Policy Report

Constraints in GARLIC Production

District Etah & Mainpuri (U.P.)

SURVEY REPORT

Directorate of Research

Chandra Shekhar Azad University of Agriculture & Technology

Kanpur

Policy Report

on

Constraints in
Garlic Production
District Etah & Mainpuri (U.P.)

Directorate of Research

Chandra Shekhar Azad University of Agriculture & Technology

Kanpur

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Foreword

Chandra Shekhar Azad University of Agriculture and Technology, Kanpur came into existence in 1975 and University has been instrumental in enhancing agricultural productivity of the nation. Its my privilege to serve as Vice Chancellor of this prestigious University and present the study report on "**Constraints in Garlic production in district Mainpuri and Etah".** Garlic (Allium sativum) is the second important bulb crops grown after onion and contributes 14.0 % of world area and 5.0 % of production. India, although rank second by area and production, is the lowest as far as productivity is concerned (5.29 t/ha). In India area, production and productivity and per capita availability of garlic have improved by about 30.89%, 53.51%, 12.50% and 31.25% respectively in past ten years. The other major garlic growing states are Gujarat, Rajasthan, Odisha, U.P. and Maharashtra. In India per hectare yield are higher in Punjab (16.67 t/ha) followed by H.P. (13.14 t/ha) Haryana (12.38 t/ha) J&K (8.16 t/ha). Earlier the coverage of crop in district Mainpuri and Etah was very high. Despite its importance and significant potential to boost production; its production, productivity and supply of the crop to the market is very limited and remain seasonal resulting low profitability. The current study is therefore designed to investigate the trend, potentials and constraints of garlic production. The survey was conducted in the main garlic producing areas of the Uttar Pradesh. Data was collected using structured questionnaire and group discussions through participatory rural appraisal method with garlic growers and interviews with garlic growers. The result indicated that Due to lack of awareness/improved high yielding varieties/ technology, farmers are not able to take high yield.

I place on record my appreciation to the endeavour of Dr H.G. Prakash Director Research and Team of scientists who involved in the study and putting the information together and bringing out this study report in the present shape.

Dated: August 19, 2021

(D.R. Singh)

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EXECUTIVE SUMMARY

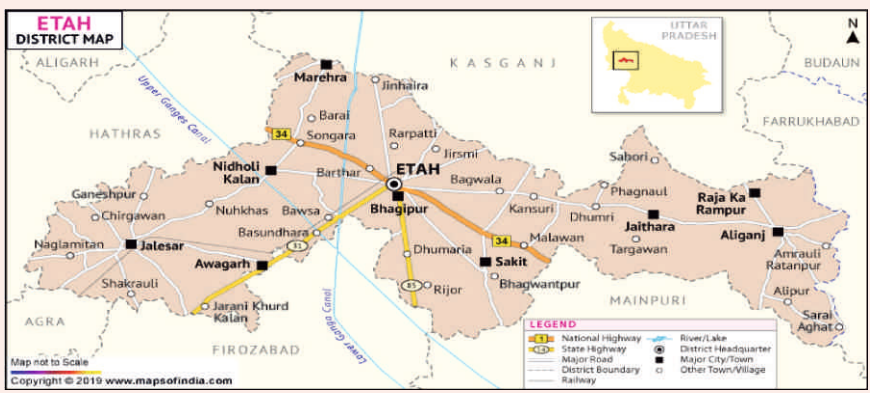
1. Like onion it is cultivated throughout the country used for flavoring and seasoning vegetables and meat dishes. Garlic oil which is brown or yellow in colour, contains Allyl-propyl-disulphide and other sulphur containing compound Alin. The oil is used in paralytic and rheumatic and infections and also in several food preparations such as chutneys, pickles, curries, vegetables and tomato ketchup. The powder of garlic can be used for the above mentioned preparations. The green fresh leaves are also used for seasoning purpose as well as chutney and salad dishes. Garlic has many medicinal uses also. Antibiotics have been prepared from its extract. It is used in stomach troubles headache, toothache, ear-ache, sore eyes and numerous other diseases. It is applied in nose in cases of fainting. It is very useful in infantile convulsions and other nervous and spasmodic infections. During winter, if it is eaten, toward off attacks of rheumatism and neuralgia. The oil in which garlic has been dried proves excellent for application against scabies and maggots infesting ulcers. Its rubbing over ringworm gives relief to the patients. By regular use of garlic harmful bacteria are killed in digestive system. Its edible portion contains 62.8 % moisture, 6.3% protein, 0.7 % fat, 1.0 % mineral matters. 0.8% fibers, 29.0% carbohydrates, 0.03% calcium, 0.31% phosphorthanous and 0.0013% iron.

2. In our state this university decided to workout study in Etah and Mainpuri district. KVK Mainpuri governed by this university, who selected Block-Aliganj, Sakeet, Sultanganj, Kurawali, Jageer and Ghirogh due to maximum area covered under garlic production. Some

village viz., Dhatingada, Karanpur, Alipur, Salempur, Nazirpur, Ramnagar, Isara, NaglaDhura, Sahara, Pal, Rajalpur, Naugaon, Sujrai, Parigawan, and Aunchhaare well known for the huge production of garlic.

3. Data collected on country level and also on state level are presented billow, which shows that, both district are very less affected from different factors.

4. From this study it seems that, there is a need of improved varieties and advance production technologies.



INTRODUCTION

Garlic (*Allium sativum* Linn.) is one of the important bulb crops grown and used as a spice or a condiment throughout India. It is also an important foreign exchange earner for India. It is consumed by almost all people who take onion. Garlic has higher nutritive value than other bulb crops. Ascorbic acid content is very high in green garlic. The uninjured bulb contains a colourless, odourless water soluble amino acid allin. On crushing the garlic bulb the enzyme allinase breaks down allin to produce allicin of which the principal ingredient is the odoriferous diallyl disulfide.

According to the Unani and Ayurvedic pattern as practiced in India, garlic is carminative and is a gastric stimulant and thus helps in digestion and absorption of food.

Garlic (*Allium sativum L.)* is a world's favorite, versatile horticultural commodity consumed for culinary, medicinal and antimicrobial purposes and is being cultivated for 5000 years. The aroma in garlic is due to volatile organosulfur compound 'Allicin' that makes it popular in daily cooking in Indian household and rest of the world, especially, Asia and the Mediterranean region. Its medicinal value has been appreciated especially, in the Unani and Ayurvedic systems of medicine for digestive system disorders, blood cholesterol, sterility, cough etc. The antibacterial action by virtue of allicin has been found to have potential even in organic farming for treatment of plant diseases. The principle producers of garlic are China, Egypt, India, Turkey, South Korea and Spain.

In India, garlic is commercially cultivated throughout the country. But the long day garlic is cultivated only in temperate region especially in Jammu and Kashmir, Himachal Pradesh, and Uttarakhand. This type requires long photoperiod (13+ hours)

with warm temperature (20-25 °C) for bulbing. In temperate India, the planting time for long day garlic falls around September-October. The increase in day length from around February following the decline in snowfall and rise in temperature till the month of May is congenial for bulbing and bulb development.

The low productivity is mainly attributed to cultivation of largely the short day genotypes accompanied by inefficient production and protection management practices, poor post harvest management and unpredictable market situation. The long day type garlic is far more productive than short day type probably due to more availability of photo-synthetically active radiation (PAR). The low productivity and yield in India is because main garlic supply comes from the states that are growing intermediate to short day type clones while most of the countries showing greatest production and productivity lie at higher latitudes and grow long day garlic. In India, there are small areas in the states of HP, J&K and Uttarakhand having long day conditions suitable for long day garlic cultivation where there is a great need for development of more long day garlic cultivars and to promote them over large area along with suitable production and post harvest package.

Garlic is a difficult crop in a sense that it imposes challenges like sterility, limited genetic variability, large genomic size and bolting, biotic and abiotic stresses like viruses, fungal and bacterial rots, pests, drought, and erratic temperature to the producer as well as the breeder. However, despite these natural obstacles, few studies have been conducted that led to the discovery of facultative apomicts, induction of sexual reproduction by manipulation of environment to enhance genetic variability and elucidate genetic/molecular understanding for crop

improvement and control on bolting behavior. Despite the present problems, long day garlic holds promise for its productivity, quality, genetic and molecular understanding, and genetic improvement aided by biotechnological means and international commerce.

Status of garlic research in India and elsewhere There are unique researchable aspects of garlic improvement in general and long day garlic in particular that pertain to Indian as well as world garlic research community. In order to provide for its ever increasing population, meet export and processing demands by the year 2050, India will have to produce 30 lakh tone of garlic [8]. The increase from present 12.5 lakh tone production will entail the need for genetic improvement via creation of variability, better plant protection measures, improved production technology, molecular understanding and explorations and introductions.

METHODOLOGY

Selection of Block

Uttar Pradesh state is consists 75 districts covering 18 commissionaires. Etah comes under Aligarh commissionary however Mainpury under Agra commissionay. Different villages of both districts were randomly selected covering 50 farmer samples for study.

Study Area

In India area, production and productivity and per capita availability of garlic have improved by about 30.89%, 53.51%, 12.50% and 31.25% respectively in past ten years (Table-1). As per NHRDF estimates the annual area under garlic during the year 2005-06is 114050 ha and production is 562670 tones with average productivity of 4.93 t/ha. Among different states in India, M.P. is the leading state accounting for more than 25% of area and 22% of production with average yield of 4.31 t/ha.

Table-1: Area, Production and Productivity in India

Particulars	1994	2004	Increase %
Area (million ha)	0.10	0.13	30.89
Production (million t)	0.40	0.62	53.51
Productivity (t/ha)	4.25	4.78	12.50
Per capita availability (kg/year)	0.44	0.58	31.25

The other major garlic growing states are Gujarat, Rajasthan, Odisha, U.P. and Maharashtra. As depicted in table 2 & 3, it envisaged that in India per hectare yield are higher in Punjab (16.67 t/ha) followed by H.P. (13.14 t/ha) Haryana (12.38 t/ha) J & K (8.16 t/ha).

Table-2: Area, Production and Productivity in Etah & Mainpuri district

District	Year	Area (ha)	Production (t)	Yield (t/ha)
Etah	2011-12	4961	25638	5.17
	2012-13	4364	22667	5.19
	2013-14	4695	27508	5.86
	2014-15	4314	24988	5.79
	2015-16	4733	27275	5.76
	2016-17	4276	27194	6.36
	2017-18	4476	23970	5.36
	2018-19	4499	29807	6.63
Mainpuri	2011-12	8112	41923	5.17
	2012-13	8536	44336	5.19
	2013-14	7865	46081	5.86
	2014-15	6937	40181	5.79
	2015-16	8398	48395	5.76
	2016-17	7970	50686	6.36
	2017-18	7941	42527	5.36
	2018-19	7822	51824	6.63

Table-3: Samples district and villages

S. No.	District			
	Mainpuri	Etah		
	Name of village	No. of farmers (samples)	Name of village	No. of farmers (samples)
1	NaglaDhura	2	Dhatingda	5
2	Chandpur	1	Alipur	13
3	Pal	2	Salempur	5
4	Nazirpur	6	Umarpur	1
5	Ishara	2	Ram Nagar Rajaur	3
6	RajalpurSonai	2	Karanpur	1
7	Sujrai Dehat	2		
8	Parigawan	1		
9	Naugaon	1		
10	Sahara	2		
11	Salempur Kunwarpur	1		
12	Aunchha	2		

Affecting factors for low productivity

1. Not getting good market price during last year.
2. Data are not reliable because covered area under garlic not mentioned by revenue staff.
3. Due to lack of cultural practices, leaves are yellowish resulted undeveloped bulb.
4. There is no any processing unit/value addition unit/ pharmacy/small scale industry at Mainpuri and Etah of garlic however, it may attract to the growers.
5. New generation not interested in cultivation.
6. Some marginal farmers are growing garlic continuously in same field.
7. Lack of awareness in growers. They are not in touch with Department of Horticulture U.P.
8. Adoption of only small cloves local varieties.
9. During storage 40% drying however about 15% rotting.

Hansa *Does Fera*

CONCLUSION

It seems from the data that, productivity improves during last 10 years. Due to lack of awareness/improved high yielding varieties/ technology, they are not able to take high yield. Frequent farmers training programmes/ frontline demonstrations must be conduct there to enhance the covered area under garlic cultivation.

REFERENCE

1. www//aps.dac.gov.in
2. NHB Database

Note

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