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A Study on Growth And Performance of Food Grains in India With Special Reference To Maize

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Abstract: In India, maize is the third most important food crops after rice and wheat. Maize in India that contributes nearly 10 per cent in the national food basket and more than Rs.100 billion to agricultural GDP at current prices. In addition to staple food for human being and quality feed for animals maize services as s basic raw material as an ingredient to thousands of industrial products that include starch, oil, protein, Beverages, food, sweet, cosmetic, film, textile, paper industries etc . Most of the studies mainly focused on overall agriculture food grains. Among the various food crops, the maize is used for different purposes as Valued Added Products in India. Therefore, it is imperative to understand the economic factors like production, consumption and India's export direction of maize.

Keywords: Maize, Production, Consumption, Exports, Agriculture, Crops

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I. INTRODUCTION

Maize known as queen of cereals also called corn which is one of the most important cereal crops of the world. Maize is preferred in poultry feed because of its easy availability. India has grown to be the fifth largest egg producer globally and 18th largest producer of broiler chicken. In the poultry feed industry, maize constitutes about 60 percent of the feed therefore, is a critical raw material. Traditionally, most maize went to livestock as feed but modern technology has helped it find new uses in various food industries in India. Maize has become a staple food in many parts of the world, with total production dominating that of wheat or rice. However, not all of this maize is consumed directly by humans. Some of the maize production is used for corn ethanol, animal feed and other maize products, such as corn starch and corn syrup. More than half of the maize area in Punjab, Karnataka, Andhra Pradesh, and Madhya Pradesh are irrigated. It is observed that Maize usually grows well under temperatures varying from 21 degree Celsius to 27 degree Celsius. It exports around 5 lakh tones and markets the remaining 5 lakh tons locally.

II. REVIEW OF LITERATURE

2.1 Sinha and Thakur (1993) examined the growth performance of major food crops in Bihar. The study found that the remarkable increase in area under cultivation, production and productivity of the wheat followed by rice and maize throughout the study period. From the variability analysis, it was revealed that the yield for all these three crops were found to be more stable in the post-green revolution period as compared to the pre-green revolution period. Further, the Chow˝s test also supported the fact that the new production technology had a significant impact in the production process of Wheat and Maize during the Green Revolution period. In case of rice, technological progress was observed over the time, though it has no significant impact on the production of rice during the period of Green Revolution.

2.2 Badal and Singh (2000) in their study attempted to analyze resource productivity and allocation efficiency in Maize production in Bihar. Authors concluded that resource use efficiency for different inputs varied widely across the crops and there was scope to reallocate the resources in order to achieve optimal allocation of inputs. High yielding varieties (HYVs) of maize offered a greater scope for input-use for an enhanced productivity compared to any other crop of the season. Human labour which was available in abundance could be increased on HYVs maize farms in both rabi and maize as well as on wheat farms.

2.3 Hasan et al., (2008) measured the change and instability in area, production, and yield of two major cereal crops wheat and maize in Bangladesh based on secondary data during 1980/81-2003/04 using different statistical techniques. They found that area and production of wheat increased satisfactorily. But yield was not increased to meet the demand of the country. In the case of maize, significant increment happened in yield

during the study period. Area and production of maize also increased to fulfill the increasing demand of population. Presently production of maize increased more rapidly than its area. They also found that the growth in area, production, and yield of wheat slightly improved in period-II, whereas the growth rate in area, production, and yield of maize improved rapidly. Though both of wheat and maize are unstable crops, maize showed very instability in its area and production because of its increasing tendency in the recent years.

2.4 Kumar et al., (2005) enquired into the production performance of maize crop in northern India. The study was mainly based on secondary data pertaining to area, production and yield of maize crops. These secondary data were collected from the Directorate of Economics and Statistics (DES), Government of India, various issues of Economics Survey, and other published sources. This study pertained to the traditional maize growing States of Punjab, Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh and Orissa, which together account for about 60 per cent of the maize area

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2.5 Objectives

1. To examine the growth of production and consumption of maize in India.
2. To find out the land area under maize cultivation and yields in India.
3. To study India's export directions of maize.
4. To know about Minimum Support Price for selected food grains.

2.6 Scope of The Study

1. The study would help to know the growth of production and consumption of maize in India.
2. The study would help to find out the land area under maize cultivation
3. The study would help to understand the export direction of maize in India.

2.7 Limitation of The Study

The study is based on secondary data. The study covered the growth and performance of only one crop like maize. Therefore, the results are not covered other food grain crops.

III. METHODOLOGY

The following methodology has been adopted for the present study.

3.1 Nature F Research Design:

As the study intends to analyse the growth of production, consumption, exports of maize, the analytical research design used for the study.

3.2 **Nature of Dat**a

The collected data were secondary in nature.

3.3 Source of Data:

USDA Directorate of Economics & Statistics, Department of Agriculture & Co-operation.

Period of Study

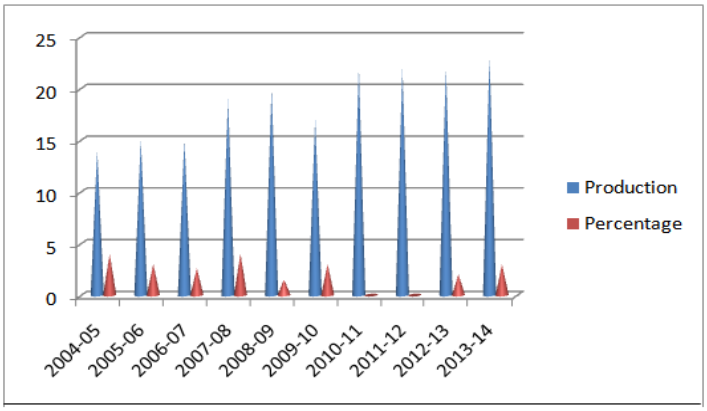
The period of study covered for 10 years i.e. from 2004-05 to 2013-14.

IV. DATA ANALYSIS AND INTERPRETATION

4.1 Productionof maize inIndia Million MT

Year	Production	Percentage
2004-05	14	4
2005-06	15	3
2006-07	15	2.6
2007-08	19	4
2008-09	20	1.5
2009-10	17	3
2010-11	22	0
2011-12	22	0
2012-13	22	2
2013-14	23	3
CAGR	**5.5**	

Source: USDA



It is clear from the above diagram, it was found that the maize in India has been increased throughout the year. Maize is the third most important cereal crop in India after rice and wheat. It accounts for ~9 per cent of total food grain production in India Maize production in India has grown at a CAGR of 5.5 per cent over the last ten years from 14 MnMT in 2004-05 to 23 MnMT in 2013-14. During 2009-10 there was a decline in production primarily due to drought that affected production. area under maize cultivation in the period has increased at a CAGR of 2.5 per cent from 7.5 Mn hectare in 2004-05 to 9.4 Mn hectare in 2013-14, the remaining increase in production is due to increase in yield. Factors such as adaptability to diverse agro-climatic conditions, lower labour costs and lowering of water table in the rice belt of India have contributed to the increase in acres.

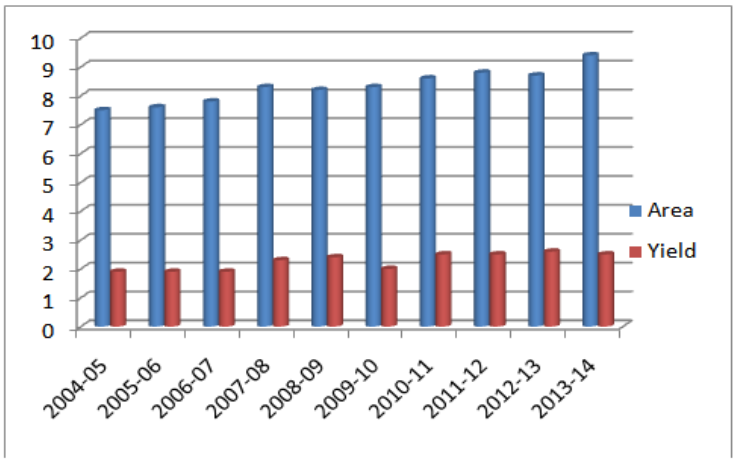
4.1 . Land area under maize cultivation & yields in India.

Productivity of maize (yield) has increased at a CAGR of 2.9 per cent from 1.9 MT/hectare in 2004-05 to 2.5MT/hectare in 2013-14. Introduction of Single cross hybrid (SCH) seeds coupled with adequate rainfall in 2007-08 contributed to 20 per cent increase in yield.

Million /per Hectare

Year	Area	Yield
2004-05	7.5	1.9
2005-06	7.6	1.9
2006-07	7.8	1.9
2007-08	8.3	2.3
2008-09	8.2	2.4
2009-10	8.3	2
2010-11	8.6	2.5
2011-12	8.8	2.5
2012-13	8.7	2.6
2013-14	9.4	2.5
CAGR	**3.0**	

Source: USDA, Directorate of Economics and Statistics, Department of Agriculture and Cooperation

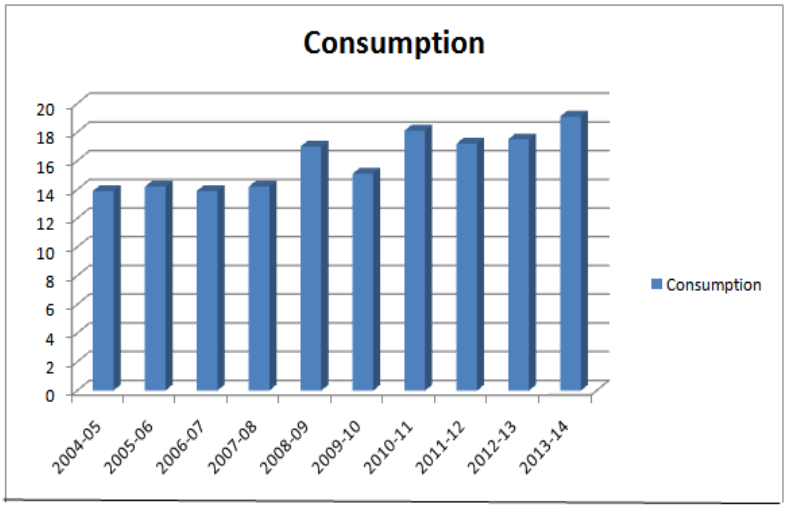


3. **Maizeconsumptioninindia**

MnMt

Year	Consumption
2004-05	13.9
2005-06	14.2
2006-07	13.9
2007-08	14.2
2008-09	17
2009-10	15.1
2010-11	18.1
2011-12	17.2
2012-13	17.5
2013-14	19.1
CAGR	**3.6**

Source: USDA



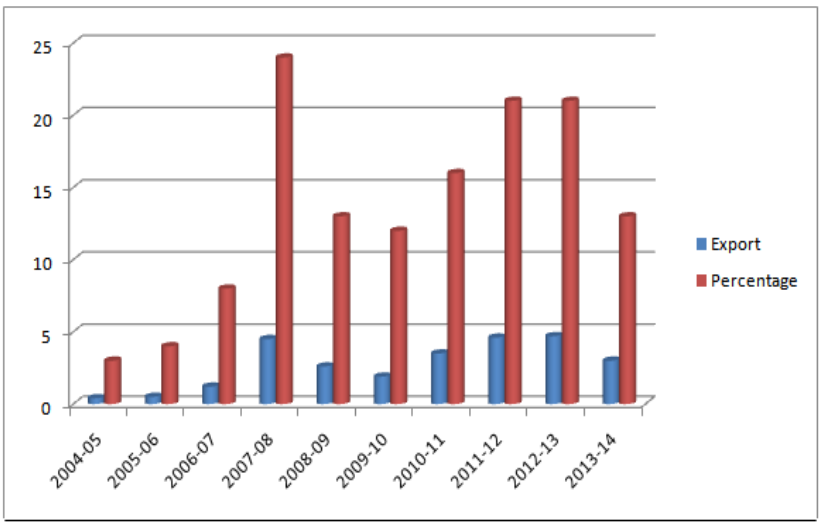
From the data observed from the above diagram, it was found that the Maize consumption in India has shown upward trend at a CAGR of ~4 per cent over the last ten years from 14 MnMT in 2004-05 to 19MnMT in 2013-14. ftere was a decrease in domestic consumption in 2009-10 primarily due to the drought that lead to decline in production. Most of the maize in India is used in the poultry feed industry. Poultry industry is heavily dependent on maize as it forms 50-60 per cent of the input required for broiler feed and 25-35 per cent of the input required for layer feed. Maize is the preferred source of energy in feed when compared with other substitutes due to availability, higher energy and price economics. Poultry feed's share has remained around 45-50 per cent of the total demand for maize in the country over the past 4-5 years.

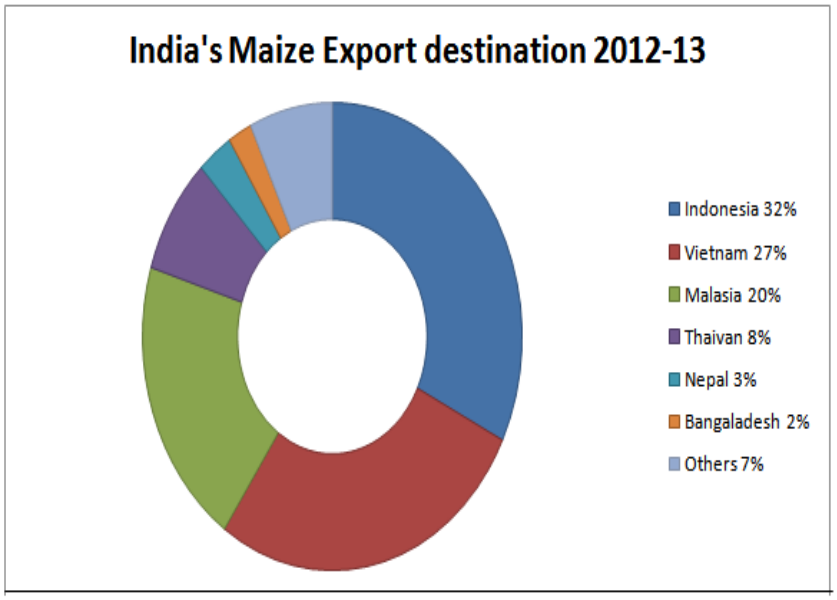
4. Direction of India's Export of Maize

MnMt

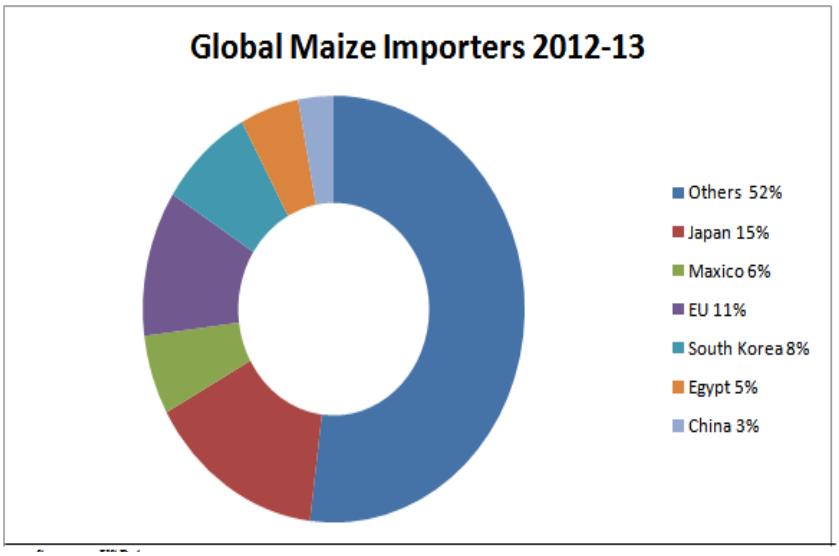
Year	Exports of Maize	Percentages
2004-05	0.4	3
2005-06	0.5	4
2006-07	1.2	8
2007-08	4.5	24
2008-09	2.6	13
2009-10	1.9	12
2010-11	3.5	16
2011-12	4.6	21
2012-13	4.7	21
2013-14	3.0	13
CAGR	**3.6%**	

Source: USDA





Source : Department of Commerce



Source: USDA

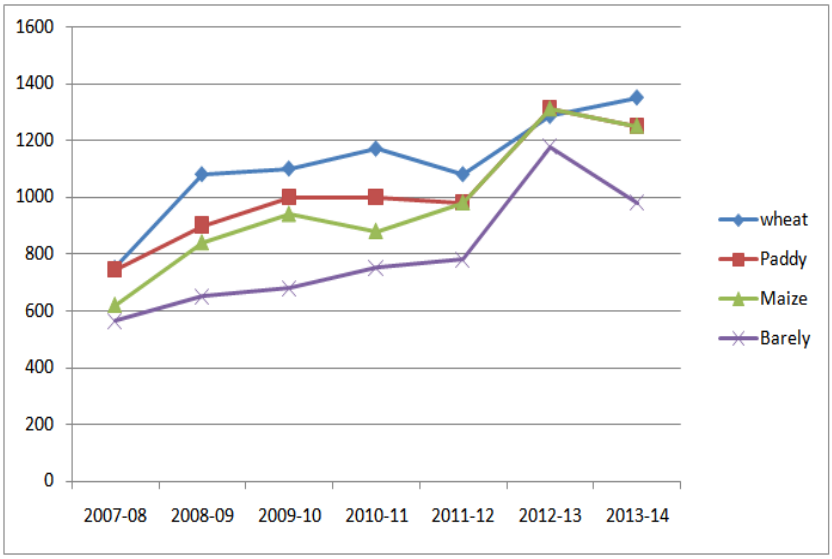
It is clear from the diagram, it was found that India has witnessed a higher growth in maize exports from 2007-08. Increase in export volumes as a result of higher production and demand for maize from international markets. Export volume declined during the period 2009-2011 due to drought conditions leading to low production. Increase local demand for maize from poultry and starch industries, within India, and application in diversified industries such as alcoholic beverages, bio-fuel, processed food, corn oil, etc., had kept maize prices relatively steady Exports had declined in 2013-14 due to weak demand in export market which is due to relatively weak global prices on improved supplies from other competing locations. Maize accounts for 22 per cent of total cereal exports from the country during the study period. Declining exports from USA and price parity offered by Indian maize provides an opportunity to supply maize to importing countries within Asia.It was showed that amongst the top importing countries, Japan, Korea and China are both much closer to India than USA, Brazil and Argentina (top exporting countries). India could have a cost advantage due to lower shipping costs. Malaysia, Vietnam, Philippines, Indonesia are the other Asian countries which import maize and the high demand in these countries is expected to increase their maize import quantity.

4.2 **Price support mechanismto encouragefarmersto grow maizeMinimum Support Prices (MSP)**

Rupees in Quintal

Year	wheat	Paddy	Maize	Barely
2007-08	750	745	620	565
2008-09	1080	900	840	650
2009-10	1100	1000	940	680
2010-11	1170	1000	880	750
2011-12	1080	980	980	780
2012-13	1285	1310	1310	1175
2013-14	1350	1250	1250	980
CAGR	**10.3**	**9.9**	**13.3**	**9.6**

Source: Department of food and public Distribution



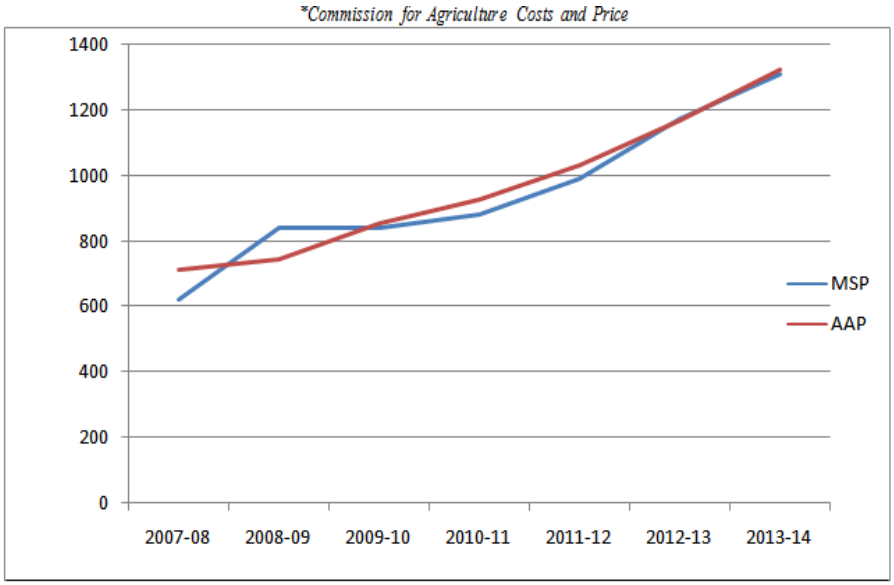
From the above table it was observed that the price support mechanism to encourage farmers to grow maize as it has ready use in starch and feed meal industries. For the first time ever, the government has fixed the MSP of maize for 2013-14 crop season at Rs 1,310 per quintal, which is same as that for common paddy, with a view to encourage farmers to plant more maize replacing paddy.It was found that Maize has observed the highest CAGR of 13.3 per cent in MSP over the last years as compared to others crops. Groundwater can be greatly enhanced if maize cultivation is promoted in place of paddy as it requires just One fifth of the total water required to grow paddy and gives much higher returns to the farmers. Crop has been included in the government's INR 500 crore crop diversification strategy for North Indian states of Punjab, Haryana and western Uttar Pradesh. Annual maize prices have been following the MSP declared by the Government, as can be seen from the graph below.

Maize - MSP & Annual Average Price

Rs. In Quintal

Year	MSP	AAP
2007-08	620	711
2008-09	840	744
2009-10	840	852
2010-11	880	926
2011-12	990	1030
2012-13	1175	1172
2013-14	1310	1326

Source: CMIE database, Department of food and public distribution



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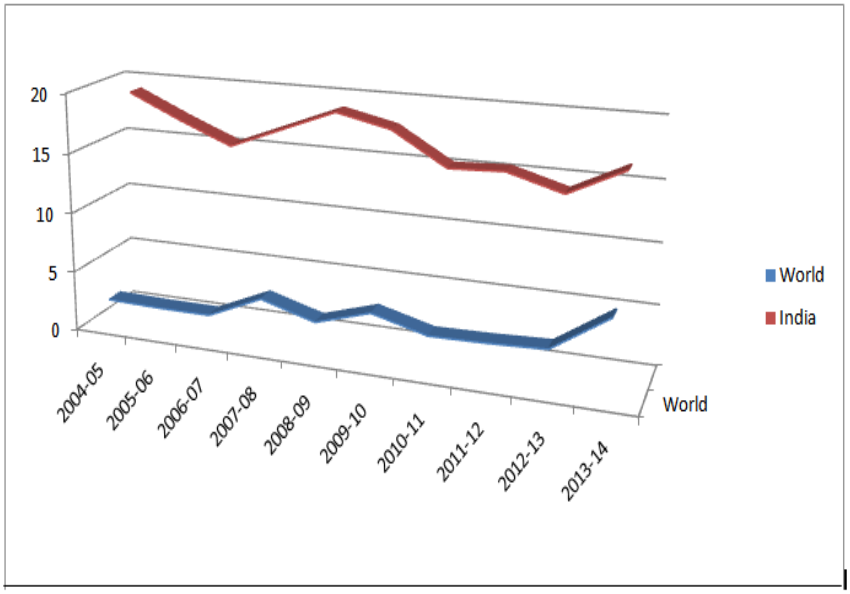
Stock to Consumption Ratio India versus World

Figures in MnMT	Beginning Stocks	Production	Imports	Exports	Total Consumption	Ending Stocks	Stock to consumption ratio
2004-05	0.5	14.2	0.003	0.4	13.9	0.3	2.40%
2005-06	0.3	14.7	0.004	0.5	14.2	0.3	2.30%
2006-07	0.3	15.1	0.004	1.2	13.9	0.3	2.30%
2007-08	0.3	19	0.004	4.5	14.2	0.6	4.30%
2008-09	0.6	19.7	0.013	2.6	17.0	0.7	4.40%
2009-10	0.7	16.7	0.024	1.9	15.1	0.5	3.00%
2010-11	0.5	21.7	0.019	3.5	18.1	0.6	3.20%
2011-12	0.6	21.8	0.003	4.6	17.2	0.6	3.30%
2012-13	0.6	22.2	0.01	4.7	17.5	0.6	3.50%
2013-14	0.6	23	0.01	3	19.1	1.5	6.60%

Source: Database CMIE Report



V. SUMMARY OF FINDINGS

1. It was found that the maize in India has shown increasing trend throughout the study period
2. It was revealed the Productivity of maize (yield) has increased at a CAGR of 2.9 per cent from 1.9 MT/hectare in 2004-05 to 2.5 MT/hectare in 2013-14.
3. From the data observed it was found that Maize consumption in India has shown upward trend during the study period.
4. It was found that exports of maize declined in 2013-14 due to weak demand in export market which was due to relatively weak global prices on improved supplies from other competing places.
5. It was showed that maize has also found the highest CAGR of 13.3 per cent in MSP over the last study period.
6. It was found that the stock to consumption ratio for India increased from 3.7 per cent in 2004-05 to 6.6 per cent in 2013-14 vis-à-vis global average of 16.3 per cent in 2013-14.
7. It was highlighted that among the India's export destination, Indonesia was the leading destination of export of maize and least percentage of destination was Bangladesh during the study period.

VI. CONCLUSION

From the above analysis, authors concluded that the growth and performance of maize in terms of production, consumption, direction of exports were observed increasing trend during the study period. However, it has not made remarkable growth in production, Minimum support prices and volume of exports. It is noted that the maize is very much essential food grain for not only human but also all kinds of livestock. Hence, the government has to be made the concrete steps for extending the growth of maize in India in order to bring the value added products in different sectors of the economy.

REFERENCES

[1]. "National Agricultural Statistics Service (NASS), Agricultural Statistics Board, US Department of Agriculture, Acreage report for 2010" Thomas E. Emerson, Kristin M. Hedman and Mary L. Simon, Marginal Horticulturalists or Maize Agriculturalists? Archaeobotanical, Paleopathological, and Isotopic Evidence Relating to Langford Tradition Maize Consumption. Mid-continental Journal of Archaeology, Vol. 30, No. 1 (SPRING, 2005), pp. 67-118 https://www.jstor.org/stable/20708222.

[2]. "The Evolution of Corn". University of Utah HEALTH SCIENCES. Retrieved 2 January 2016.

[3]. Chandawat and Mahendra Singh, (2003). A Study of Effectiveness of Training Programmes of Improved Cultivation Practices of Maize and Wheat Crops, Organized by KVKs for Tribal Farmers of Southern 287 Rajasthan Maharana Pratap University of Agriculture and Technology, Udaipur.

[4]. Badal, P. S. and R. P. Singh (2000), "Resource Productivity and Allocative Efficiency in Maize Production in Bihar", **Agricultural Situation in India**, Vol. LVI, No. 10, pp: 593-596.

[5]. Gangwar, B., (1999), "Technical Advances for Increasing Crop Productivity in Diara Areas", Agricultural Situation in India, Vol.LV,No. 10, pp:615-620.

[6]. Sharma, H. R., Kamlesh Singh and Shanta Kumari, (2006), "Extent and Source of Instability in Food Grains Production in India", **Indian Journal of Agricultural Economics**, Vol. 61, No. 4, pp: 647-666.
[7]. Hasan M. N., M. A. Monayem Miah, M. S. Islam, Q. M. Alam and M. I. Hossain, (2008), "Change and Instability in Area and Production of Wheat and Maize in Bangladesh", **Bangladesh Journal of Agricultural Research**, Vol. 33, No. 3, pp : 409-417, September 2008.
[8]. Kumar, Ranjit, R. P. Singh, N. P. Singh and A. K. Vasisht, (2005), "Production Performance of Maize crop in Northern India: A District-wise Exploration", Agricultural Situation in India, Vol.LXI, No. 11,pp:765-771.
[9]. Sinha, D. K., and Jawahar Thakur, (1993), "An Economic Analysis of Growth Performance of Major Food Crops in Bihar", **Agricultural Situation of India**, Vol. XLVIII, No. 7, pp: 543-548.
[10]. Ghosh, Nilabja and Chiranjib Neogi, (1995), "Supply Response of Foodgrains and Policy Actions: A Model with Rational Exceptional Hypothesis", **Indian Journal of Agricultural Economics**, Vol. 50, No. 2, pp: 135-152.

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