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PRODUCTION, MARKETING, AND ECONOMIC ANALYSIS OF MARIGOLD PRODUCTION IN NEPAL

Aman Mehta*, Pankaj Kumar Yadav, Shaurav Sharma

Faculty of Agriculture, Agriculture and Forestry University, Rampur, Chitwan, Nepal

Rojina Adhikari

Jibika College of Agricultural Science, Itahari, Sunsari, Nepal

*E-mail: mehtaaman048@gmail.com

ORCID: 0000-0003-1628-1161

ABSTRACT

A study was conducted to analyze the production economics, socio-economic status, potential problems, and marketing of marigolds among marigold cultivating farmers in Nepal. Total 60 commercial farmers were selected by a simple random sampling technique. Kathmandu, Bhaktapur, Lalitpur, Chitwan, Pokhara, Lamjung, Kavre, and Rupandehi, the major marigold-producing areas of Nepal were the study area. The data were tallied and statistically examined to derive appropriate conclusions. The average area under marigold cultivation was 0.23 ha. The average marigold production was 55662.5 kg with an average BCR ratio of 3.786 per household which is much higher than the cereal production with BCR 1.1. The total average cost, gross revenue, and net revenue per hectare were NPR.55650, NPR.253937.5, and NPR.198287.5 respectively. Seed cost nearly accounts for 42% of total input cost. The average number of household members involved in marigold cultivation was three. The findings of this study revealed that 53.3% of the household were of the young age group (below 25 years). This may be due to the involvement of agriculture graduates in commercial marigold cultivation. The majority of the household were having marigold farming along with other businesses as their main occupation. The maximum number of the household belonged to the medium size of land holdings category (0.77 ha). Therefore, the finding suggests that the production and income can be maximized by providing training facilities on export-oriented production, and post-harvest loss management with efficient marketing facilities for marigold products.

KEY WORDS

Adoption, economy, households, marigold, pinching.

Floriculture is a promising horticultural sector in Nepal which has been the most evolving and demanding income-generating business sector in the agriculture section of Nepal (Pun et al., 2019). There are about 700 entrepreneurs and 43000 farmers directly involved in floriculture (Sureis, 2020). Flowers have always been an important component of the social fabrics of human life since their essence and smell are required in all social, cultural, and religious functions of any community since the beginning of time. There is ample reference to flowers in Mythology signifying their importance (Sharma, 2014). Marigold (*Tagetes erecta* L.) is one of the main commercial flowers in the Asteraceae family, accounting for over half of all loose flower production in the world (Jyothi et al., 2018). Ryberg identified nearly 33 species in the genus *Tagetes*. It is an erect, annual, hermaphrodite herb with a 1-2 m tall green stem and compound leaves with narrow serrated leaflets (A. Kumar et al., 2020). The decorative merits of *Tagetes erecta* L. and *Tagetes patula* L. are more often grown. African marigolds (*Tagetes erecta* L., $2n = 24$) and French marigolds (*Tagetes patula* L., $2n = 48$) are the most often grown commercially in Nepal (V. Kumar et al., 2019). Marigold is an important flower of Nepal with high religious value. Marigold is referred to as '*Sayapatri*' in the Nepali language. They are used extensively on cultural and social occasions as loose flowers or as garlands. The marigold flower is



wrapped with fern and mango leaves to greet people in various ceremonies and to offer the flowers to the god in various offerings (Gaenzle et al., 2005). In the year 2017/18, floriculture in Nepal made about NRs. 2250 million (FAN, 2019). Similarly, a worth of NRs 385 million of Marigold was produced and sold. In the fiscal year 2020/21, Nepal has traded a sum of NRs 356 million Marigold flowers (FAN, 2021).

Marigold production and consumer demand are increasing day by day in Nepal, but productivity is minimal. There is no clear recommendation based on existing technology to increase yield potential. Flower production offers a lot of promise for providing remunerative self-employment opportunities for small and marginal farmers, as well as earning much-needed foreign currency (Yadav & Dahiya, 2020). Rising demands for marigold for garlands, floral arrangement, loose flowers, and raw materials for the preparation of incense sticks during special occasions has paved the path for expanding marigold cultivation. Marigold is currently grown commercially in 32 districts of the country on 157 hectares of land. Chitwan, Makwanpur, Sindhuli, Pokhara, Kathmandu, Bhaktapur, and Lalitpur are the highest marigold producing districts of Nepal whereas extensive farming has started in other parts of Nepal due to huge demand in urban markets and a good return on investment (THT, 2020). The maximum presence of flower business has been found in Bagmati Province (12 out of 13 districts) and Madhesh province (7 out of 8 districts). Karnali province has the minimum presence (2 out of 10 districts). Other province lag behind in terms of flower production and trading (Pun et al., 2019).

In recent times, the cultivation of marigolds is attracting flower growers on account of its easy culture, wider adaptability, and short duration to produce marketable flowers with a handsome amount of money as well as receiving popularity among the consumers due to its appealing color, forms and good keeping quality (Datta & Singh, 2008). Our specific objective was to find out the input to output ratio and the most profitable flower business in Nepal, considering the goals of flower production. The findings of this study will be valuable to the country's policymakers and planners to increase marigold farmers' income, employment, and prosperity. Researchers and the government will benefit from the findings of the study. It will also assist research academics in comprehending the flower industry's economic analysis, marketing channels, existing technical gaps, challenges, and limits.

MATERIALS AND METHODS OF RESEARCH

The survey was carried out discovering sixty actively and commercially marigold growing farmers. The present study is based on the analysis of primary data given by the households. Data for the study was collected from 2020 to 2021. Primary data was collected through interviews of selected commercial marigold producers with the use of the pre-tested questionnaire. The interview schedule was prepared in the English language and the question was asked in the Nepali language. Pre-testing of the interview schedule was done to test its validity and effectiveness. Key Informants Interview (KII) was carried out with progressive or model farmers, Agriculture Information Center (AIC) officers, zone officers, JT, and JTA. Primary data was collected through direct interaction with the farmers and the traders of the study site using research instruments like Household surveys, Focus Group Discussion (FGD), KII, and telephone surveys. Some of the data were taken through phone calls due to the Covid-19 restrictions. Secondary data was obtained through the detailed literature review of annual ADO reports, and research articles published in national and international journals. Collected data were tabulated according to the need and purpose of the study. The obtained data were coded, tabulated, and analyzed using Microsoft Excel 2021, and SPSS (Statistical Package for Social Science) v. 24.

RESULTS AND DISCUSSION

The majority of the household i.e. 53.3 % were male whereas 46.7% were female. It has also been seen that the majority of the household, 36.7% belonged to the middle age group (25 to 40 years), 53.3 % of the household were under the young age group (up to 25



years) and 10.0 % of the household were of the old age group (above 40 years). So it has been seen that the adoption rate of marigold cultivation in a commercial way is more among new generations of active farm holders, students, and young farmers. Regarding the distribution of households according to their Family type, it is observed that the majority of households, 55% belonged to the nuclear type and 45% joint type. Here, it is concluded that the maximum rate of adoption is more in the nuclear family (up to 5 members) and lesser adoption in the joint family (more than 6 members) due to the various occupational structure of the family members. This finding is in accordance (Kumar & Manjunath, 2008; Mewara & Pandya, 2007; Siddiqui et al., 2006).

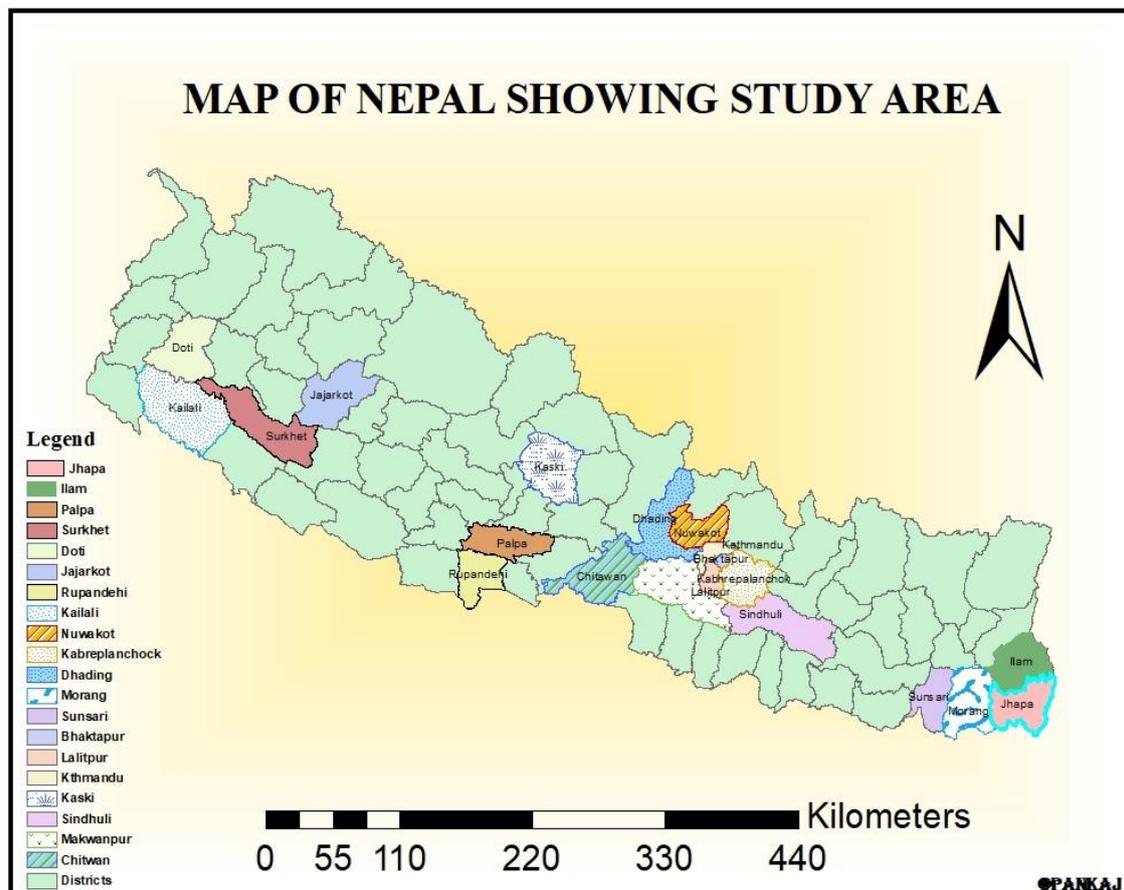


Figure 1 – Map of Nepal showing the study areas under commercial marigold cultivation

Regarding the distribution of households according to their location of the farm, the majority of households, 61.7% belonged to Central Nepal, 16.7% belonged to Eastern Nepal, whereas 21.7% belonged to Western Nepal. Education is one of the responsible factors in the level of adoption of technology and commercial flower production. From Table 1, it is evident that 8.3% had a primary level of education, 21.7% had a secondary level of education, 65% had a university level of education and 5% were illiterate. The above result signifies that more educated and skilled farmers have a higher rate of adoption of improved marigold production techniques than unskilled farmers (Yadav & Dahiya, 2020). Also, more numbers of educated and technical persons for marigold cultivation are from Central Nepal which has also the highest marigold productivity of marigold compared to other parts of Nepal. The study revealed that in the majority of the households 50.0 % of major occupation is agriculture, 6.7% of major occupation is business, 6.7% of major occupation is a government job, and 36.7% were students. Land, labor, and capital are the major factors for the cost of production. Table 1 shows that the majority of the households 56.6% had their land, 41.7% had land on lease and 1.7% had *adhiya* (sharecropping). The above result tells



us that there is a higher rate of adoption seen among full-time farmers involved in agriculture. The land is more or less fragmented and more often people took to land on lease for marigold cultivation. This finding is in line with the results of Poudel et al., (2017); Rathod, (2009); Vathsala, (2005).

Table 1 – Socio-Economic data of commercial marigold growers in Nepal

Indicator	Frequency (%)	Indicator	Frequency (%)
<25 years age	32 (53.5)	Main occupation	
25-40 years age	22 (36.7)	Agriculture	30 (50.0)
>40 years age	6 (10.0)	Student	22 (36.7)
Nuclear family	33 (55.0)	Business	4 (6.7)
Joint family	27(45.0)	Government Job	4 (6.7)
Seasonal production	52 (86.7)	Marigold land status	
Year round production	8 (13.3)	Own land area	34 (56.6)
Illiterate	3 (5.0)	Leased	25 (41.7)
Primary level	5 (8.3)	Adhiya	1 (1.7)
Secondary Level	13 (21.7)	Male	32 (53.3)
University Level	39 (65.0)	Female	28 (46.7)

Improved technologies in marigold production result in higher and stable production among marigold farmers. Hybrid seeds with efficient management practices have made it possible for the farmers to make huge income in a short space of time. Regarding the distribution of households according to their preferences of using different plant materials, 55% of the farmers used hybrid seeds, 16.7% of them used hybrid seeds and cuttings whereas 28.3% of farmers used seedlings and cuttings.

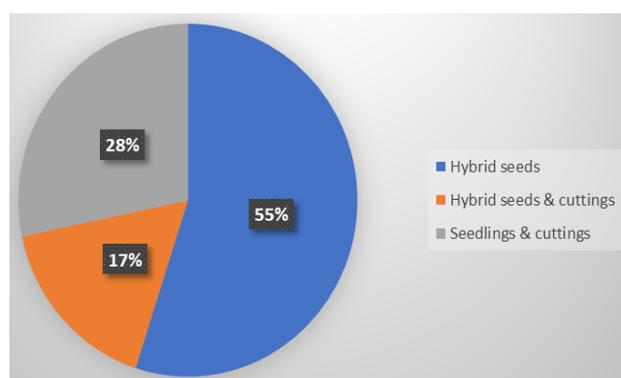


Figure 2 – Planting material used by commercial marigold growers in Nepal

In Nepal, only two varieties are widely cultivated commercially, among which 66.7% of farmers used Karma 555 varieties of marigold. Similarly, 11.6% of farmers used the Karma Orange variety and 21.7% of farmers used Culcuttiya variety plant material as seedlings and cuttings.

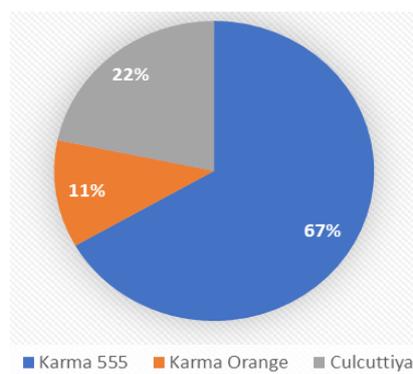


Figure 3 – Marigold varieties used by commercial growers



Among all the households, 53.3% of them brought seeds from a local agro vet, 21.7% from a recognized seed distributing company and 25% from private farms. Regarding the distribution of households according to methods of seed sowing, 6.7% of them sowed seed directly, 55.0% used a germination tray to grow seedlings whereas 38.3% prepared seedbeds for the growth of seedlings. 33.3% of households used Coco peat as media for seedling growth. 38.3% of them used FYM and garden soil as media. Similarly, 11.7% of them used mixed media of coco peat, vermicompost, and garden soil. 11.7% of them used Peat moss and 5% of farmers used vermicompost as media to grow marigold seedlings.

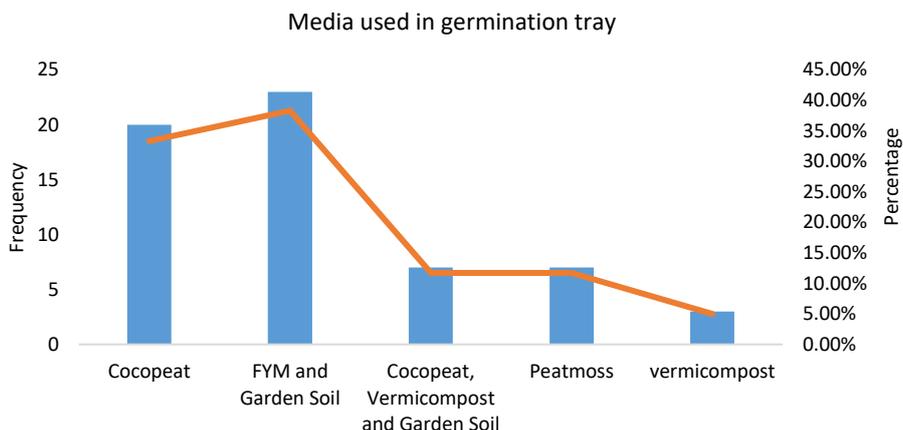


Figure 4 – Different growing media used in the germination tray by the commercial marigold grower

Regarding the Nutrient medium used in a seedling tray, 35.0 % of households used Humic Acid, and 51.6% of them used NPK complete solution while 13.3% of them used Plug Mix as a nutrient medium for seedling growth. Among households, 60% were following the practices of proper seed treatment, 36.67% were performing soil drenching with fungicide, and finally, 3.33% of them doing soil solarization. About 65% of the households used plastic mulching for marigold production whereas 35% were not using plastic mulching. Talking about the growing conditions of marigolds, 91.7% of them had open field conditions. Similarly, 5.0% of them were producing marigolds in the plastic house and 3.3% were producing in the shade house. A timely and proper amount of irrigation is one of the prime needs for the successful production of marigolds. Regarding the distribution of households according to the source of irrigation, 20% of the household were dependent upon rainfed irrigation. 15% of them were using river/dams canal system of irrigation while 65% of them used underground water/boring system of irrigation. 16.67% of the household were using drip irrigation, 23.33% of flooding systems and 60% of furrow irrigation.

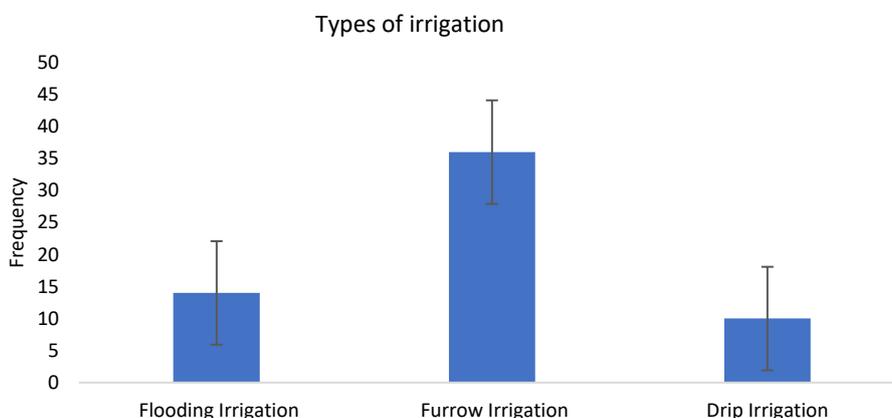


Figure 5 – Types of irrigation used in commercial marigold production



Timely methods of fertilizer application also ensure the marigold's productivity. 10% of our households only used a basal dose of fertilizers, 5% of them used fertigation through a drip system of irrigation, 60% of them through a foliar spray of nutrients, 11.7% through furrow application (between beds of the plant) and 13.3% of them used ring placement near root zone area as a method of fertilizer application. About 98.3% know about the marigold pinching operation and its beneficiaries in the commercial production of marigolds. 1.7% didn't know about pinching operations. Regarding pinching practices, 26.7% of the farmers received information from Agricultural Officers, 53.3% of them from Farm Assistants/Students, 8.3% of them from nearby neighbors/friends, and 11.7% from resource personnel of their respective seed companies. 60% of the household performed pinching at 30-35 days of seed sowing, 38.3% of them performed pinching at 50-55 Days of Seed Sowing, and 1.7% performed pinching at 70-75 Days of Seed Sowing.

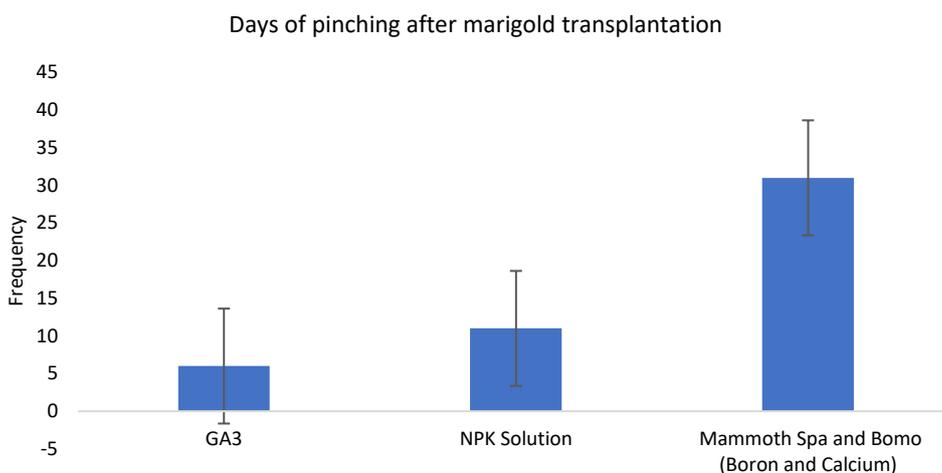


Figure 6 – Bar-Diagram representing no. of days of pinching practices followed in commercial marigold production

Plant growth regulators and micro-nutrients play an important role in flower production, longevity, and good size and color. Regarding the information about PGR used by the households, 10% of them used Gibberellic Acid, 18.3% used NPK solution, 51.7% used Mammoth spa (Micronutrients) and Bomo (Boron & Calcium), and 20% used Mammoth Spa (Micronutrients) + Bomo (Boron, Calcium) + GA3 + NPK solution. This finding is in accordance with (Singh et al., 2016).

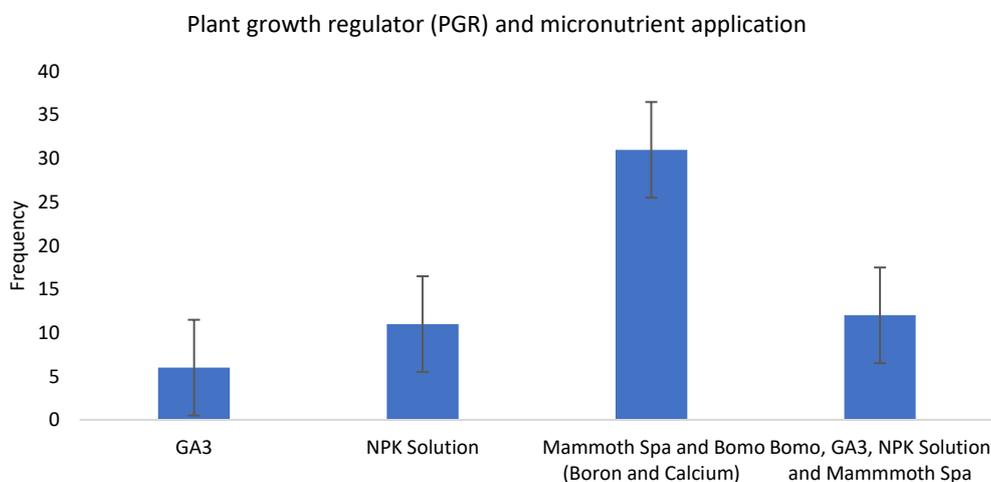


Figure 7 – Plant Growth Regulator and Micronutrients used in commercial marigold production



About 75% of the household received all the agricultural inputs from the local agro vet whereas 25% of them received from cooperatives. The marketing channels of marigold are not very efficient in Nepal. The middle-men plays a huge role to provide final products of marigold from producers to consumers creating a huge profit margin. In recent times, due to the Internet and mass advertisement, consumers directly place their order with the producer which has decreased the supply chain between producers and final consumers. Among our households, 40% used Carton-Box (Afternoon harvesting of marigold) as a medium of delivering marigold flowers. 10% of them used the lorry/bus transport system as a means to deliver the final product. Similarly, 50% of them used plastic packing to provide marigold flowers and garlands. The average rate per piece of marigold, price per garland, and kg marigold flower from different farm sources were NRs 3-5, NRs 100-200, and NRs 400-600 respectively. These findings are in accordance with the findings of (Haque et al., 2012; Hussain & Khan, 2015).

Table 2 – Production and Economic data of marigold cultivation

Indicator	Frequency (%)	Indicator	Frequency (%)
Planting material		Source of irrigation	
Hybrid seeds	33 (55.0)	Rainfed irrigation	12 (20.0)
Cuttings	31 (16.7)	Canal system	9 (15.0)
Seedlings	6 (28.3)	Underground	39 (65.0)
Varieties		Knowledge of Pinching	59 (98.3)
Karma 555	40 (66.7)	Resource person access	
Karma Orange	7 (11.6)	Agriculture Officer	16 (26.7)
Culcuttiya	13 (21.7)	Farm assistants/Students	32 (53.3)
Seeds are brought from		Neighbors/Friends	5 (8.3)
Agro vet	32(53.3)	Seed Company	7 (11.7)
Private farms	15 (25.0)	Irrigation methods	
Seed company	13 (21.7)	Flooding	14 (23.33)
Sowing Methods		Furrow	36 (60)
Direct seed sowing	4 (6.7)	Drip	10 (16.6)
Germination tray	33 (55.0)	Fertilizer application	
Soil (Seedbed)	23 (38.3)	Basal	6 (10.0)
Media use		Fertigation (Drip)	3 (5.0)
Coco peat	20 (33.3)	Foliar	36 (60.0)
FYM & garden soil	23 (38.3)	Furrow	7 (11.7)
Coco peat, vermicompost and garden soil	7 (11.7)	Ring placement	8 (13.3)
Peat moss	7 (11.7)	Plant Growth Regulators	
Vermicompost	3 (5.0)	GA3	6 (10.0)
Nutrient medium		NPK solution	11 (18.3)
Humic acid	21 (35.0)	Mammoth Spa & Bomo	31 (51.7)
NPK complete solution	31 (51.6)	Bomo, GA3, NPK solution & Mammoth Spa	12 (20)
Plug mix	8 (13.3)	Source of Inputs	
Seedbed preparation		Cooperatives	15 (25.0)
Seed treatment	36 (60)	Private Agro vets	45 (75.0)
		Packaging	
Fungicide Soil drenching	22 (36.6)	Cartoon Box Packing	24 (40.0)
Soil solarization	2 (3.33)	Lorry/Bus Transport	6 (10.0)
Plastic mulching	39 (65.0)	Plastic Packing	30 (50.0)
Growing condition		Days of Pinching	
Open field condition	55 (91.7)	30-35 Days of Seed sowing	36 (60.0)
Open plastic house	3 (5.0)	50-55 Days of Seed Sowing	23 (38.3)
Shade house	2 (3.3)	70-75 Days of Seed Sowing	1 (1.7)

In the study area, the average number of family members involved in agriculture was 3.17 ± 1.3 . The minimum and maximum numbers were found 1 and 6 respectively. The average landholding area of the farm holder was 23.32 ± 35.13 having a minimum of 0.03 kattha and a maximum of 5.33 kattha. The average land area that was utilized for the cultivation of cereal crops was 15.40 ± 12.99 . The minimum and maximum numbers were found <1 kattha and 50 kattha respectively. The average land area that was utilized for the cultivation of vegetable crops was 9.13 ± 5.74 . The minimum and maximum numbers were found <1 kattha and 25 kattha respectively. Similarly, the average land area under marigold cultivation was 7.01 ± 5.07 . The minimum and maximum number was found at 3 kattha and 28 kattha respectively. The average number of irrigation after transplantation of marigold was 2.75 ± 0.93 . The minimum and maximum numbers were found to be 2 and 5 respectively.

**Table 3. Production technology data of commercial marigold growers in Nepal**

Parameters	Mean	SD	Parameters	Mean	SD
Members involved	3.17	1.32	Pre-sowing cost	9541.67	8971.86
Total land holding (Kattha)	23.323	35.13	Total cost	7163.33	7361.88
Land for Cereal crop	15.40	12.99	Marigold from mother plant (kg)	752.25	1048.43
Land for vegetables crop	9.13	5.74	Marigold from Pinched plant (kg)	288.05	433.85
Land for marigold	7.007	5.074	Net income	138210.0	191412.25
Number of Irrigation	2.75	0.93	Surplus Income from seedlings and cuttings	26900.00	38356.47
Number of weeding	3.17	0.42	Prices of marigold	2.92	0.96
Seeds cost	7410.3	11342.09	last year production	214.13	277.42
Number of pinching	1.68	0.537	Post-harvest loss(kg)	43.23	72.16
Average fertilizers cost	4993.3	6479.43	Market occupied by Indian flowers (%)	52.7%	17.48%
Seedling cost	2909.8	2178.71	Total input cost	55677.63	42523.43
Pesticide cost	2893.8	5231.79	BCR Ratio	3.786	1.862

Similarly, the average number of weeding practices was 3.17 ± 0.14 . The minimum and maximum numbers were found to be 3 and 5 respectively. Average seed cost for Nepalese marigold growers is 7410.33 ± 11342.09 .

The minimum and maximum numbers were NRs. 500 and NRs. 82000 respectively. The average number of pinching practices was 1.68 ± 0.53 . The minimum and maximum numbers were 1 and 3 respectively. In the study area, the average fertilizer cost (Urea, DAP, MOP, SSP) was 4993.33 ± 6479.43 . The minimum and maximum numbers were NRs. 500 and NRs. 45000 respectively. The average cost of pesticides was 2893.83 ± 5231.78 . The minimum and maximum numbers were found to be NRs. 80 and NRs. 40000 respectively. The average cost of land preparation, seed sowing, transplanting, and irrigation was 9541.67 ± 8971.86 . The minimum and maximum values were NRs. 400 and NRs. 40000. Average labor cost, harvesting, post-harvest loss, and transportation was 7163.33 ± 7361.88 . The minimum and maximum numbers were NRs. 500 and NRs. 45000. The average production of marigold by the growers in the previous year was 214.13 ± 277.47 . The minimum and maximum numbers were found 50 kg and 1000 kg respectively. The average quantity of the product damaged in the field and after harvest (kg) was 43.23 ± 72.15 . The minimum and maximum numbers were 10 kg and 500 kg respectively. The average net income from marigold production (mother plant + pinched plant) was 138210.0 ± 191412.25 . The minimum and maximum numbers were NRs. 7600 and NRs. 900000 respectively. In the study area, the average quantity of marigold produced from the mother plant was 752.25 ± 1048.43 . The minimum and maximum numbers were 45kg and 6500kg respectively. According to the Marigold farmers, the average price of marigold flowers, per kg of marigold flower and price per garland were Rs.2.5, Rs.400, and Rs.125 respectively. The average production of marigold last year was 214.13 ± 277.47 . Similarly, the Average market occupancy by Indian flowers during the peak festive season was $52.75\% \pm 17.47\%$. The minimum and maximum were 25% and 90% respectively. The average BCR ratio of marigold cultivation per household was 3.786 which was much higher than the cereal production with BCR 1.1 (Sapkota et al., 2021).

Family members involved in agriculture were strongly positively related to the number of weeding practices of the marigold farmer with ($r = 0.72$) which shows the significance of weeding members in floriculture. There was the positive relation with the land under marigold cultivation, the number of irrigation, pinching number, net income, and quantity of marigold produced.



Table 4 – Correlation table showing the relation between different parameters of marigold cultivation

Parameters	Members involved	Land under marigold cultivation	Irrigation	Weeding	Pinching	Total cost	Income from marigold	Income from marigold and cutting	Marigold produced
Members involved	1	-	-	-	-	-	-	-	-
Land under marigold cultivation	0.186	1	-	-	-	-	-	-	-
Irrigation	0.35	0.121	1	-	-	-	-	-	-
Weeding	0.72	0.191	0.326	1	-	-	-	-	-
Pinching	0.100	0.094	0.008	0.088	1	-	-	-	-
Total cost	-0.023 ^c	0.120	0.301	0.222	0.141	1	-	-	-
Income from marigold	0.015 ^c	0.193	-0.084	-0.015	0.113	0.115	1	-	-
Income from marigold plus cutting	-0.007	0.239	-0.015	0.083	0.148	0.222	-0.015	-1	-
Marigold produced	0.192	0.382	0.036	0.073	0.262	0.29	0.361	0.159	1

Note: - ** and *** indicates 5% and 1% level of significance respectively.

The number of family member was negatively correlated with the total labor cost and net income from marigold. Land under marigold cultivation was positively correlated with the number of irrigation, weeding practices, number of pinching, total labor cost, net income from marigold, net income from selling other materials else marigold, and quantity of marigold produced. The number of irrigation was positively correlated with the weeding practices, the number of pinching, total labor cost, and total quantities of marigold produced whereas it was negatively correlated with net income from marigold and also from the selling of cuttings/seedlings. Weeding practices were positively correlated with the number of pinching, total labor cost, net income from marigold plus cuttings, and quantity of marigold produced whereas it was negatively correlated with net income from marigold. The number of pinching was positively correlated with total labor cost, net income from marigold, net income from marigold plus cuttings, and quantity of marigold produced. Total labor cost was positively correlated with net income from marigold, net income from marigold plus cuttings, and quantity of marigold produced. Net income from marigold was positively correlated with quantity of marigold produced ($r = 0.361$). Net Income from marigold plus cutting positively correlated with quantity of marigold produced ($r = 0.159$).

CONCLUSION

The floriculture industry in Nepal is steadily expanding, but it has the potential to expand into other countries as well. Commercial-scale cultivation of Marigold is an emerging sector in agriculture. The marigold business is small yet growing on a large scale, profitable, and is carried out by the local people on a self-employed basis. Marigolds are well adapted in Nepal and are cultivated all around the year. There is less prevalence of pests and diseases yet the most susceptible to insect pests and disease is the seedling stage and flowering stage. Growers can manage and coordinate available resources in a viable manner by knowing the cost of cultivation and returns from marigold production. Mainly, farmers are facing the problems of unhealthy market competition due to the heavy import of flowers from the neighboring country. The other problems faced by farmers are low prices in the market, lack of market information, malpractices by traders, and many more. High transportation costs and post-harvest loss are the constraints that are faced by the Nepalese marigold growers. The high retail price of marigolds grown in Nepal in comparison to India leads the consumer to neglect the marigold produced in Nepal. Similarly, there is a lack of customer understanding and motivation in socio-personal restrictions. Technical obstacles include a lack of training facilities for export-oriented marigold flower production and post-production technology. Economic limits, limited bloom life, lack of cooperative financing facilities, increased demand and spoiling loss owing to storage facilities.



RECOMMENDATION

Government support should be extended to commercial marigold growers for the positive and progressive impact on the local economy as well as the standard of living of the locals. There is a need for training for female farmers which can increase employment. To tackle the obstacles, however, a partnership between the government and the business sector is required. External markets for marigold will result in a significant increase in turnover in this industry, as well as the potential for further investment. Results have shown that the maximum adoption level of marigold cultivation is among youths. So, proper support and encouragement through research funding, training, and proper acknowledgment of their work should be done.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interests regarding the publication of paper.

REFERENCES

1. Datta, S., & Singh, S. (2008). Marigold and its Commercial Potential. *Applied Botany*.
2. FAN, 2020. (2021). Current Situation Of Floriculture In Nepal. <https://www.fanepal.org.np>
3. Gaenzle, M., Bickel, B., Banjade, G., Lieven, E., Paudyal, N. P., Rai, I. P., Rai, M., Rai, N. K., Stoll, S., & Yadava, Y. P. (2005). Worshipping the king god: A preliminary analysis of Chintang ritual language in the invocation of Rajdeu.
4. Haque, M. A., Miah, M. M., Hossain, S., & Alam, M. (2012). Economics of marigold cultivation in some selected areas of Bangladesh. *Bangladesh Journal of Agricultural Research*, 37(4), 711–720.
5. Hussain, A., & Khan, A. (2015). The marketing and cost-benefit analysis of floriculture in the rural areas of Peshawar: a case study of Bazid khel. *City University Research Journal*, 5(1), 49–63.
6. Jyothi, K., Goud, C. R., Girwani, A., & Kumar, T. S. (2018). Studies on the Effect of Planting dates and levels of Pinching on Growth, Flowering and Yield in Marigold (*Tagetes erecta*) cv. Arka Agni. *Int. J Curr. Microbiol. App. Sci*, 7(11), 2705–2713.
7. Kumar, A., Gautam, R. D., Kumar, A., Bisht, A., & Singh, S. (2020). Floral biology of wild marigold (*Tagetes minuta* L.) and its relation to essential oil composition. *Industrial Crops and Products*, 145, 111996. <https://doi.org/10.1016/j.indcrop.2019.111996>.
8. Kumar, S., & Manjunath, L. (2008). Marketing behaviour, information source consultancy pattern and problems of vegetable growers in Bijapur district of Karnataka. M. Sc.(Ag.) Thesis, University of Agricultural Science, Dharwad, College of Agriculture, Dharwad.
9. Kumar, V., Singh, V., Kumar, L., & Maurya, S. K. (2019). A Review on Effect of Pinching on Growth, Flowering and Flower Yield of Marigold. *Ind. J. Pure App. Biosci*, 7(4), 493–501.
10. Mewara, R. C., & Pandya, R. D. (2007). Knowledge and adoption level of tomato growers regarding value added techniques in Navsari. *Rural India*, 70(9), 169–171.
11. Poudel, S., Regmi, R., Pun, U., & Rijal, A. (2017). Influence of spacing and pinching on growth parameters of African marigold cv. Inca orange-1ks.
12. Pun, U., Tripathi, K. M., & Kafle, D. R. (2019). Prospects and Challenges of Floriculture Business in Federal Nepal. Proceedings of the 10th national horticulture seminar 2019. https://www.researchgate.net/profile/Umed-Pun-2/publication/344518789_Prospects_and_challenges_of_floriculture_business_in_federal_Nepal/links/5f7dd7f1299bf1b53e15a801/Prospects-and-challenges-of-floriculture-business-in-federal-Nepal.pdf.
13. Rathod, J. J. (2009). A study on adoption of recommended plant protection measures by chilli growers in Anand district of Gujarat state. M. Sc.(Agri.) Thesis (Unpublished). Anand Agricultural University., Anand Campus, Anand.



14. Sapkota, N., Yadav, P., & Sapkota, S. (2021). An economic analysis of rice production in the Rautahat district of Nepal. 1, 01–09. <https://doi.org/10.26480/faer.01.2021.01.09>
15. Sharma, M. K. (2014). Economic analysis of commercial flower cultivation in Sirmaur district of Himachal Pradesh.
16. Siddiqui, B. N., Muhammad, S., & Malik, N. H. (2006). Effect of socio-economic aspects on the awareness and adoption of recommended horticultural practices by apple growers in Baluchistan, Pakistan. *Pakistan Journal of Agricultural Sciences*, 43(1–2), 73–76.
17. Singh, A., Sharma, B., Ditta, B., Gupta, D., Laishram, N., & Baweja, H. (2016). Economic analysis of carnation cv. “Master” cut flower production as influenced by fertilizer schedules under naturally ventilated polyhouse. *Bangladesh Journal of Botany*, 45, 25–31.
18. Sureis. (2020). Domestic production to meet flower demand. In *The Himalayan Times*. <https://thehimalayantimes.com/business/domestic-production-to-meet-flower-demand>.
19. THT. (2020). Economics of marigold production in Nepal. *The Himalayan Times*. <https://thehimalayantimes.com/business/domestic-production-to-meet-flower-demand>.
20. Vathsala, B. C. (2005). Knowledge and Adoption of Integrated Pest Management Practices as Cabbage by Farmers in Eastern Dry Zone of Karnataka [PhD Thesis]. University of Agricultural Sciences, GKVK.
21. Yadav, P., & Dahiya, D. S. (2020). Knowledge and adoption of marigold cultivation practices of women farmers in Gurugram district of Haryana. *Indian Journal of Extension Education*, 56(2), 99–102.