		Capsicum	5±.12	0.03±.002
		Pea	15±.98	0.04±.003
		Rajama	5±.12	0.05±.01
7	Mundhol	Apple	18 ±.99	1.50±.08
		Walnut	0.4±.001	0.02±.01
		Pea	10±.63	0.30±.023
		Rajama	4.5±.10	0.04±.01

8	Radu	Apple	15±.98	1.50±.01
		Walnut	0.7±.05	0.02±.01
		Pea	15 ±.98	0.05±.01
		Rajama	15±.98	0.05±.01
		Urd	4±.10	0.04±.01
		Tomato	40±2.63	0.03±.01
9	Raigi	Apple	15 ±.98	1.30±.02
		Tomato	20±1.21	0.02±.01
		Pea	6±.13	0.03±.01
		Rajma	15±.98	0.04±.02
		Urd	15±.98	0.04±.02
10	Bagi	Apple	13±1.00	1.30±.031
		Tomato	15± .98	0.10±.004
		Pea	16±.99	0.03±.02
		Rajma	14±.97	0.04±.003
		Urd	15±.98	0.05±.004

Table 1: Per year av. production and av. income generated / 10 families from different villages.
± SE of means
Figure 1: Total av. production and total av. income generated / year from different crops / 10 families.

S.N.	Crops (Scientific Name)	Family	English name	Local Name	Sowing month	Harvesting month
1	*Amaranthus caudatus (L.)*	Amaranthaceae	Choulai	Choulai, Marshu	May-June	October
2	*Brassica oleracea (L.)*	Bracicaceae	Cauliflower	Gobhi	September-October	December
3	*Capsicum annuum (L.)*	Solanaceae	Capcicum	Mirch	June- July	October
4	*Capsicum frutecense (L.)*	Solanaceae	Capsicum	Shimla mirch	February-March	June
5	*Eleusine coracana (Gatn.)*	Poaceae	Mandwa	Kodu	May-June	October
6	*Glycine max (L.) Merr.*	Fabaceae	Soyabean	Soyabean bhatt	June- July	October
7	*Juglans regia (L.)*	Juglandaceae	Wallnut	Akhrot	July	September
8	*Macrotyloma uniflorum (L.) Verdc*	Fabaceae	Kulthi	Gahat	June-July	October
9	*Malus domestica (Borkh)*	Rosaceae	Apple	Seb	February	July
10	*Oryza sativa*	Poaceae	Rice	Chawal	June	October
11	*Phaseolus coccineus (L.)*	Fabaceae	Beans	Bean	June	October
12	*Phaseolus vulgaris (L.)*	Fabaceae	Rajma	Chemmi	June	October
13	*Pisum sativum (L.)*	Fabaceae	Pea	Mattur	July	December
14	*Prunus armeniaca (L.)*	Rosaceae	Khubani	Khumani	July	June
15	*Prunus domestica (L.)*	Rosaceae	Plum	Pulam	July	June
16	*Prunus persica (L.)*	Rosaceae	Peach	Aadu	July	June

17	*Pyrus communis (L.)*	Rosacea	Pear	Naspati	February	August
18	*Solanum lycopersicum (L.)*	Solanaceae	Tomato	Tamatur	March	July
19	*Solanum tuberosum (L.)*	Solanaceae	Potato	Aalu	April	July
20	*Triticum aestivum*	Poaceae	Wheat	Gehun	October	May
21	*Vigna mungo (L.)*	Fabaceae	Urd	Urd	July	October

Table 2: Major crops cultivated in Chakrata block.

Conclusion

There are no means of irrigation in the hilly areas of Uttarakhand state. The farming system here is based on rain; even then the local people work hard on agriculture and earn good income throughout the year. Bhabar area of Chakrata block of Dehradun district is an example in itself where local people are earning good profits from different crops throughout the year. The local people of Bhabar region are becoming self-dependent along with promoting agriculture by producing different types of cash crops. This area is also a source of inspiration for people migrating from Uttarakhand. Apples, walnuts, Pea, kidney beans etc. of this region are famous in different regions of the country. The main feature of this area is that the people here live in joint family. Due to which there is no shortage of human resources. In the absence of modern agricultural machinery, the production of crops is being adversely affected. It is necessary that the government should encourage the farmers here and provide agricultural machinery at cheap rates, so that the economy of the farmers here can be strengthened.

References

1. Roberts DP, Mattoo AK (2018) Sustainable agriculture-enhancing environmental benefits, food nutritional quality and building crop reliance to abiotic and abiotic stresses. Agriculture 8(1): 3390-3397.
2. Thirtle C, Irz X, Lin L, Mckenzie- Hill V, Wiggins S (2001) Relationship between changes in agricultural productivity and the incidence of poverty in developing countries. In: DFID Report No. 7946.
3. Dorward A, Kydd J, Poulton C, Smallholder (1998) Cash Crop Production under Market Liberalisation: A New Institutional Economics Perspective CAB International, Wallingford.
4. Garcia-Leon D, Lopez-Lozano R, Toreti A, Zampieri M (2020) Local-scale cereal yield forecasting in Italy: Lessons from different statistical models and spatial aggregations. Agronomy 10(6): 809-815.
5. Kim S, Dale BE (2008) Effects of nitrogen fertilizer application on greenhouse gas emissions and economics of corn production. Environmental Science & Technology 42(16): 6028-6033.
6. Hudson BD (1994) Soil Organic-Matter and Available Water Capacity. Journal of Soil and Water Conservation 49(2): 189-194.
7. Tong C, Hall CAS, Wang H (2003) Land use changes rice, wheat and maize production in China. Agriculture Ecosystems and Environment 95(3): 523-536.
8. Stork NE, Eggleton P (1992) Invertebrates as determinants and indicators of soil quality. American Journal of Alternative Agriculture 7(1): 38-47.
9. Blanchart E, Villenave C, Viallatoux A, Barthès B, Girardin C, et al. (2006) Long-term effect of a legume cover crop (*Mucuna pruriens* var. utilis) on the communities of soil macrofauna and nematofauna, under maize cultivation, in southern Benin. European Journal of Soil Biology 42(1): 136-144.
10. Newton AC, Akar T, Baresel JP, Bebeli PJ, Bettencourt E, et al. (2010) Cereal landraces for sustainable agriculture. A review. Agron Sustain Dev 30: 237-269.
11. Schipanski ME, Barbercheck M, Douglas MR, Finney DM, Haider K, et al. (2014) A framework for evaluating ecosystem services provided by cover crops in agro-ecosystems. Agricultural Systems 125: 12-22.
12. Groom MJ, Gray EM, Townsend PA (2008) Bio-fuels and bio-diversity: Principles for creating better policies for bio-fuel production. Conservation Biology 22(3): 602-609.
13. McCown RL, Hammer GL, Hargreaves JNG, Holzworth DD, Freebairn APSIM (1996) A novel software system for model development, model testing and simulation in agricultural systems research. Agric Syst 50(3): 255-271.
14. Kaiser D, Lamb J (2012) Dry Soils and implications on nitrogen management for following years. Page 1 News Source. Minnesota Department of Agriculture, St. Paul, MN, US State.