

Policy Report

Substantial Reduction in
Export **LENTIL**

District Sitapur (U.P.)

SURVEY REPORT



Directorate of Research

Chandra Shekhar Azad University of Agriculture & Technology
Kanpur

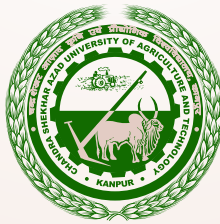
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on

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Dr. D. R. Singh
Vice-Chancellor

चन्द्रशेखर आजाद कृषि एवं प्रौद्योगिक विश्वविद्यालय

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Foreword

Lentil (*Lens culinaris* sp. Medik) is the second most important *rabi* season food legume next only to chickpea in India with an acreage of 1.5 million ha and production of 1.6 million tones. In Uttar Pradesh it is grown on 478 thousand ha with production of 497 thousand tones, the average productivity being 997 kg/ha. In Sitapur district lentil occupies an acreage of 16192 ha with productivity of 714 kg/ha and grown in rainfed areas on marginal and sub-marginal lands resulting the crop suffers from terminal moisture and heat stress.



Lentil like other pulses has remained neglected crop and over 90% of lentil are grown in rainfed areas on marginal and sub-marginal lands generally poor in soil fertility. Apart from agro-ecological constraints, lentil crop is prone to diseases like rust, wilt and root rot. These biotic stresses have been reported to reduce the productivity of lentil by 20-25% and exports also. Other important constraints are terminal moisture and heat stress, non-availability of quality seeds of improved varieties, non-adoption of improved production technologies, inadequate and unbalanced use of fertilizer, delayed sowing, poor plant population due to low seed rates and weed infestation. Hence, present investigation was planned to investigate the constraints in production and substantial reduction in export.

It is matter great pleasure in presenting the study report on “**Substantial reduction in export of Lentil from district Sitapur**”. I would like to record my appreciation for wfforts made by Dr H.G. Prakash Director Research and Dr Manoj Katiyar Dr Manoj Katiyar, Dr S. K. Vishwakarma, Dr Sanjay Singh, Dr Pradeep Kumar Bisen and Dr N. K. Tripathi. I hope that the information presented in this study report would be found useful by policymakers, researchers and students involved in the field of pulses.

Dated: August 19, 2021


(D.R. Singh)



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EXECUTIVE SUMMARY

- Lentil (*Lens culinaris* sp. Medik) is the second most important rabi season food legume next only to chickpea in India with an acreage of 1.5 million ha and production of 1.6 million tones. In Uttar Pradesh it is grown on 478 thousand ha with production of 497 thousand tones, the average productivity being 997 kg/ha. In Sitapur district lentil occupies an acreage of 16192 ha with productivity of 714 kg/ha.
- In Sitapur district, the lentil is grown in rainfed areas on marginal and sub-marginal lands generally poor in fertility and the crop suffers from terminal moisture and heat stress. Farmers generally grow local varieties which is a mixture of several grain sizes and susceptible to rust, wilt and root rot. Non-availability of quality seed of improved varieties remains the major impediments in enhancing production. Farmers do not adopt improved package of technologies and the area lacks rural based dal mills. There are no organized markets for sell of farmers' produce.
- Until 2009-10, there had been substantial export of lentil from Sitapur district to Arabian countries which slowly and slowly slowed down because the farmers gradually decreased the area under lentil cultivation and switched over to sugarcane and toria cultivation in rabi season with the result a sufficient quantity of lentil was not available to exporters to export.
- During 2012-13, the market price of pulses particularly of pigeonpea suddenly increased, the GoI imposed a ban on export of pulses to meet its domestic requirements, with the result the export of lentil from Sitapur reached to stand still. The four exporters out of five closed down their business. The Mandi charges in U.P. are also very high 2.5% against 0.35% in as many as 16 states in the country.
- In order to improve the export of lentil and in the current

scenario of globalization and increasing competitiveness, post harvest management and value addition will be necessary. Cost effectiveness in production and post harvest handling through application of latest technologies will be required. The agro-processing facilities should preferably be located in the vicinity of production in rural areas which will greatly promote farm employment.

- Of course recently, the Mandi charges have been reduced from 2.5% to 1.5% by U.P. Govt, however, still there is a necessity to reduce it further as is prevalent in other states. Van on export of lentil is lifted and single wagon loading facilities are made available to exporters.
- Adequate marketing facilities and support are made available to farmers so that they get the remunerative prices of their produce.
- There is a still need to make MSP lucrative to the extent that lentil cultivation fetches equal returns to the farmers as in case of cereals
- There is no proper grading system for lentil and grading is done by visual inspection. The absence of more stringent quality standards reflects the relatively low income and high price sensitivity of most of the consumers. Govt should initiate an special quality category system to serve certain niches in trade market.
- Strict imposition of holding limit of lentil with traders need to be implemented. This will serve farmers from distress selling to traders.

INTRODUCTION

Lentil is one of the most nutritious rabi season food legumes and ranks next only to chickpea in India. It is grown throughout northern and central India for grains which are mainly used as dal (whole or dehulled) as well as various other culinary preparations. Lentil contains above 25% protein with abundant lysine, 0.7% fat, 2.1% mineral, 0.7% fibre and 59% carbohydrate. It is a rich source of phosphorus and carotene. Lentil have the highest phenolic, flavonoid and condensed tannin content. The seed coat of lentil is very rich in catiechins, procyanidins dimmers and trimers. It's straw is very good as feed for animals. Being a leguminous crop its ability to fix atmospheric nitrogen and do carbon sequestration to improve soil health is undeniable. Lentil is generally grown as rainfed crop during rabi season after rice, maize, pearl millet or kharif fallow. It is also grown as inter-crop with barley, linseed, mustard and autumn planted sugarcane. In north eastern parts of country, lentil is cultivated as paira crop with rice in which seeds of lentil are broadcasted in the standing crop of rice 7-10 days before its harvest. It is grown on a wide range of soils from light loamy sand to heavy clay soil in northern parts and moderately deep black soils in central India.

Global scenario of Lentil production

Lentil (*Lens culinaris* ssp. *culinaris* Medik) an important cool season legume crop grown on 4.4 million ha in more than 50 countries across the globe mainly in Indian sub-continent with 4.7 million tonnes production. India ranks first in area and production. During the last five decades, the crop has experienced spectacular growth (>5 tonnes) in global production, thanks to expansion of the crop in new areas and doubling the productivity from 550 to 1077 kg/ha. This was possible due to adoption of improved varieties emerging from international and national programmes with adaptation to different target environments. Three top ranking countries viz; India, Turkey and Canada experienced an increase in their productivity and production. Replacement of fallow by

appropriate varieties became instrumental for spread of lentil cultivation in Turkey. Bangladesh, China, India, Iran, Nepal, Pakistan, Syria and Turkey are the major producers in Asia. Among lentil producing countries, the productivity is lowest in France and highest in China. The genetic base of lentil varieties remains narrow due to repeated use of handful germplasm. Pedigree analysis of lentil varieties released in India confirmed the extensive and repetitive use of a few genotypes as one of the parents in hybridization. Mainstreaming wild species and land races in the process of trait discovery and deployment is necessary to make lentil varieties adapted to challenges posed by biotic and abiotic stresses under climate change and variability.

Lentil seeds are generally black/brown or tan in colour and is classified as microsperma type (small seeded) which is particularly found in Southern Asia and macrosperma type (large seeded) native to WANA region (West Asia and North Africa) and Southern Europe. In the Western countries, green seeded is very popular especially in Canada and USA. In the international trade, small seeded, red cotyledons lentil is dominated by Australia, Canada and Turkey and in large seeded, green lentil by Canada and USA. The major importers of red lentils are South Asian countries, Egypt and middle East. Southern Europe and South America import large seeded yellow lentils

Indian scenario of Lentil production

3.1 Trend in area, production and productivity of lentil

In India, lentil is the second most important rabi pulse crop next only to chickpea. It occupies 1.5 million ha area with production of 1.6 million tones. Trend in area, production and productivity of lentil is depicted in Fig1. It is mainly cultivated in the states of Madhya Pradesh, Uttar Pradesh, Bihar and West Bengal. These states contribute 90% to the total production. The contribution of different states in area, production and productivity of lentil is given in Fig 2

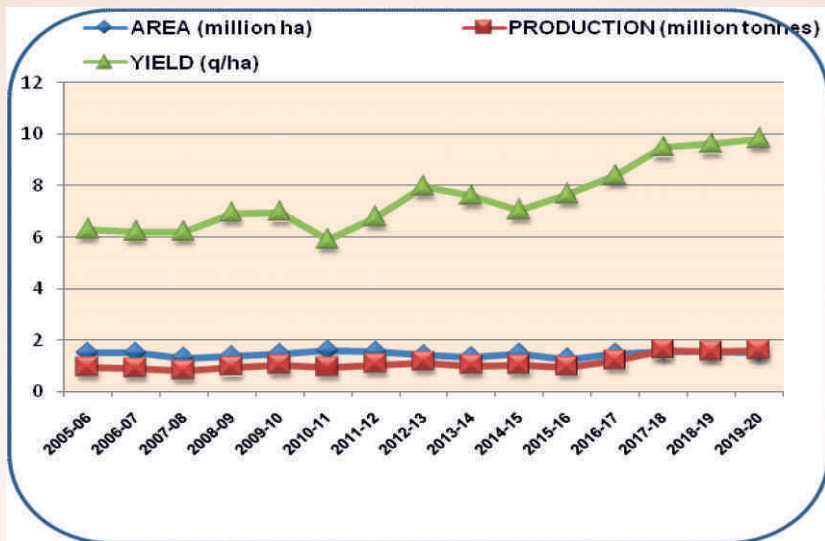


Fig 1. Trend in area, production and productivity of lentil in India

3.2 Trend in area, production and productivity of lentil in different states of India

It is generally grown as a rainfed crop on marginal lands. In most of the regions, it is cultivated after maize or rice. In West Bengal it is grown after jute. In cotton belt of Maharashtra and Madhya Pradesh, it follows cotton. In Bundelkhand region of Uttar Pradesh, it is cultivated under rainfed monocrop situation. In Central Madhya Pradesh, eastern plains of Rajasthan and Bundelkhand region, lentil is grown as mixed/intercrop with mustard and linseed. In low lands of Uttar Pradesh, Bihar, Chhattisgarh and West Bengal, lentil seeds are broadcasted in the standing crop of rice 7-10 days before harvesting (relay cropping) to capitalize on residual moisture and ensure timely sowing. In *tarai* region of Uttar Pradesh, it is also inter-cropped with winter sugarcane.

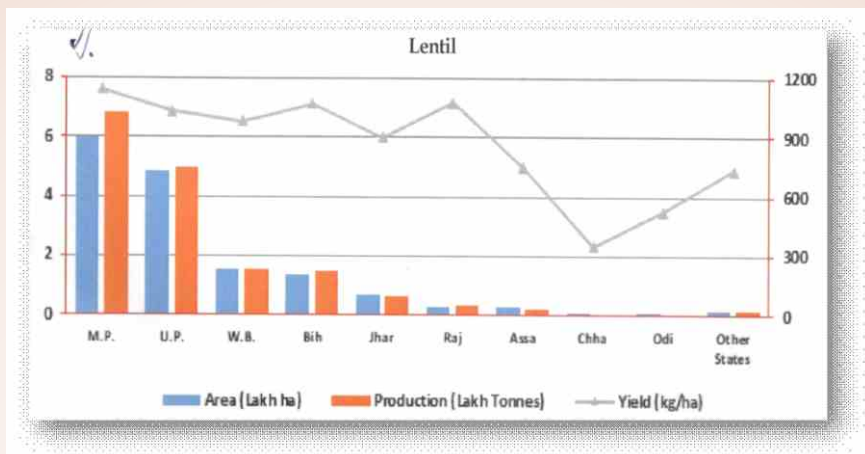


Fig. 2 – Trend in area, production and productivity of lentil in different states of India

3.3 Trend in area, production and productivity of lentil in U.P.

In Uttar Pradesh lentil is grown on an area of 478 thousand ha with production of 497 thousand tones (Fig. 3), the average productivity being 997 kg/ha (2019-20). Five are the major lentil growing districts in the state.

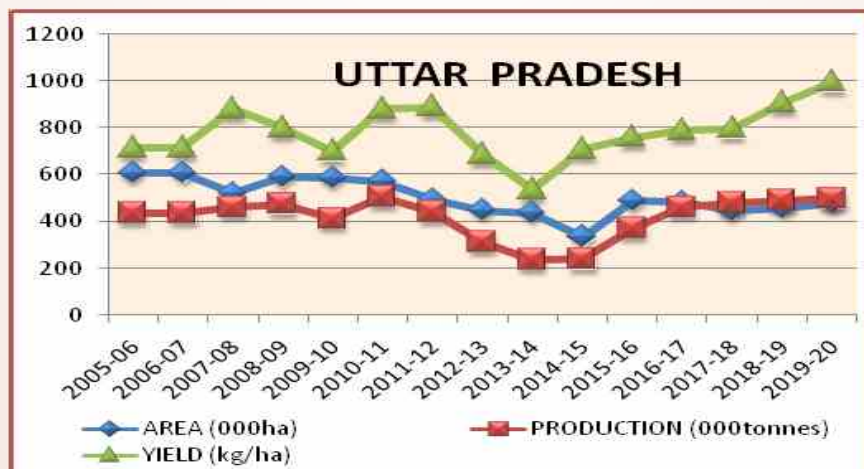


Fig. 3–Trend in area, production and productivity of lentil in U.P.

METHODOLOGY

5.1 Study Area :

Central Plain Zone of Uttar Pradesh is consisting of 16 districts covering 6.3 thousand ha acreage of Lentil with production 5.9 thousand metric tones. Out of 16 districts of Central Plain Zone, Sitapur distt. study reasons for substantial reduction in export of Lentil from Sitapur to Arabian countries. Sitapur districts is consist of seven Tehshil viz. Maholi, Sitapur, Laharpur, Biswanwa, Sidhauli, Mahmudabad. There are Nineteen blocks i.e. Maholi, Fisherman, Godlamaun, Aaliyah, Hargaon, Persian, Kherabad, Laharpur, Sacraan, Kasmanda, Sidhauli, Mahmudabad, Rampuramathura. Ten villages from each of two blocks were randomly selecte.



Map of Uttar Pradesh and district sitapur

5.1.1 Sources of Data :

Secondary data were collected from Uttar Pradesh Ke Krishi Akare, Annual Publication Department of Uttar Pradesh, Government of Uttar Pradesh. Primary data was collected from farmers practicing the lentil cultivation and Sankhiki Patrika. For selection of farmers, two blocks and from each block five villages was selected randomly. All the farmers in a village were grouped into two categories viz. marginal and small on the basis of their size of holdings.

5.1.2 Survey conducted

To work out the reasons for almost nil export of lentil from Sitapur district to Arabian countries, which was substantial about 7-8 years ago, a team comprising Dr. Manoj Katiyar, Asstt. Pulses Breeder, Legume Section CSAUA&T, Kanpur and Scientists Dr. S.K. Vishwakarma, Dr. Sanjai Singh, Dr. Pradeep Kumar Bisen, Dr. A. K. Tripathi of Krishi Vigyan Kendra (KVK), Sitapur conducted a survey in the villages Laharpur, Koraisapavali, Kakrahi, Mahrasa, Harirampur, Koraima, Manpur, Ebhramipur and Nayagaon and in each village farmers (marginal, small and large on the basis of their land holding size) were consulted.

5.2 Selection of sample blocks and villages :

Out of 16 blocks in Sitapur districts, Laharpur and Hargaon blocks were selected where lentil is comparatively grown on large scale. In block Laharpur villages Laharpur, Koreimapavali, Bhaisaha, Ebrahimipura and Nayagaon and in block Hargaon villages Kakrahi, Maharasa, Harirampur, Koraima and Mahadevara were selected for recording relevant data. In all 10 villages were selected (Table 1).

Table 1 : Sampled blocks and villages

S l . No.	District-Sitapur			
	Block-Laharpur		Block- Hargaon	
	Village	No. of Farmers	Village	No. of Farmers
1.	Laharpur	10	Kakrahi	15
2.	Koraimapavali	10	Mahrasa	15
3.	Bhaisaha	10	Harirampur	15
4.	Ebrahimipur	10	Koraima	15
5.	Naya Gaon	10	Mahadevara	15

5.3 Selection of Farmers

For selection of farmers, the criteria was to select marginal and small farmers. From block Laharpur 32 marginal and 18 small and from Block Hargaon 60 marginal and 15 small farmers were selected. In all 125 farmers were selected. The farmers who take cultivation of lentil and who were responsive were preferred. (Fig.5)



A team of scientists interacting with farmers

5.2.1 Size of holdings of sampled farmers:

The size of holdings of selected farmers is given in table 2.

Table.2 : Size of holding of sampled farmers

Sl. No.	Block-Laharpur			Block- Hargaon			Over both the blocks	
	Type of farmer	No.of farmers	Average size of holding (ha)	Holding (ha) Type of farmer	No. of Farmers	Average size of holding (ha)	No. of farmers	Average size of holding (ha)
1.	Marginal	32	0.73	Marginal	60	0.79		
2.	Small	18	1.39	Small	15	1.10	33	1.24

It is evident from the table that out of 125 farmers sampled, 92 were marginal and 33 small with average land holding of 0.76 ha and 1.24 ha, respectively.

5.4 Selection of Exporters:

In district Sitapur, there are five exporters who do business of purchasing lentil from farmers, processing it, preparing dal and exporting to Arabian Countries. All the five were consulted, understood their business method and the problems faced by them in doing so.



Scientist visiting & interacting with exporters

5.5 Selection of Policy personnels:

The personnels of Deptt. of Agriculture of Sitapur district including Dy. Director, Distt. Agriculture



Officers were consulted and interacted with them about the lentil varieties which do they recommend to farmers, the quantum of seed distribution and other inputs being supplied. The problems which do they resolve being raised by farmers from time to time.

RESULTS AND DISCUSSION

6.1 Land use pattern in Sitapur district

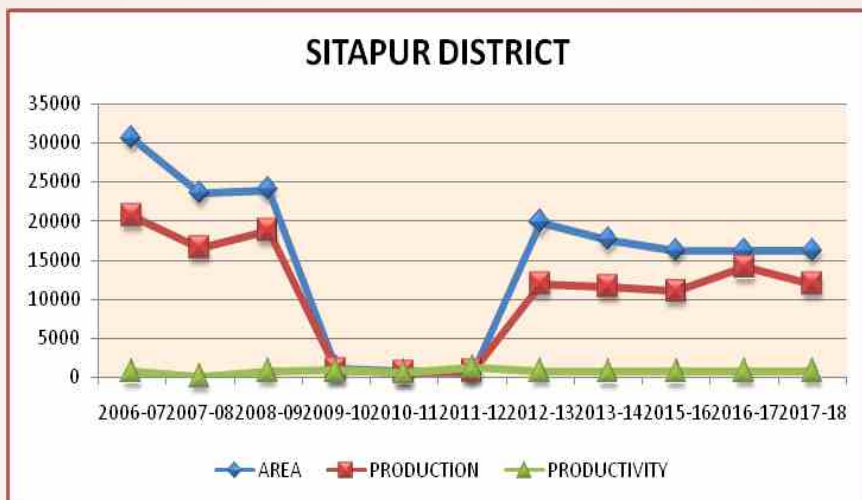
The land use pattern of Sitapur district is given in Table 3. It is evident from the table that total reported area of the district is 5,73,891 ha out of which 5772 ha (1.02%) is under forest cover and 5767 ha (1.01%) is usar (reh). Net sown area is 4,44,424 ha which is 77.44% of total area of the district. The area sown more than once is 2,63,934 ha and the cropping intensity of the district is 148.24%.

Table 3 : Land use pattern in Sitapur district

Item	Area (ha)	% age of total reported area
Total reported area	5,73,891	-
Forest cover	5,772	1.02
Usar	5,767	1.01
Fallow	72,315	12.60
Net sown area	4,44,424	77.44
Area sown more than once	2,14,374	37.35
Total rabi area	2,63,934	-
Cropping intensity	148.24%	-

6.2 Trend in area, production and productivity of lentil in Sitapur district

In Sitapur, lentil is grown on an area of 16192 ha with productivity of 714 kg/ha. Looking at the trend in area and production, in the district, there had been continuous decrease in area. It was 30,609 ha in 2006-07 now (2018-19), it is 16192 ha, almost a half.



Trend in area, production and productivity of lentil in Sitapur district of U.P.

6.3 Production constraints:

Lentil like other pulses has remained neglected crop and over 90% of lentil are grown in rainfed areas on marginal and sub-marginal lands generally poor in soil fertility. Apart from agro-ecological constraints, lentil crop is prone to diseases like rust, wilt and root rot. These biotic stresses have been reported to reduce the productivity of lentil by 20-25%. Other important constraints are terminal moisture and heat stress, non-availability of quality seeds of improved varieties, non-adoption of improved production technologies, inadequate and unbalanced use of fertilizer, delayed sowing, poor plant population due to low seed rates and weed

infestation. A large number of area and season specific high yielding varieties and improved production technology have been developed and the varieties have proven their potential in farmers' fields as also in large scale demonstrations. It has been demonstrated that improved varieties have positive impact of 15-20% in increasing lentil production. These improved varieties could not reach to farmers due to poor TOT mechanism

Another major constraint is poor processing and marketing facilities. Lack of processing facilities at the village level compels farmers to sell their produce at relatively low price. Marketing support is inadequate due to lack of organized markets and high fluctuating market prices particularly just after harvest of the crop. The following conclusions were drawn

- Farmers generally grow local varieties which is a mixture of several grain sizes and is susceptible to rust, wilt and root rot
- It is grown on rainfed areas on marginal land
- The crop suffers from terminal moisture and heat stress
- Non-availability of quality seed of improved varieties
- Farmers do not adopt improved package of production technologies including seed treatment and plant protection measures
- Delayed sowing, poor plant stand and weed infestation
- Inadequate and imbalanced use of fertilizers
- There are no organized markets
- There are no proper seed storage facilities. Grains suffer from high infestation with stored grain pests
- The area lack rural based dal mills
- The farmers are forced to sell their produce to traders at the price fixed by them.

Measures to improve production

- Extensive extension programme should be taken up to popularize high yielding biotic and abiotic tolerant/resistant varieties of lentil through demonstrations/field days and farmers' trainings
- Production technologies should be demonstrated and popularized in a mission mode
- Adequate quantity of quality seed of improved varieties is made available in time.
- Emphasis on post-harvest processing and value addition
- Availability of agro-processing facilities preferably in rural areas
- Adequate marketing support
- Govt. policy support

6.4. Technological backup available Varieties recommended

Variety	Productivity (q/ha)	Maturity (Days)	Specific features
KLS 218	18-20	125-130	Small seeded, rust resistant
KL 320	15-18	125-135	Small seeded, rust & wilt resistant
NM 1	20-22	135-140	Medium seed size, rust resistant
PM 4	18-20	135-140	Small seeded, rust resistant
KLS 122	18-20	105-115	Small seeded, rust & wilt resistant
KLS 09-3	18-20	105-110	Small seeded, rust & wilt resistant
IPL 315	12-15	129-130	Small seeded, rust & wilt resistant
IPL 321	14-15	125-135	Small seeded, rust & wilt resistant

Sowing time	<ul style="list-style-type: none"> • Mid October to Mid November for timely sown • Up to first week of December in case of late sowing
Seed rate	<ul style="list-style-type: none"> • 40-4 kg/ha for timely sowing • 40-50 kg/ha for late sowing and uttera cultivation
Seed treatment	Rhizoiium culture 250g/ 10kg of seed
Fertilizer	20N + 40P + 20K + 20 S /ha
Irrigation	One light irrigation before flowering and one at grain filling stage
Weed control	Pendimethalene 30% EC@3.3 lit. /ha within 2-3 days of sowing



Recommended varieties of lentil for Sitapur districts

6.5 Exporters Problems/ constraints:

Upto 2009-2010, there was a substantial export of lentil to Arabian countries, with the passage of time slowly and slowly the export slowed down because of :-

1. Farmers gradually reduced the area under lentil cultivation because of extremely poor yields caused by terminal moisture and heat stress and recurring incidence of wilt
2. Farmers shifted to sugarcane and toria cultivation in rabi season.
3. Only very small acreage left under intercropping of lentil with sugarcane

4. Sufficient quantity of lentil was not available to exporters for export

Reasons for substantial reduction in export

During 2012-13, the market prices of pulses particularly of pigeonpea, suddenly increased, the GOI imposed van on export of pulses to meet its domestic requirements with the results the export of lentil from Sitapur reached to standstill. The four exporters out of five closed down their business.

The Mandi charges in U.P. are also very high 2.5% against 0.35% in as many as 16 states in the country.

6.6 Measures to improve export

Once the adequate quantity of lentil is available in the region, the export programme can regain by the exporters provided:

1. Of course, recently the Mandi charge has been reduced from 2.5% to 1.5% by U.P. Govt, however, still there is necessity to reduce it further as is prevalent in other states
2. Adequate marketing facilities are made available to farmer so that they get the remunerative prices of their produce.
3. Van on export of lentil is lifted
4. Single Wagon loading facilities are made available to exporters.

Also, in the current scenario of globalization and increasing comprehensiveness, post-harvest management and value addition will be necessary to improve the export, which is quite low. Cost-effectiveness in production and post harvest handling through the application of latest technologies will be necessary. The agro-processing facilities should preferably be located in the vicinity of production in rural areas, which will greatly promote the farm employment. Post-harvest processing and value addition will

encourage the production by masses against mass production in factories located in urban areas. Agricultural cooperatives and Gram Panchayats must play a leading role in this effort. In doing so, the needs of small farmers should be kept in mind.

6.7 Policy support:

Realizing the yield gaps due to inadequate SRR and poor dissemination of production technologies, several programmes were launched during past period to boost pulse production in the country with technological backup and interventions of NARS and well planned financial support of Govt of India. Doubling of farmers' income should not be viewed as same as doubling of farm output. The policy frame work has to ensure the market stability and remunerative prices of farm output. Increased output do not automatically translate into higher farm incomes. In fact, there can be a paradoxical situation of food loss and income loss, even suitable agro-logistics and market support are absent.

Inclusion and adoption of improved varieties of different pulse crops under different farming systems also helped in increasing productivity per unit area. The policy initiatives such as increasing the minimum support price by govt. also encouraged the farmers to take up pulse cultivation as a profitable venture. Quality seed acts as a prime input to realize the potential of all other inputs. However, non-availability of quality seeds remains one of the greatest impediments in improving productivity.

Investments in MSP for pulses can incentivize the farmers to adopt recommended package of practices and realize higher productivity. In order to give much needed fillip to pulse production, the government has included pulses in National Food Security Mission (along with wheat and rice). Over the past five years, the increase in MSP was tremendous in each of pulse crop and their inclusion in NFSM will further give the much required

impetus to their vertical and horizontal growth. The following figure-5 depicts the progressive increase in support of lentil in the country.

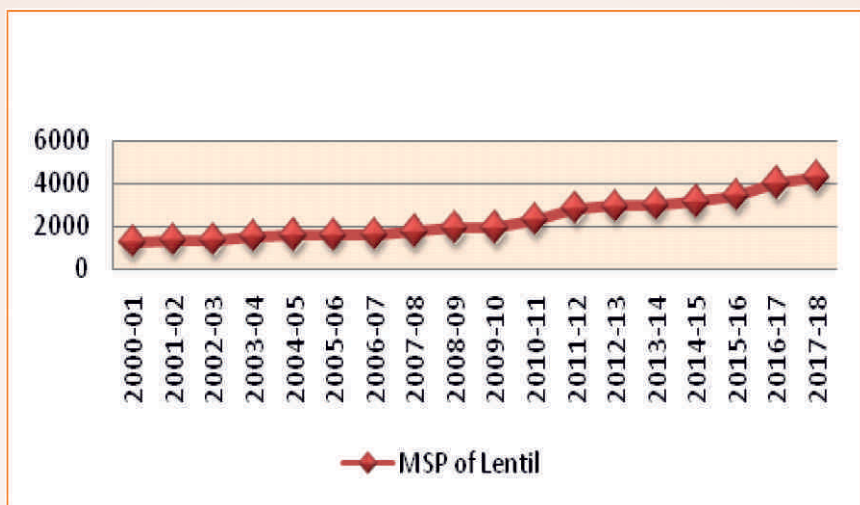


Fig. 5: MSP of lentil in different years

6.8. Required policy interventions

- There is still need to make MSP lucrative to the extent that lentil cultivation fetches equal returns to the farmers as in case of cereals
- The small scale dal processing mills and indigenous processing of small farm produce in rural areas need to be promoted
- The Govt needs to invest on reducing post-harvest losses and provide adequate institutional support.
- The market for lentil are thin and fragmented, new niches need to be identified and appropriately supported by improved technologies and policies.

- There are numerous layers in marketing chain between farmers and consumers. The Govt should take steps to decrease the number of intermediaries between producers and consumers.
- There is no proper grading system for lentil and grading is done by visual inspection. The absence of more stringent quality standards reflects the relatively low income and high price sensitivity of most of the consumers. Govt. should initiate a special quality category system to serve certain niches in the trade market.
- Strict imposition of holding limit of lentil with traders need to be implemented. This will serve farmers from distress selling to traders



CONCLUSION

From the study it is concluded that the Sitapur district has a great export potential of lentil provided cost effectiveness in production and post-harvest handling through application of latest technologies are made available. The agro-processing facilities preferably are located in the vicinity of production in rural areas. Adequate marketing facilities and support are made available to farmers. MSP still need to be made lucrative to the extent that lentil cultivation fetches equal returns to the farmers as in case of cereals Mandi changes needs to be still reduced.





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