A SITUATIONAL ANALYSIS OF AGRICULTURAL PRODUCTION AND FOOD SECURITY IN INDIA

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ABSTRACT

India achieved impressive growth in food production after the adoption of green revolution technology which made the country self sufficient in basic foods. Total demand for cereals is projected to grow to 218.9 million tonnes by the end of the eleventh plan and it would reach 261 million tonnes the year 2020-21. Demand for pulses the same period would grow to 16.1 and 19.1 million tonnes. Besides, the domestic demand for foodgrains is expected to reach 280.6 million tonnes by the end of 2020-21.to meet this demand in foodgrains pulses and cereals. The growth rate in agricultural production has to be substantial. If growth rate in domestic production of foodgrains fails to rise this would create imbalance in demand and supply condition and eventually would lead to increased dependence on import of wheat and pulses. The current paper highlights on the issues such as the trends in population and agricultural production, demand and supply gap and food consumption pattern in India, using the secondary sources of information drawn from various reports.

Keywords: Agriculture Production, Population, Food demand and Supply and Food Security.

INTRODUCTION:

Sufficient food production is a prerequisite to sustainable, equitable economic development and indeed a critical factor for economic and social stability in every country. There are now about 1billion malnourished people in the world, indicating that almost one sixth of all humanity is suffering from hunger. Food shortages and decreased purchasing power of poor people lead to increased hunger. Alleviating hunger, a severe manifestation of poverty, depends in the long run on sustainable food production and income – generation activities in the country. Besides other factors, demand – supply of good commodities is also an important factor in determining the prices. As demand increases and supply does not match it, the prices of commodities increase, leading to food crisis. Hence in long run, the rising prices of commodities can be stabilized by increasing the food production in country.

BACKGROUND OF THE STUDY:

Many countries experience perpetual food shortage and distribution problem. These result in chronic and often widespread hunger amongst significant number of people. Human populations respond to chronic hunger and malnutrition by decreasing body size, known in medical terms as stunting or stunted growth.
Worldwide around 852 million people are chronically hunger due to extreme poverty, while up to 2 billion people lack food security intermittently due to varying degrees of poverty. The number of people without enough food to eat on a regular basis remains stubbornly high, at over 800 million, and is not falling significantly. Over 60 per cent of the world's undernourished people live in Asia, and a quarter in Africa. The proportion of people who are hungry, however, is greater in Africa (33%) then Asia (16%).The latest FAO figures indicate that there are 22 countries, 16 of which are in Africa, in which the undernourishment prevalence rate is over 35 per cent. So FAO proposes several keys to increasing rural income and reducing food insecurity. Current agricultural yields are insufficient to feed the growing population. Eventually, the rising agricultural productivity drives economic growth, securing property rights and access to fiancé, enhancing human capital through education and improved health. Agricultural productivity is likely to play a key role in this if it is reached on time to stabilize the food security in India.

REVIEW OF LITERATURE:

Alain de January, K. Subbarao (1984), made their study on "Agricultural price policy and income distribution in India", the study analysed that the role of food price and intersect oral terms of trade in stimulating agriculture growth and effecting changes in income distribution had been the subject of bitter controversy in the recent period in India.
Amarender Reddy, A. (2004), author made a study on "consumption pattern trade and production potential of pulses", the author analysed that the regional patterns in the production and consumption of pulses in India and the potential for expansion of output. The paper stated the large differences in both production and consumption of pulses across regions, as well as the increase in imports in recent years.
David,et.al, (2009), in his study on "Historical Warnings of future food Insecurity with Unprecedented seasonal heat", the study analysed that the higher growing season temperatures could have dramatic impacts on agricultural productivity, farm incomes, and food security.
Praduman Kumar et.al (2009), in his study on "Demand Projections for Food grains in India". The author analysed that the demand for food grains had been estimated for India for the years 2011-12, 2016-17 and 2021-22, by accounting for the factors like urbanization, regional variations in consumption pattern, shifts in dietary pattern and income distribution, limit on energy requirement and changes in tastes and preferences of consumers for food varieties. **Suresh pal, and Girish Kumar sha, (2011),** in their study on "Food prices in India current trends and their implications". The study started that the international prices rose sharply due to global shortfall in the food grain production mainly wheat in some major food producing countries because of unfavorable weather .Besides, a number or structural factors also played an important role in influencing for rise in food prices.
Dinesh Kumar, and Shivay, S. (2011), the study on "sustaining food production to stabilize rising food prices", the study highlighted demand and supply of food commodities was also an important factor in determining the prices. As the demand increases and supply does not match it the prices of commodities increase leading to food crisis. Hence in long run the rising prices of food commodities could be stabilized

by increasing the food production in the country.

FOOD PRODUCTION FOR EVER INCREASING POPULATION:

According to one United Nations Report (2011) India will have a total population of 1,420 million people in 2026.One of the major issues is that India needs to address the sustainable supply of agricultural produce. More population, less production is going to create less supply and more demand for food. Lesser agricultural growth going to increase demand for food production which is a major reason for India not achieving self sufficiency in food production. However, exceptional situations such as the food crisis require the world organizations to go beyond such customary advice. Two factors aggravating the food shortage can be neutralized only through global cooperation. The switch from food crops to bio fuels in the United States and the European Union, often by subsidizing their farmers, is one of them. The pernicious influences of climate change on food production are well documented and they can be countered only with the active participation or the developed countries.

STATEMENT OF THE PROBLEM:

Farming has been more than 1000 years old. Earlier farmers resorted to cultivation only for that personal need. Now they have expanded their territories to produce crops for the whole world. Our country is the second largest producer of agriculture products in the world. At the time of independence, 90 per cent of the Indian's engaged them in agriculture. Then the percentage has slid down gradually to 80%, 70%, 60% and now it is only 52%. The world cannot revolve around without atom. Likewise the world cannot live without food. Agriculture is the backbone of Indian economy. India has had a growing problem with food output and availability for the mass of the population since the inception of neoliberal economic reforms in 1991. A deep agricultural depression and rising unemployment rates resulting from "reform" policies have made the problem especially acute over the past decade. There has been a sharp decline in per capita grain output as well as grain consumption in the economy as a whole. With this background the study analyse projections of demand and supply of food grains in India. The current study is based on the following specific objectives.

1. To examine the situation of agriculture in India
2. To assess the condition of demand and supply gap in food production and
3. To analyse the food consumption pattern over years

MATTERS AND METHODS:

Food security may be defined as economic access to food and its utilisation along with food availability. So, food security is viewed in terms of three components food availability, food access, food utilisation. Food availability alone therefore does not ensure food security; access to food and utilisation is equally important. The sources of information may be either primary or secondary. The data from published or unpublished sources such data will constitute secondary data's. For the current study, All India level data from various rounds of consumption surveys conducted by the National Sample Survey Organization (NSSO) were used. The data on area, production, productivity and other related variables of important food grains were collected from different published sources such as: Economic Survey of India, Agricultural Statistics at a Glance; Agriculture in Brief and Central Statistical Organization, journal books economic political weekly etc., for the period (2000 to 2012). The data on area, production, productivity and other related variables of important foodgrains were collected from different published sources such as; Economic Survey of India; Agricultural Statistics at a Glance; Agriculture in brief, etc. for the period 1960-61 to 1998-99. The data on consumer expenditure for both rural and urban consumers were compiled from various rounds of National Sample Survey (NSS)) Organization. The study used simple percentages to analyse the data.

PRODUCTIVITY OF MAJOR CROPS:

Diversity of food crop is ascertained according to the factors of temperature, rainfall and the soil type. The major food crops of India are Paddy, Wheat, Maize, Jowar, Bajra, and Ragi. India is second largest producer of Paddy in the world. It is a tropical crop which is grown in alluvial plains and river deltas. It requires a mean monthly temperature of 24 $^{\circ}$C, average rainfall 150 cm and deep fertile and alluvial soil for its growth.

In areas of less rainfall particularly in Punjab and Haryana, it is grown with the help of irrigation. Wheat is a temperate crop. Its cultivation is mainly confined to the north western part of India.

Table 1: Details of Productivity of Major Crops in World Level

(kg.in.Hectare)

S. No	Paddy Countries	Yield	Wheat Countries	Yield	Maize Countries	Yield
1	Egypt	9840	Belgium	8980	Jordan	18730
2	USA	7990	Netherland	8910	Belgium	12820
3	Spain	7410	UK	7780	Netherland	11820
4	Morocco	7350	France	7580	Newzeland	11330
5	India	3120	India	2713	India	2041

Source: Agricultural Research Data book-2007

It requires 10 ^{o} C at the time of sowing and 15 ^{o} C to 20 ^{o} C temperatures at the time of ripening and an average rainfall of 50 to 60cm. It can be cultivated with the help of irrigation particularly in the areas of UP, Punjab, Bihar, Rajasthan and M.P. The above data reveal that the productivity of paddy in Egypt increases three fold then India which was registered very low (i.e.) 3120 kg. In the same manner the productivity of wheat in Belgium increases three fold than India which was registered as 23713 kg, and the productivity of maize in Jordan increases nine times than in India which was registered as low (.i.e.) 2041 kg.

GROWTH RATE OF AGRICULTURE PRODUCTION AND YIELD:

Production means the act of combining factors of production namely land, labour capital and organisation, so as to produce output. Growth rate means a measure of a growth in real output over a period of time. Productivity means yield per hectare.

Table 2: Details of the yield per hectare of major crops in india

S.No	Crops	2007-08 kg	2008-09 kg
1	Rice	2202	2177
2	Wheat	2802	2806
3	Jowar	98	922
4	Pulses	625	617
5	Oilseeds	1115	1016
6	Cotton	467	418

Source: Economic survey (2007-2008)

The above data reveals that during the year 2007-08 productivity of wheat is higher i.e. 2802 kg than cotton which was registered low i.e. 467 kg per hectare. In the same manner during the year the productivity of wheat is higher (i.e.) 2806 kg than cotton which was registered low (i.e.) 418kg.

INDIA'S PULSES OUTPUT:

India's forecast on protein rich pulses crop has shown that the country could reap the robust output in current season, more than what it targets thanks to better monsoon. the country targeted for 16.5million tons this crop season (2011), but reports from key producing states said that the production may cross the target to 19.08 million tons said India's Farm Secretary PK Basu. He expressed that the expected higher production would help to lower imports and it could bring down the inflation to lower imports and it could bring down the inflation to some extent. Basu said he was hope full final output for the year through June 2011 would rise 500000 tons beyond the annual target due to higher plantings, given the jump in the state fixed price of pulses as well as improved supply of subsidized seeds and fertilizers. India's summer-sown pulses output has already risen by 39.5% to 6.0 million tons this year, while the winter sown output is forecast at about 11

million tonnes.

The agriculture sector contributes a significant part of share to the national income of India. India is primarily an agricultural country. The importance of agriculture in Indian economy is evident. It is the largest and the most important industry in India. More than 50 per cent of the people in India depend on agriculture either directly or indirectly for their living. The Indian economy is presently a developing economy or less developed economy. India has witnessed high economic growth in the last one decade, but the problem of food and nutrition insecurity still remains a great threat to a large number of poor and vulnerable people in the country. According to the FAO report (2011) the stark reality is that India has 29 per cent of the 872.9 million undernourished people in the world .World Health Organization (2011) reports that 49 per cent of the world's stunted children and over 46 per cent of world's undernourished children live in India.

Table-3: Changes in the Per Capita Net Availability of Food Grains Per Day in India

Year	Average(grams percapita per day	Percentage change from previous period
1951-1960	429.8	-
1961-1970	447.5	+4.12
1971-1980	442.2	-1.9
1981-1990	464.2	+4.98
1990-2000	475.5	+2.44
2001-2005	454.2	-4.5
2006*	445.3	-1.95
2007*	442.8	-0.56
2008*	436.0	-1.53
2009*	444.0	+1.83

Source: Manjoi Kumar (2011)

Table 4 provided here shows that there have been variations in the per capita net availability of food grain per day throughout the six decades. The decade from 1961 to 1970 saw a rise in food grain 442.2 grams per capita per day. Further, 456 million people (about 42%) of the population n children are below the new international poverty line(i.e. earning less than $1.25 per day) and India is ranked at 67, way below neighbouring countries like China (Ranked 9) and Pakistan (Ranked 52), in 2010 Global Hunger Index prepared by international Food Policy and Research Institute(IFPRI). So what it all means that achievement of food security at the national level has not percolated down to the level of individual house hold and thus has not resulted in food and nutritional security.

POPULATION GROWTH WORLD WIDE:

The world's population has reached 6.8 billon by the middle of 2009,82 per cent of which (5.58 billion) are in the developing and poor nations of Asia, Africa and Latin America (USAID 2009).Predictions using current growth rates put world population at 9.42 billion in 2050 though an optimum population for the world as a whole is argued to be around 2 billion only (Tepperman and Blain 1999).it is a matter of great surprise that for tens of thousands of years, the world population grew slowly, but in the last 200 years and in the year 2000 it has reached 6 bn. In spite of a declining rate of natural increase in all parts of the world, world population is projected to cross 7 billion by 2011 and 8 billion by 2025. World population growth is, however, far from systematic as nearly 37 per cent (2.5 billion) of world population today is in two developing countries, viz. China (1.33 billion) and India (1.17 billion) only. It is, therefore, not surprising why such developing countries constantly face a tug of war between population and development. The tragic aspect of population growth is that poorer the country, the higher the rate of population growth. The more developed countries of the West today have low death (10 per 1000 population) and low birth rate (12 per 1000 population). These societies are therefore trying to deal with strains of declining and aging population. One important reason for such a demographic transition is the high standard of life of their population as revealed in their HDI rank and Gross National income in Purchasing Power Parity (GNI PPP) per capita.

Table 4: Details of Population and Development in World Level

Countries (by Population)	Population Mid-2009((Millions)	Projected Population(Millions)		GNI PPP Capita(2008)
		2025	2050	
China	1331.4	1476	1437	6020
India	117.1	1444.5	1748	2960
USA	306.8	357.5	439	46970
Indonesia	243.3	291.9	343.1	3830
Brazil	191.5	212.4	215.3	10070
Pakistan	180.8	246.3	335.2	2700
Bangladesh	162.2	195	222.5	1440
Russia	141.8	133.3	116.9	15630
Japan	127.6	119.3	95.2	35220
Nigeria	152.6	207.2	285.1	1940
Mexico	109.6	123.4	129	14270
Philippines	92.2	120.2	150.1	3900
Vietnam	87.3	100.1	112.8	2700
Germany	82	79.6	71.4	35940
Ethiopia	82.2	113.1	149.5	870
Egypt	78.6	99.1	123.3	560

Source: World Population Data Sheet, SAID 2009 and Human Development Report 2009.

A cursory look at these figures (Table-4) reveals that developed and developing countries today face contrary realities so far as population and development are concerned. It is in such a context that we need to review the theories of population once again.

HIGH GROWTH RATE OF POPULATION:

Most of the developing nations have a largest sized population when compared to their area of land. Death rates have been continuously declining mainly due to improvements in health facilities, governmental effort and willingly co-operation of the people. But birth rate remains high.

Table 5: Details of the Dependency of Population on Agriculture in World Level

S. No	Countries	Dependency of Population on Agriculture
1	Europe	8
2	USA	5
3	Japan	4
4	China	24
5	South Africa	18
6	India	60

Source: Shanthi (2011)

The net result is high growth rate of population explosion. The following data explain dependency of population on agriculture.

FOOD CRISIS IN INDIA:

During pre-independence era, consumption of fruits and vegetables as a part of daily diet was not in vogue. People used to take fruits and vegetables as supplement whenever they were sick. This clearly indicates that during that period, horticultural commodities were not in the reach of common man. Moreover, with the concerted efforts, systematic planning, higher plan allocation, better infrastructural facilities and technological advances; there has been appreciable progress in agriculture including horticulture after independence. Food grain production increased 4.5 times, horticulture 8 times, milk 6 times and fish 9

times in 2009-10 compared with production in 1950-51.the area, production and yield of almost all agri-horticultural crops have increased significantly from 1950-51 to 2009-10(Table-6)

Table 6: All India Production and Yield of Major Agri-Horti Commodities

Commodities	2009-10		
	Area(Million ha)	Production (Million tonnes)	Yield(kgha)
Food grains	121.37	218.20	1798.00
Pulses	23.25	14.60	625.00
Oilseeds	26.11	24.93	955.00
Coarse cereals	27.64	33.77	1222.00
Cotton	10.31	23.99	395.00
Jute and Mesta	00.92	11.29	2216.00
Sugarcane	04.20	277.75	66099.00
Fruits	06.32	71.51	11300.00
Vegetables	07.98	133.75	16700.00
Potato	18.35	36.58	19900.00
Tuber crops	0.36	9.15	26100.00
Spices	02.36	04.02	1600.00
Plantation crops	03.27	11.93	3648.00

Source: P.L Saroj (2011)

Horticulture provides wider choice to the farmers, to cultivate an array of crops in different environments, soil and climate conditions. Horticultural crops can be grown even in marginal and degraded soils. Horticultural crops are referred to as protective foods and assume great importance as nutritional security of the people. There are many horticultural crops like; potato, tuber crops and banana and vegetables which are complementary as food. Fruits and vegetable therapy is now a practice to have good health without medication. In Asian countries, more than 80 per cent people still depend on herbal medicines. thus balanced diet protects many diseases by improving immunological system the fruits (aonla, bael, jamun, papaya), vegetables (carrot, onion, garlic, leafy vegetables),spices(ginger,turmeric,black pepper,fenugreek,ajown),medicinal plants(turmeric,ginger,tulsi and product like triphala) are use since long back as best option for health care. Horticultural crops thus provide ample opportunities for health care as besides various minerals, vitamins, carbohydrate, protein, fiber, fat etc. They are also rich in antioxidant with high calorific value than most of the cereal crops.

FOOD DEMAND IN INDIA:

The total food demand projections for 2025 and 2050 are given in Table 7. We use the state level population projections of Manhood and Kundu 2006 for estimating the total food demand. According to this demographic projection, the rural population will increase from 729 million in 2000 to 879 million in 2025 and then decrease to 776 million by 2050.

Table 7: Total Food Demand Projections In India: 2025 And 2050

Food demand (Mmt)

Year	Grains	Rice	Wheat	Maize	cereals	Pulses	Oilcrops	Roots	Veg.	fruits	sugar
2000	173	76	58	10	17	12	42	6	70	40	26
2025	230	102	81	11	20	16	89	11	142	67	39
2050	241	109	92	7	14	19	115	19	180	106	52

Source: 1990 and 2000 data from FAOSTST (FAO 2005)

The urban population will increase from 278 million in 2000 to 510 million in 2025 and to 810 million by 2050. Overall, the total population will reach the peak of about 1,580 million by 2050 and will start to

decline thereafter. More than half (53 %) the total population will be in urban areas by 2050.

CONCLUSION:

In a developing country like India, food security means making available minimum quality of food grains to the entire population. Despite the fact that India has made a satisfactory achievement in food grains production, its population growth has nullified the benefits of production. Thus, examination of food population relationship is important. Therefore, the present study is devoted to estimate the supply of food grains and its requirement to visualize the food security scenario of the country, which accounts for about 97 percent of total production as well as population, up to the period close to the eleventh five-year plan. The agriculture and private public partnership, economic approach, food justice and sovereignty, encouragement for genetically modified crops, greater investment in irrigation, better economics in farming and greater government attention to agriculture – all offer short term relief, but, unless more sustainable food systems are introduced, none will succeed in the long term. There's no doubt that something like a second Green Revolution has great potential to transform India's food production capacity and bring it up to levels that will sustain the population as it continues to grow. However, unless sustainable methods are employed organic agriculture, for example, that feeds the soil and retains more water as crops grow – we'll be only talking about another green Revolution.

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