

AGRICULTURAL PRODUCTION SCENARIO IN 21st CENTURY

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Nation's policy-makers in India have a dream today. And it is to double the Agricultural production during next one decade. Growth profile of different commodities is bound to be different. Moreover, regional and state specific variations are bound to add yet another dimension to the expected basket size. Let us look at the growth trend of each commodity during last 5 decades so as to project it upto the year 2010.

Wheat

Success story of green revolution started unfolding 32 years ago. Wheat yield since then is moving in only one direction – upwards. India has overtaken several countries during this long marathon. Europe was overtaken during mid-80's. Now, USA has been overpowered both in terms of production and yield. Only China is ahead of us today. But during next decade, we are almost going to be at par or even excel them. Around 26 MH. Area with 95 percent irrigation coverage would produce 105 MT of wheat by 2010. Production and productivity gains would be in UP, Punjab, Haryana, Madhya Pradesh, Rajasthan and Bihar and these six states would contribute more than 95 percent of India's wheat production by 2010.

Rice

Rice is essentially water driven crop. Availability of adequate water quantities as well as its proper control and management would determine its production behaviour in future. Area under Rice is saturating around 43 MH. Operations and maintenance of canal and distributory system must be in the hands of farmers through water user associations. Tube wells irrigation with reasonable power tariff would also optimize the water usage and minimize wastage of this precious natural resource. We are 2nd in the world – next to China in Rice production and are likely to remain so by 2010 as well. Around 43 MH with 60 percent irrigation coverage would produce around 111 MT. of Rice by then. Production and

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productivity gains would be seen in West Bengal, Uttar Pradesh, Andhra Pradesh, Tamil Nadu, Bihar, Punjab, Orissa, Madhya Pradesh, Assam and Karnataka. These ten states would contribute more than 90 percent of India's Rice production by 2010.

Coarse Cereals

It includes jowar, bajra, maize, ragi, barley and small millet. Total area under coarse cereals peaked during mid sixties at 47 MH. It has been declining since then. The trend is likely to continue in the future too except for maize. In different states, the shift is clearly towards commercial crops like oilseeds, cotton, vegetables and fruits. Maize appears to be the only exception due to its direct linkage with poultry industry. Total area be around 20 MH with 10 percent irrigation coverage producing around 38 MT. of coarse cereals by 2010. Production would be concentrated in Maharashtra, Karnataka, Uttar Pradesh, Rajasthan, Madhya Pradesh, Andhra Pradesh, Gujarat and Bihar. These eight states would contribute more than 90 percent of India's coarse cereals production by 2010.

Pulses

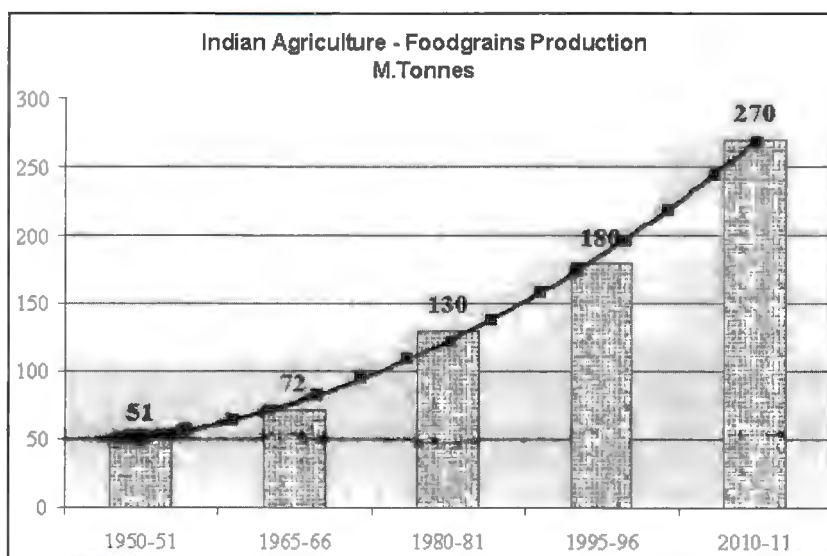
With around 23 MH of area constantly committed for last 40 years or so, India is the largest producer of pulses in the world. However, yield at around 600 Kg. per hectare far lags behind global standards of 850 Kg. per hectare. Total area under pulses would remain the same 23 MH with 12 percent irrigation coverage producing around 16 MT pulses by 2010. Production would be concentrated in M.P. U.P. Maharashtra, Rajasthan, A.P and Karnataka. These six states would contribute more than 80 percent of India's pulses' production by 2010.

FoodGrains Scenario in 2010*

Country has recorded the highest foodgrains harvest crossing 200 MT mark this year. Production level in 2010 is estimated to be around 270 MT – a gross increase of 35 percent. Historical trend along with future projection are tabulated as follows.

Using the estimates of compound growth rates, production is "puffed up" for the year 2010.

Sl. No.	Commodity Unit	1950-51	1965-66	1980-81	1995-96	2010-11
1	Wheat (M.T.)	6	10	36	62	105
2	Rice (M.T.)	21	31	54	77	111
3	Coarse Cereals (M.T.)	15	21	29	29	38
4	Pulses (M.T.)	8	10	11	12	16



Non-Food Grain Production

Sugarcane, Cotton and Oilseeds are covered under this category.

Sugar Cane

Like Rice, sugarcane is also water driven crop. It needs good land as well as good quantities of irrigation water. Moreover, control and management aspect of water ultimately determines the productivity level of this crop. Area under sugarcane cultivation has steadily climbed from 2 MH. in 1956 to 4 MH. in 1996. More importantly, irrigation coverage has gone up from 65 percent to 90 percent in the same period. Around 5.5 MH. area with 95 percent irrigation coverage would be under cane by 2010. In fact, the control and management

of water by farmers directly and professional management of sugar factories ensuring prompt payment to farmers would be key to productivity. Successful models of water management involving water users associations and factory management involving farmer cooperatives are very much functioning in various states and are replicable. Right now, India is only next to Brazil in sugarcane production. But, by 2010, we are going to produce around 365 MT. and occupy the top rank. Production and productivity gains would be seen in U.P, Maharashtra, Tamil Nadu, Karnataka, Andhra Pradesh, Gujarat, Haryana and Punjab. These eight states are likely to contribute more than 95 percent of sugarcane production in the country by 2010.

Cotton

Area under cotton has gradually climbed from 5 MH. in 1950 to 9 MH in 1997. Equally important fact is increased irrigation coverage from 8 percent then to 34 percent now. This trend of more area with more irrigation coverage is likely to continue in future too. Productivity breakthrough was witnessed during late eighties with costly seeds and costlier pesticides. Sudden spurt in profitability made cotton look like white gold in early 1990's. Heavy investments were made by farmers often by borrowing capital at a very heavy interest rates. Spurious pesticide companies egged on farmers to keep the gamble going. But the returns were not golden all the years. When crops failed, several farmers committed suicides in states like Andhra Pradesh, Karnataka, Maharashtra, and Punjab. Phenomena were driven by spurious inputs and unbridled human greed. But, of late, a better sense is dawning upon all wherein pesticide inputs have moderated without affecting productivity. This trend is healthy and wise both. We expect around 12 MH areas with 40 percent irrigation coverage to produce 19 M bales of cotton by 2010. Production and productivity gains would be seen in Maharashtra, Punjab, Gujarat, Haryana, Andhra Pradesh, Rajasthan and Karnataka. These seven states are likely to produce more than 95 percent of cotton in the country by 2010.

Oilseeds

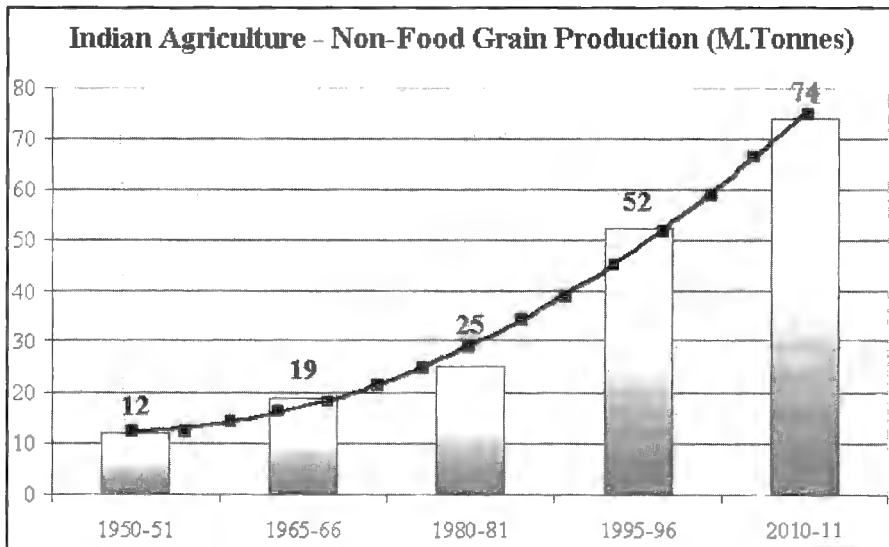
Area under oilseeds has climbed from 10 MH. in 1950 to 27 MH. in 1997. More important fact is that 25 percent of this area is under irrigation today which was almost nil in 1950. Thus, the trend of more area along with more coverage under irrigation is likely to continue in the future too. Breakthrough in productivity came during 80's under oilseeds technology mission. There is stillroom for more improvements. Around 38 MH of area with 35 percent of irrigation coverage

is likely to produce 38 MT. of oilseeds by 2010. Production and productivity gains would be witnessed in M.P., Rajasthan, Andhra Pradesh, Gujarat, Maharashtra, Karnataka, Tamil Nadu and Uttar Pradesh. These eight states are likely to contribute more than 90 percent of oilseeds production in the country by 2010.

Non-Food Grain Production Scenario in 2010

Present output of Sugarcane, Cotton, and Oilseeds is likely to grow by 30 percent, 45 percent and 70 percent by 2010 as tabulated below.

Sl. No.	Commodity Unit	1950-51	1965-66	1980-81	1995-96	2010-11
1	Sugarcane (MT)	57	124	154	281	365
2	Cotton (M. Bales)	3	5	7	13	19
3	Oilseeds (MT)	5	6	9	22	38



Livestock Production

Milk, Fish, and Poultry are covered under this category.

Milk

India can proudly claim to be the milk superpower of the world today. It has edged past USA just this year by recording 76 MT production. Milk graph started

climbing in early 70's after green revolution. More crops meant more residues – and eventually more milk. Animal Breed upgradation and health care provided opportunities to small and medium dairy farmers to make it a commercially viable preposition. There are no big corporate names behind milk revolution. In fact, it is powered by tens of millions of ordinary dairy entrepreneurs scattered in all the villages across the country. Animal population would by and large remain constant – but production is estimated to cross 120 MT. by 2010 – through the Milky Way.

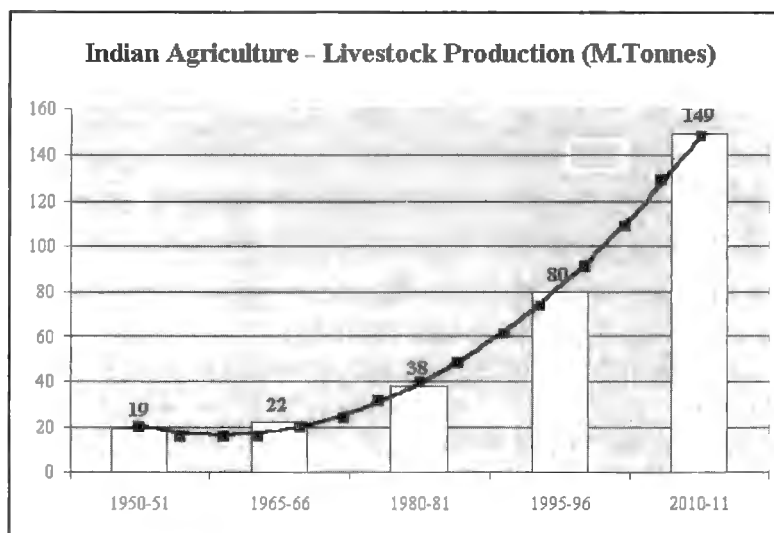
Fish and Poultry

The decade of 80's saw considerable breakthrough in productivity and overall production of both of these commodities. Fish production doubled and eggs production almost trebled from 1980 to 1995. The same upwards trend is likely to continue in future. We expect fish production to be around 8 MT and eggs output to exceed 60 billion nos. by 2010. Six states namely West Bengal, Gujarat, Kerala, Tamil Nadu, Maharastra and Andhra Pradesh would account for more than 75 percent of fish production. Regarding eggs, six states namely Andhra Pradesh, West Bengal, Maharastra, Punjab and Kerala would contribute more than 70 percent of its production.

Livestock Production Scenario in 2010

Growth in this area has surged beyond expectations during last two decades. We are going to witness a revolution during the decade ahead. Present output of milk, fish and eggs would grow around 50 percent, 70 percent and 150 percent by 2010 as shown below.

Sl. No.	Commodity Unit	1950-51	1996-66	1980-81	1995-96	2010-11
1	Milk (M.T.)	17	19	32	66	120
2	Fish (Lakh Ton)	8	15	24	50	80
3	Eggs (Billion nos.)	1.8	4	10	27	60



Horticultural Production

Vegetables and fruits are covered under this category.

Vegetables

With 6 MH area producing 70 MT., India is the world's second largest producer of vegetables – only next to China. Production can be divided into two kinds. One is grown in interior villages for internal consumption. The other is grown in suburbs mostly by small and marginal farmers to cater to nearby urban and semi-urban markets. Area under all important vegetables like potato, onions, tomato, okra, cabbage, cauliflower and peas is expanding to cater to ever growing urban needs on one hand and fast changing rural tastes on the other. This trend would continue in future too. We expect around 8 to 9 MH. area to produce 110 MT. of all variety of vegetables by 2010. Production and productivity gain would be witnessed all across the country, but more particularly so in states like Bihar, U.P., West Bengal, Tamil Nadu, Orissa, Maharashtra, Kerala, Punjab, Delhi and Haryana.

Fruits

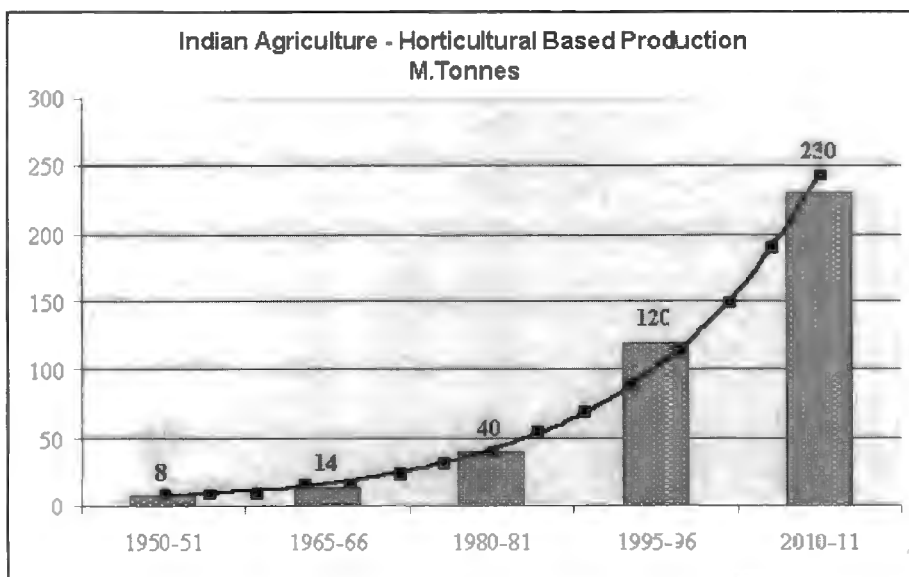
Area under fruits and overall production has increased dramatically since early 90's. Both have almost doubled in a short span from 1991 to 1997. And the trend continues unabated. This is essentially a capital based high technology venture which is normally driven by the enterprising genius of medium and large farmers. In the wake of liberalisation from 1991 onwards, several states like

Karnataka, and Maharashtra have relaxed the provision of Agricultural Land Ceiling Act to encourage horticultural ventures. Thus, liberating land from the jaws of Agricultural Land Ceiling Act coupled with technology and capital intervention has transformed the farmer from a mere manager of inputs to a powerful entrepreneur of resources during liberalisation decade of 90's. As on today, 5 MH of area is producing around 50 M.T of fruits of all kinds. By 2010, we expect around 10 MH of area to be producing around 120 MT of fruits. Leading states would be Andhra Pradesh, Maharashtra, Tamil Nadu, Karnataka, Bihar, Uttar Pradesh and Gujarat. These seven states would account for more than 70 percent of fruits output by them.

Horticultural Production Scenario in 2010

The decade of 90's has witnessed an explosive growth in this sector. By 2010, we are likely to witness, yet again almost 100 percent growth over and above present production levels.

Sl. No.	Commodity Unit	1950-51	1965-66	1980-81	1995-96	2010-11
1	Vegetables (M.T.)	-	-	-	70	110
2	Fruits (M.T.)	-	-	-	50	120



CONCLUSION

The overall size of national agricultural basket would grow around 60 percent by 2010. It includes foodgrains, animal and agro-industry based and horticultural produce. Population size may grow by 20 percent by then. Thus, aggregate availability from this composite basket to each family is going to be fairly comfortable – say 33 percent more than what it is today.

However, the dream of the nation's policy makers to double the agricultural production by 2010 is likely to fall short by 40 percent mark. To realize the dream, we have to move beyond the confines of green revolution witnessed during 20th century – into the realm of all-green and evergreen revolution just waiting to unfold into 21st century.

Reference

1. Centre for Monitoring Indian Economy Pvt. Ltd., (CMIE), "Directory of Indian Agriculture", 1996.
2. Directorate of Economic & Statistics, Ministry of Agriculture, Govt. of India "Agricultural Statistics at a glance" 1996.