Economic Affairs, Vol. 67, No. 04, pp. 543-549, September 2022
DOI: 10.46852/0424-2513.4.2022.20

AESSRA

Research Paper

Financial Feasibility Analysis of *Ghritkumari* (*Aloe vera*) Cultivation as Farm Business Enterprise- Findings from Churu District of Rajasthan

Rakesh Rathore

School of Business Studies, Punjab Agricultural University, Ludhiana, Punjab, India

Corresponding author: rathorerakesh.iabm@gmail.com (**ORCID ID:** 0000-0002-0024-1176)

Received: 17-05-2022 **Revised:** 20-08-2022 **Accepted:** 01-09-2022

ABSTRACT

The present study was carried out with a view to compute the cost of cultivation of *Ghritkumari* on basis of cost concept and measuring financial feasibility of the cultivation. Total 80 *Ghritkumari* cultivating farmers were selected using multistage sampling and to obtain results cost concepts were employed. The result of the study revealed that the cost A1 and cost A2 was found to be similar because the farmers cultivate *Ghritkumari* crop on their own land. The net present value (NPV) at 15 per cent discount rate was found to be ₹ 55317.16 for overall farm size. The net present value (NPV) calculated at 10 per cent and was found ₹ 67213.64 overall farm. The internal rate of return (IRR) was found 36 per cent on overall farm. The benefit cost ratio was found 1.17 at 15 per cent discount rate and 1.19 at 10 per cent discount rate on overall farm. Farm business income, family labor income and farm investment income was found to be ₹ 83143.24, ₹ 73909.69, ₹ 78589.59 highest during 3rd year of *Ghritkumari* cultivation, respectively. Hence more emphasis should be given to increase *Ghritkumari* cultivation. The government support helps in better production and marketing of *Ghritkumari* crop.

HIGHLIGHTS

- The production cost found increase during first year of aloe vera cultivation
- The farm business income, family labor income and farm investment income was found negative during first year
- Benefit cost ratio was found positive

Keywords: *Ghritkumari*, Net present value, cost concept, Benefit cost ratio, IRR

Ghritkumari (Aloe vera) is one of the most economically important medicinal plant. *Ghritkumari* is drought tolerant crop and is grown commercially for its high demand in the cosmetic and pharmaceutical industry. In India, this crop is cultivated in Rajasthan, Haryana, Gujarat, Tamil Nadu, Andhra Pradesh, and Maharashtra. In Rajasthan, it is mainly cultivated in Churu, Alwar, Jaisalmer, Barmer, Jodhpur, Jalore, Sikar, Jhunjhunu, Ajmer, and Jaipur districts. *Ghritkumari* juice is used in skin care medicines and is also effective in treating constipation, arthritis and cough (Joseph and Raj, 2010). *Ghritkumari* juice is also used for treating stomach ailments, gastrointestinal problem, as antiseptic, as anti-inflammatory and as anticancer (Ali *et al*. 2012). *Ghritkumari* is known as wonder and natural plant for its wound healing and medicinal properties (Sahu *et al*. 2013).

The benefit cost ratio of patchouli at 9.5 per cent discount rate was 2.14 (Raghu, 2006). The benefit cost ratio of Citronella, Patchouli and Lemon grass

How to cite this article: Rathore, R. (2022). Financial Feasibility Analysis of *Ghritkumari* (Aloe vera) Cultivation as Farm Business Enterprise-Findings from Churu District of Rajasthan. *Econ. Aff.*, **67**(04): 543-549.

Source of Support: None; **Conflict of Interest:** None

was 1.17 (Mittal and Singh, 2007). The large farm size fetch more remunerative return as compared to small and medium size farms (Balamurugan, 2009). Good management results in much higher income and net profit from medicinal plants (Biswas, 2010). Cost and financial feasibility of cultivation of medicinal and aromatic plants shows viability (Guleria *et al.* 2014). Successful cultivation of *Aloe vera* plant is economically attractive (Bali *et al*. 2015). Farmer received net profit of ₹ 24117, ₹ 43676, ₹ 45631 and ₹ 45631 per acre in the first, second, third and fourth year respectively from aromatic plants cultivation (Mounika, 2015). The cost of C2 of mentha cultivation was found higher on small farm (Ramakant, 2015). Annual cost of capital is most important elements of the production cost of organic *Aloe vera* (Liontakis and Tzouramani, 2016). The benefit cost ratio of *Ashwagandha* cultivation intercropping with pulses and oilseeds, intercrop with red gram (*Tur*) was found most productive in terms of productivity (Ahirwar *et al.* 2017). The average farm business income of *Safed muesli* cultivation was 1.13 lakh per hectare and family labor income was 1.08 lakh (Rajak and Sarawagi, 2017). The benefit cost ratio of vetiver cultivation was highest 1:3.05 at cost A1 which indicates that the farmers obtained 3.05 as return by investing ₹ 1 in vetiver cultivation (Sharma *et al*. 2022). Keeping this in view, the purpose of the study was conducted to know the financial feasibility of *Ghritkumari* cultivation. The successful increasing area and production of *Ghritkumari* can increase the income of farmers and fulfill the demand of most of the industries which depends on as source of raw material.

DATA AND METHODOLOGY

The present study was conducted in Churu district of Rajasthan. Multistage sampling technique was used for selection of the farmers. A list of *Ghritkumari* cultivation villages were prepared from two selected *Tehsils* (Churu and Sardarsahar). From each *Tehsil* four villages were selected. A list of *Ghritkumari* cultivation farmers also prepared with the help of officials of agriculture department. From each selected villages and 10 farmers from each village were randomly selected. Total 80 farmers were selected. The collected data were compiled and analyzed logically. For the present investigation following tools and techniques used.

Tools and techniques utilized

Cost concepts

The following cost concepts were utilized i.e., cost A1, cost A2, cost B1, cost B2 and cost C1, Cost C2 and Cost C3 calculated on the basis of cost concept.

- Cost A1 include all real expenditures in production by the farmer.
- Cost A2 = Cost A2 include, cost A1 + rental value of leased in land
- Cost B1 = Cost B1 include, cost A1+ interest on fixed capital +rental value of land
- Cost B2 = Cost B2 include, cost B1 + rent paid for leased in land + rental value of owned land
- Cost C1 = Cost C1 include, cost B1 + value of family labor
- Cost C2 = Cost C2 include, cost B2 + value of family labor
- Cost C3 = Cost C3 include, cost C2 + 10 per cent of cost C2 as managerial cost

Net income measure: It is surplus after subtracting all the cost

$$Net\ return = Gross\ return - Total\ cost$$

Benefit-Cost Ratio

The Benefit-Cost Ratio (BCR) measures the returns or benefits per unit cost of investment. It is the ratio of sum of total cash inflows to the sum of total cash outflows.

$$BCR = \sum_{t=1}^{t=n} \frac{Bt}{(1+i)n}$$

$$\sum_{i=1}^{t=n} \frac{Ct}{(1+i)n}$$

Where, Bt = Benefit in t^{th} year, Ct = Cost in t^{th} year, t = 1, 2…n; n = Number of years i = Interest (discount) rate.

Net Present Value

$$\text{NPV} = \frac{\text{Cash flow}}{(1+i)t} - \text{initial investment}$$

Where, i = required return or discount rate; t = Number of time period

Internal Rate of Return

$$0 = NPV = \sum_{t=1}^{T} \frac{Ct}{(1+IRR)t} - C0$$

Where,

Ct = Net cash inflow during the period '*t*'

C_0 = Total initial investment cost

t = Number of time period

Cost of production was calculated from cost of cultivation

$$\text{Cost of Production} = \frac{\text{Cost of cultivation per ha}}{\text{Production per ha}}$$

Income measures

The measure of income includes farm business income, family labor income, net income and farm investment income etc. Income measures are the returns over different cost concepts. Using cost concepts, different income can be derived from the cost concepts.

Farm Business income

= Gross income – Cost A1/A2

Family labor income

= Gross income – Cost B2

Farm investment income

= Farm business income – value of family labor or net income + rental value of land + interest on fixed capital

RESULTS AND DISCUSSION

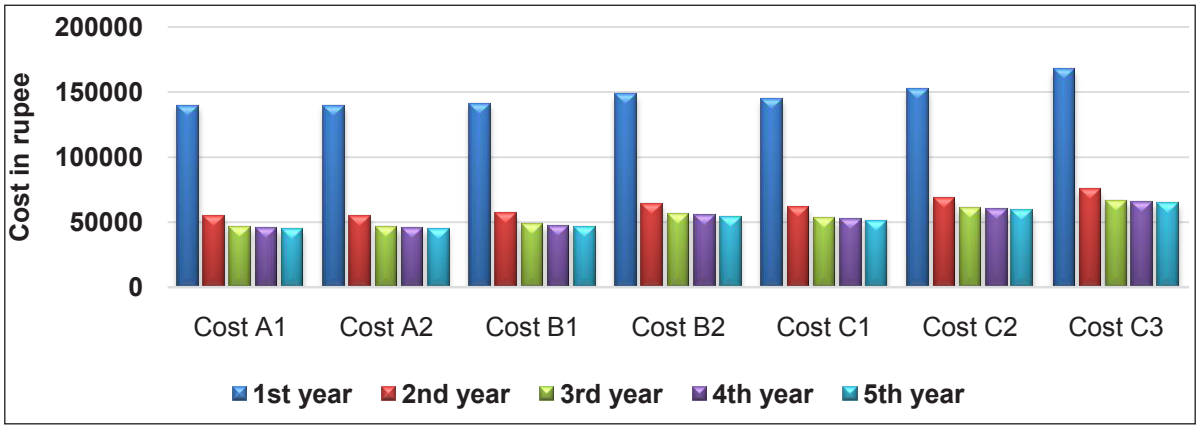
Cost of cultivation of *Ghritkumari* on different cost concepts on small farm

The cost A1 and cost A2 was found similar because the farmers cultivate the *Ghritkumari* on their own land. Table 1 shows the cost A1 was found ₹ 132344.60 per hectare during the first year and decreases to ₹ 48720.86 per hectare during the second year on small farms. The cost A1 was found ₹ 42139.16, ₹ 41659.01 and ₹ 41294.17 during the 3rd, 4th and 5th year. Cost B1 was found ₹ 134012.6 during first year and it decreased to ₹ 50388.86 during second year. Cost B1 was found ₹ 43807.16, ₹ 43327.01 and ₹ 42962.17 during 3rd, 4th and 5th years. Cost C1 was found ₹ 137848.4 during first year. The cost C3 was found higher at ₹ 159800.7 than cost C2 ₹ 145273.4 during first year and ₹ 68923.37, ₹ 62657.61 during the second year. The cost of C3 was found ₹ 61683.5 ₹ 61155.34 and ₹ 60754.01 during 3rd, 4th and 5th year.

Table 1: Cost of cultivation of Ghritkumari on different cost concepts of small farmers (₹ '000/ha)

Cost	1st year	2nd year	3rd year	4th year	5th year
Small					
Cost A1	132.34	48.72	42.14	41.65	41.29
Cost A2	132.34	48.72	42.14	41.65	41.29
Cost B1	134.01	50.39	43.81	43.32	42.96
Cost B2	141.44	57.81	51.23	50.75	50.39
Cost C1	137.85	55.23	48.65	48.17	47.81
Cost C2	145.27	62.66	56.08	55.59	55.23
Cost C3	159.80	68.92	61.68	61.15	60.75
Medium					
Cost A1	141.30	56.29	48.04	46.467	44.75
Cost A2	141.30	56.29	48.04	46.467	44.75
Cost B1	143.02	58.02	49.77	48.192	46.48
Cost B2	150.56	65.55	57.30	55.728	54.01
Cost C1	146.58	62.67	54.42	52.850	51.14
Cost C2	154.12	70.21	61.96	60.387	58.67
Cost C3	169.53	77.23	68.16	66.425	64.54
Large					
Cost A1	143.91	59.10	49.64	48.66	48.13
Cost A2	143.91	59.10	49.64	48.66	48.13
Cost B1	145.60	60.79	51.33	50.35	49.82
Cost B2	153.25	68.45	58.98	58.00	57.48
Cost C1	149.06	65.15	55.68	54.71	54.18
Cost C2	156.71	72.80	63.34	62.36	61.83
Cost C3	172.38	80.08	69.67	68.60	68.02
Overall (average)					
Cost A1	139.18	54.70	46.60	45.59	44.73
Cost A2	139.18	54.70	46.60	45.59	44.73
Cost B1	140.88	56.40	48.30	47.29	46.42
Cost B2	148.42	63.94	55.84	54.83	53.96
Cost C1	144.50	61.02	52.92	51.91	51.04
Cost C2	152.04	68.56	60.46	59.45	58.58
Cost C3	167.24	75.41	66.50	65.39	64.44

Source: *Author's own computation from primary data.*



Source: *Authors computation from primary data.*

Fig. 1: Cost of cultivation of *Ghritkumari* on different cost concepts of on overall farm

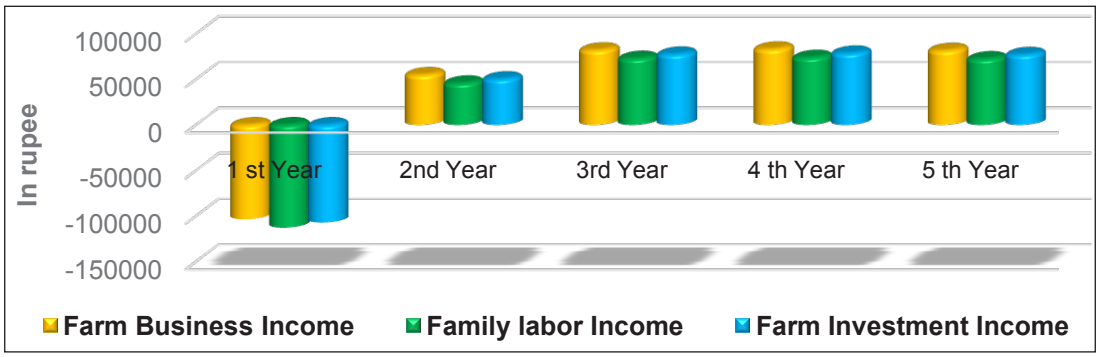


Fig. 2: Farm business income, family labor income and farm investment income of *Ghritkumari* cultivation on overall farm

Table 1 revealed that cost A1, A2, B1, B2, C1, C2 and C3 was found increase during first year on overall farm size during first year. Cost A1, A2, B1, B2, C1, C2 and C3 were ₹ 54703.91, ₹ 54703.91 ₹ 56398.24, ₹ 63937.46, ₹ 61018.56, ₹ 68557.78 and ₹ 75413.56 was observed during second year on overall farm size. The cost C3 was found higher as compared to cost C2 during 3rd, 4th and 5th year on overall farm.

Farm Business income, family labor income and farm investment income of *Ghritkumari* cultivation on small farm

The farm business income, family labor income and farm investment income is presented in the Table 2. The farm business income, family labor income and farm investment income was found negative during first year and was found increasing during second year onwards. The farm investment income was found higher as compared to family labor income and farm investment income during 2nd, 3rd, 4th and 5th year on small farm. The family labor income was found lower as compared to farm business income and farm investment income on small farm.

Farm business income, family labor income and farm investment income was calculated and presented in the Table 2 it was found that during first year it was negative, during second year onwards it started increasing. Farm business income is ₹ 54984.99 per hectare, family labor income ₹ 45,751.47 per hectare, farm investment income was ₹ 50364.68 per hectare during second year on overall farm. Farm business income, family labor income, and farm investment income was ₹ 82131.87, ₹ 72899.31 and ₹ 77512.55 per hectare during 3rd year, ₹ 83143.24, ₹ 73909.69 and ₹ 78589.59 during 4th year, ₹ 81654.43, ₹ 72420.88, ₹ 77100.78 per hectare during 5th year on overall size farm.

Cost of Production of *Ghritkumari*

The total cost of production is shows in table 3 of small, medium, large and overall farms. On large farm cost of production was ₹ 1437.78 and it was lower than small and medium farm, on overall farm ₹ 1488.35 per quintal during first year and ₹ 212.92, ₹ 214.35 was found during second year on large and

Table 2: Farm business income, family labor income and farm investment income of *Ghritkumari* cultivation (₹/ha)

Particular	1st year	2nd year	3rd year	4th year	5th year
Small					
Farm business income	-99145.4	52276.89	75776.71	76256.86	74903.23
Family labor income	-108238	43183.89	66683.71	67163.86	65810.23
Farm investment income	-102981	47433.14	70932.96	71413.11	70059.48
Medium					
Farm business income	-105424	54133.86	83122.34	84696.34	84309.84
Family labor income	-114685	44872.5	73860.98	75434.98	75048.48
Farm investment income	-108984	49475.16	78463.64	80237.64	79851.14
Large					
Farm business income	-105626	58544.07	87499.56	88476.51	85750.21
Family labor income	-114973	49197.77	78153.26	79130.21	76403.91
Farm investment income	-109085	54185.57	83141.06	84118.01	81391.71
Overall (average)					
Farm business income	-103399	54984.99	82132.87	83143.24	81654.43
Family labor income	-112632	45751.44	72899.31	73909.69	72420.88
Farm investment income	-107017	50364.68	77512.55	78589.59	77100.78

Source: *Authorsown computation from primary data.*

Table 3: Cost of production of *Ghritkumari* of small, medium, large and overall farmers (₹/quintal)

Land size	1st year	2nd year	3rd year	4th year	5th year
Small	1531.61	217.13	166.44	165.02	165.86
Medium	1503.60	213.36	165.35	160.6	162.99
Large	1437.78	212.92	162.17	159.65	161.97
Overall	1488.35	214.35	164.60	160.58	163.6

Source: *Author's own computation from primary data.*

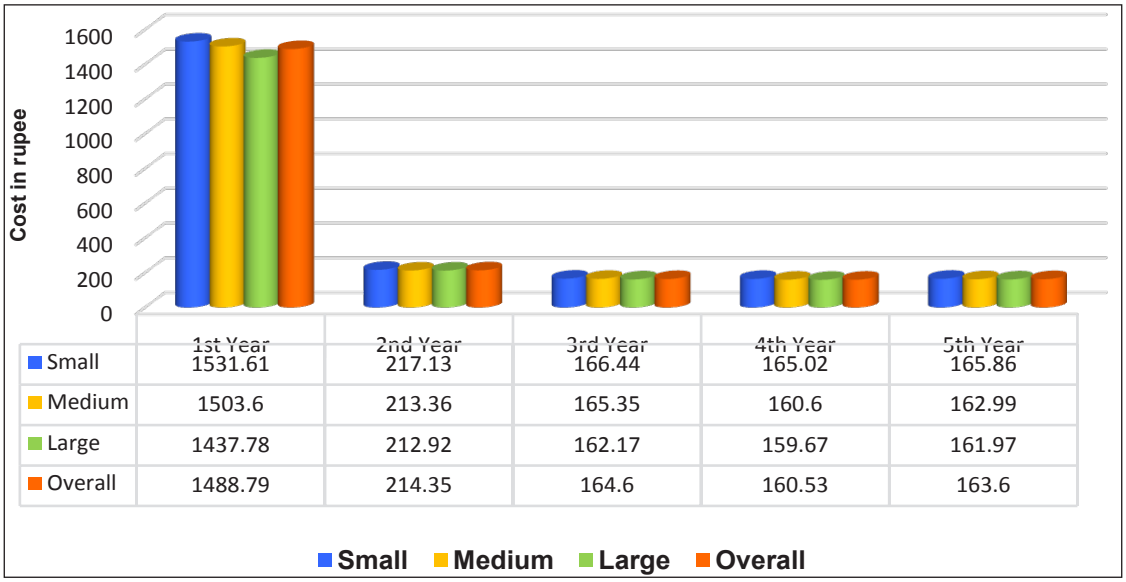


Fig. 3: Cost of production of *Ghritkumari* of small, medium, large and overall farm (₹/quintal)

overall farm, respectively. Cost of production was found to be ₹ 162.17 for large and ₹ 1488.35, ₹ 214.35 ₹ 164.60, ₹ 160.58 and 163.60 per quintal during 1st, 2nd, 3rd, 4th and 5th year, respectively overall farm size.

Financial feasibility of *Ghritkumari* cultivation

Financial feasibility of *Ghritkumari* cultivation is shows in the Table 4 for small, medium, large and

Table 4: Financial feasibility of *Ghritkumari* cultivation of different farmers

Particular	Discount factor @rate (%)	NPV (₹)	BC ratio	IRR (%)
Small Farmers	10%	54631.77	1.17	32%
	15%	43859.31	1.14	
Medium Farmers	10%	72571.67	1.20	36%
	15%	60339.25	1.18	
Large Farmers	10%	78710.85	1.22	40%
	15%	65876.27	1.19	
Overall	10%	67213.64	1.19	36%
	15%	55317.16	1.17	

Source: *Author's own computation from primary data.*

overall farm. The Net Present Value (NPV) at 15 per cent discount rate was found ₹ 43859.31, for small farm, ₹ 60339.25 for medium farm, ₹ 65876.27 for large farm and ₹ 55317.16 for overall farm. The Net Present Value (NPV) calculated at 10 per cent and was found ₹ 54631.77, 72571.67 and ₹ 78710.85 and ₹ 67213.64 on small, medium and large farm and overall farm respectively. The Internal Rate of Return (IRR) was found higher for large farm 40 per cent followed by 36 per cent on medium farm, 32 per cent on small farm and 36 per cent on overall farm.

Benefit-Cost Ratio of *Ghritkumari* cultivation

Discounted benefit cost ratio was calculated for small, medium, large and overall farm at two discount rate 10 per cent and 15 per cent the discounted BC ratio at 10 per cent discount rate was found 1.17, 1.20, 1.22 and 1.19 on small, medium, large and overall farm respectively. The B-C ratio at 15 per cent discounted rate was found to be 1.14, 1.18, 1.19 and 1.17 on small, medium, large and overall farm, respectively. The benefit cost ratio was found highest on large farm followed by medium and small farm. The Internal Rate of Return was found 36 per cent for overall farm. Similar finding reported by (Guleria *et al.* 2014).

CONCLUSION

The finding of the study revealed that the cultivation of *Ghritkumari* (Aloe vera) found economically viable and financial feasible as farm business enterprise except first year of cultivation and it gives profit during second year onward. Since the criteria of economic feasibility measures were met. Net present value was positive, internal rate of return (IRR) was more than discount rate. Benefit cost ratio was found more than one it means investment in cultivation of *Ghritkumari* is profitable farm business enterprise for the farmers. Government and industries should work closely to boosting cultivation and processing of *Ghritkumari*. Government should assist farmers by establishment of processing unit near by villages so *Ghritkumari* farmers get market easily.

ACKNOWLEDGMENTS

The author are thankful to Dr Aditi Mathur and other advisory members and Institute of Agri Business Management, Bikaner for their direction and positive suggestions that helped to improve the present research.

REFERENCES

Ahirwar, S.K., Kushwaha, H.S., Agrawal, K.K. and Singh, R. 2017. Productivity and economics of ashwagandhaunder different intercropping with pulses and oilseeds. *Int J. of Pure Appl. Biosci.*, **5**(6): 227-233.

Ali, S.A., Galgut, J.M. and Choudhary, R.K. 2012. On the novel action of melanolysis by a leaf extract of aloe vera and its active ingredient aloin, potent skin de-pigmenting agents. *Med. Plants*, **78**(8): 767-71

Balamurugan, S. 2009. A study of cost and returns of vanilla cultivation in India, synopsis submitted to the Madurai Kamaraj University for the award of the degree of doctor of philosophy in commerce pp.10. shodhganga.inflibnet.ac.in/bitstream/10603/139504/7/16_synopsis.pdf

Bali, B., Meghawal, D., Lal, J. and Chandrawat, K.S. 2015. *Aloe vera*: cultivation practices and its human benefits. *Popular Kheti*, **3**(3): 53-56.

Biswas, B.C. 2010. Cultivation of medicinal plant, success story of two farmers. *FertilizerMarketing News*, **41**(3): 1-4.

Guleria, C. Kumar Vaidya, M., Sharma, R. and Dogra, D. 2014. Economics of production and marketing of important medicinal and aromatic plants in mid hills of Himachal Pradesh. *Econ. Aff.*, **59**(3): 363-378.

Joseph, B. and Raj, S.J. 2010. Pharmacognostic and phytochemical properties of aloe vera Linn: An overview. *Int. J. Pharm. Sci. Rev. Res*., **4**(2): 106-110

Liontakis, A. and Tzouramani, I. 2016. Economic sustainability of organic *aloe vera* farming in Greece under risk and uncertainty. *Sustainability,* **8**: 338.

Mittal, R. and Singh S.P. 2007. Shifting from agriculture to agribusiness. *Agric. Econ. Res. Rev*., **20**(Conference issue): 541-550.

Mounika, S. 2015. Profitability of aromatic plants cultivation in Nalgonda and Mahabubnagar districts of Telangana State the case of Palmarosa crop. Project report MBA (AB) Professor Jayashankar Telangana State Agricultural University, Telangana, India.

Raghu, C. 2006. Economics of production and marketing of patchouli in North Karnataka. Thesis Msc (Ag.) University of Agricultural Science Dharward, India, pp. 1-53

Rajak, S.K. and Sarawagi, A.K. 2017. Comparative economic analysis and farm profit of food grains and safedmusli crop. *Agriculture Update*, **12**(TECHSEAR-6): 1621-1624

Ramakant, 2015. A study on production and marketing of Mentha in Phoolberi block of Lakhimpur Kheri district of Uttar Pradesh. Project Report (MABM) Banaras Hindu University, Varanasi, India, pp.1-55

Sahu, P.K. Giri, D.D. Singh, R. Pandey P. Gupta, S. Kumar, A.Shrivastava A.K. Kumar A. and Pandey K.D. 2013. Therapeutic and medicinal uses of aloe vera: a review *J. Pharm. and Pharmacol*., **4**: 599-610

Sharma, R.S., Kumar, Y., Singh, S.P., Singh Choudhri, H.P., Kumar, D., Bhise, R.N., Srivastava, R.K. and Kumar, S. 2022. Economics of Vetiver cultivation increase in the income of household from marginal land in Madhepura district of Bihar. *Econ. Aff*., **67**(01 Spl.): 59-64.