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Demand Versus Supply of Foodgrains in India: Implications to Food Security

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ABSTRACT
DEMAND VERSUS SUPPLY OF FOODGRAINS IN INDIA: IMPLICATIONS TO FOOD SECURITY♣

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The present paper addresses the issues namely (i) the present food supply and the trend for future, (ii) shift in food consumption pattern over years and (iii) food demand projection for the next three decades in the context of food security. The analysis reveals that increase in cereal production (mainly rice and wheat) but decline in the percentage share of coarse grains and pulses in total foodgrains production is witnessed since 1960s. India's total foodgrain production has increased at an annual growth rate of 2.68 per cent since 1960-61. The increase in foodgrain production is mainly due to increase in yield (growth rate being 2.44 per cent as against growth rate of area being 0.17 per cent per annum during 1960-61 to 1998-99). To project the future foodgrains supply, past growth trend has been extrapolated. Based on this assumption, the foodgrain supply is expected to be about 245, 291 and 342 million tonnes by 2010, 2020 and 2030 AD, respectively. Shift in consumption pattern and future demand for food is analyzed for both rural and urban India. Per capita cereal consumption exhibited a declining trend over years in both rural and urban India. This decline is larger in rural India (12.19 %) than in urban India (5.43%) during the period under study. Increase in per capita income and urbanization has led to changes in the composition of the food basket, with consumers moving from coarse cereals to superior cereals (rice and wheat). The allocation of monthly per capita expenditure on food items showed structural shift in dietary pattern in favour of non-cereal food items such as fruits, vegetables, milk, meat, eggs and fish in both the areas. Future food demand is also projected which is based on factors such as growth in population, growth in per capita income, urbanization and consumption behaviour. For projecting population, it is assumed that the growth in population will decline by 0.05 per cent per year in future and urbanization will increase by 0.3 per cent per annum. However, production at the assumed growth rate may not increase in future because the past production growth factors in future may not work well in future also. Hence, in the absence of favorable past growth factors, the food supply to match the demand in future may be a matter of great concern for food security. To meet the demand, the increased production will have to be brought about mainly through increases in productivity as the possibility of area expansion is very minimal.

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India's food grain production which was 82 million tonnes in 1960-61 reached to about 203 million tonnes in 1998-99. It has increased at the rate of 2.68 per cent per annum during this period which is a significant achievement. India has now become self-sufficient in foodgrains production from near famine situation prevailing during mid sixties. Public investment in irrigation and other rural development infrastructures together with improved crop production techniques such as high yielding variety seeds, chemical fertilizers, plant protection measures, etc. have significantly helped to expand the food production. The substantial increase in foodgrains production has resulted in significant shifts not only in production trend but also in the availability of foodgrains. But what is more important is that whether increase in foodgrains production would be sufficient to meet its increasing demand in the time to come. The structure of food basket is undergoing change as diets are diversifying from basic cereals to fruits, milk and milk products, meat, fish and eggs, etc. Within the cereals, consumers seem to shift away from cheaper coarse cereals to fine varieties of rice and wheat. Population growth, rise in per capita income, urbanisation, change in taste and preferences, economic growth, etc. are likely to change the supply and demand prospects for food in the years to come. Providing food at the household level for ensuring food security is the major policy concern of the country. Hitherto, the present study has been undertaken to study (i) the present food

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supply and the trend for future (ii) shift in food consumption pattern over years and (iii) food demand projection for the next three decades in the context of food security.

Methodology

The data:

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, etc. for the period 1960-61 to 1998-99. The data on consumer expenditure for both rural and urban consumers were complied from various rounds of National Sample Survey (NSS)) Organization. The NSS Organization publish data on average monthly per capita consumer expenditure on about 20 broad types of commodities for each state of India. For the present study, the required data were collected for five rounds viz. 27th (1972-73), 32th (1977-78), 38th (1983), 43rd (1987-88) and 50th (1993-94).

Estimating future foodgrains supply:

For studying the trend in food grains production, compound growth rates were calculated at different points of time. For projecting future supply, growth trend in production prevailed during 1990-91 to 1998-99 has been extrapolated. However, projection based on past trend may not be realistic because of the fact that past production growth factors may not work in future and new sources of production growth may be found. Hence, foodgrains production in India may not increase at the past growth trend. Therefore, it was assumed that growth rate as observed during 1990-99 will decline to a level of 90, 80 and 70 per cent, by 2009-10, 2019-20 and 2029-30, respectively.

Estimating future foodgrains demand

Growth in population and urbanization, changes in per capita real income and consumption behavior are the most important factors which influence the future foodgrains demand and these are discussed below:

Population growth:

The population growth rate has slowed down during the last decades and the growth rate is further expected to slow down. For the present study it is assumed that the population growth rate will decline at the rate of 0.05 per cent per year during the next three decades. Further, keeping in view the increase in urbanization over the last decades, it is also assumed that urbanization will increase by 0.3 per cent per annum. Based on these assumptions, India's population is expected to reach to 1169.27, 1301.44 and 1378.22 million by 2009-10, 2019-20 and 2029-30 and urbanization is expected to increase to about 32, 35 and 38 per cent during this period, respectively.

Income elasticity

Expenditure elasticity was used as a proxy of income elasticity. The income elasticity was calculated by using data from the 47th round (1987-88) and the 50th round (1993-94, the latest available data) of Consumer Expenditure Survey (NSS, 1996) by fitting double logarithmic function. The elasticities are calculated separately for rural and urban areas (Appendix 1). For the present study, the expenditure elasticitiy of different crops is assumed to change at almost the same rate for future as prevailed during 47t^{h} and 50th rounds.

Per capita income

The per capita net national product at constant prices increased at the annual compound growth of about 3.26 per cent during 1990-99. In future we expect somewhat faster increase in real per capita income. So, it is assumed that per capita

real income would grow at a slightly higher rate as observed during 1990-99 ie. by 3.5 per cent per annum.

Based on the above assumptions, the rate of growth in per capita consumption was worked out for each commodity by multiplying income elasticity of demand with growth rate in per capita income. The per capita human demand so obtained was multiplied by projected population for the respective period. To estimate the aggregate demand (human and non-human), the demand for non-human uses such as seeds, feeds, and wastage. was assumed to be 12.5 per cent of the aggregate demand of each commodity.

Results and Discussion

Food grains production

Average area and production of important food grain crops in India during the last four decades are presented in Table 1. The average cereal production per year increased from 73.90 million tonnes during 1960s to 172.71 million tonnes during 1990s showing about 2.5 times increase during this period. The share of superior cereals (rice and wheat) to total food grains production has shown increasing trend during the last four decades. However, the share of coarse cereals and pulses to total food grain production has experienced declining share during this period. Within the superior cereals, the share of wheat has increased from about 16 per cent during 1960s to about 34 per cent during 1990s, whereas the share of rice to total food grains production has remained about 41 per cent per year during this period.

There was a substantial increase in average area per year under food grains during 1970s over 1960s but in 1980s, the pace of this increase slowed down. During 1990s, the average area was lower than the average area in 1970s and 1980s but higher than 1960s. The share of area under cereals to total area under food grains has been almost stagnant (81%) during the last four decades. Within the cereals, there was

substantial increase in share of wheat area and the area under coarse cereals was being replaced by superior cereals particularly by wheat and rice.

The all India compound growth rate in area, production and yield of food grain crops are given in Table 2. Foodgrains production increased at an annual compound growth rate of 2.68 per cent during 1960-99. The growth rate indicate a marginal increase in the area and increased production was mainly because of productivity growth (2.44%). Decade wise growth indicate that the positive area growth rate during 1960s and 1970s turned into negative growth after words. Regarding production, there was steady increase in growth rate during 1970s and 1980s from the rate of their previous decade but during 1990s, India experienced shortfall in growth rate from the previous decade. However, there was no uniformity in the growth rates among the different crops.

Declining trend in area growth was observed for cereal crops. In rice crop, the growth rate in production was found to be much higher during 1970s and 1980s over the previous decade mainly due to larger increase in yield growth despite of marginal decline in area growth rate during 1980s over previous decade. The production growth declined during 1990s over 1980s mainly due to decline in yield growth. In case of wheat crop, the growth rate in production was lower during 1970s, 1980s and 1990s over their previous decades due to drastic fall in yield growth during 1970s and area growth during 1980s over the previous decade. During 1990s, decline in yield growth was compensated by increase in area growth.

In case of coarse cereals, there was negative growth in area except during 1960s and this declining growth in area continued over the years. The positive yield growth compensated the fall in area and kept the production growth positive. The negative growth rate in area of pulses experienced during 1960s turned to be positive during 1970s. Again, area growth of pulses showed a negative growth during 1980s and

1990s. However, positive yield growth rate during all the decades barring 1970s had resulted in a positive growth rate of production. During 1970s, positive area growth could not outpace negative yield growth which resulted in negative growth in production.

Projectios for foodgrains supply

The production of rice, wheat, coarse cereals, total cereals and pulses increased at the growth rate of 1.80, 3.30, 0.19, 2.02 and 1.92 per cent per annum, respectively during 1990-98. Based on the assumptions mentioned in the methodology section, the production of cereals is expected to increase to 227.59, 271.73 and 319.16 million tonnes by 2009-10, 2029-20 and 2029-30, respectively (Table 5). The cereal production in this way will increase by about 22.47, 42.44 and 62.82 per cent by 2009-10, 2029-20 and 2029-30 over the base year's level (average of 1996-98), respectively. In case of pulses, the production is expected to reach to 16.92, 19.71 and 21.52 million tonnes by 2010, 2020 and 2030, respectively. These projection of cereals production are very close to the projections made by Kumar (1996) with decelerating rate of growth in Total Factor productivity (269.9 million tonnes) for 2020.

Food grains consumption

Cereal Consumption – trend and shifts

The per capita consumption of cereals was higher in rural areas as compared to urban areas during the period studied. However, over the years the rural-urban difference has come down (Table 3). The per capita cereal consumption showed a declining trend during 1972-94 in both rural and urban areas. The decline was more pronounced in rural area (12.19%) than in the urban area (5.43%) during this period. It was further found that consumption of rice increased by 6.54 per cent in rural area and by 6.66 per cent in urban area in 1993-94 over 1972-73. In case of wheat consumption, in rural areas, there was an increase by 13.39 per cent in 1993-94 over 1972-73 level

whereas in urban areas, it has declined by 2 per cent during this period. Within the cereal consumption, the share of superior cereals (rice and wheat) was 68.6 per cent in 27th round which increased to 85.23 per cent in 50th round in rural area which indicates declining importance of coarse cereals in human diet. Similarly, the declining trend in coarse grain consumption was also observed in urban area.

Shift in Food consumption Pattern

The monthly per capita total expenditure was only Rs. 44 in 1972-73 which increased to Rs. 281 in 1993-94 in the rural areas indicating per annum increase by about 25 per cent (Table 4). In urban areas, it has increased from Rs. 63 in 1972-73 to Rs. 458 in 1993-94 indicating an annual increase by about 30 per cent. The increase in consumption expenditure is the result of both rise in income and rise in price level. The per capita total expenditure in urban areas was higher by about 43 per cent than that in rural areas in 1972-73 and by 1993-94, it had increased to 63 per cent. The allocation of monthly per capita expenditure on food and non food items over time showed continuous decline in the share of food items in both the rural and urban areas. However, the magnitude of percentage decline was same i.e. about 10 per cent in both the rural as well as in urban areas. The share of food expenditure to total expenditure in rural areas was more than in urban area in each year under study.

The percentage of total food expenditure on different food items over years is presented in Table 4. There was a substantial variation in percentage of total food expenditure on different food items between the rural and urban areas. The per cent expenditure on cereals was about 38 per cent in the rural areas and about 26 per cent in urban areas during 1993-94. The share of pulses, fish, egg and meat in the total food consumption expenditure was more or less the same in both the areas. In case of fruits and vegetables and milk and milk products, the per cent of food expenditure was more in the urban area than in the rural area. The share of each food items in total food

consumption expenditure over year revealed that the percentage of food expenditure on cereals has declined continuously during 1972-94. It declined by 31 and 29 per cent in the rural and urban area, respectively during this period.

The share of pulse expenditure was more or less the same in both the areas during 1972-94. The share of all other non-cereal food items to total consumption expenditure exhibited an increasing trend over the years in both the areas. However, the magnitude of percentage increase was much more in the rural area than in the urban area. For example, the percentage consumption expenditure on milk and milk products increased by 50 per cent in the rural area while is urban area, it increased by only 24 per cent during 1972-94. Similarly per cent expenditure on meat, egg and fish and fruits and vegetables increased by 55 and 95 per cent in the rural area by 22 and 50 per cent in the urban area, respectively.

Projected foodgrains demand

The foodgrains demand has been estimated separately for the rural and the urban areas. Average annual per capita availability of foodgrains during 1996-98 has been used as the base consumption for predicting the future demand. The base year per capita consumption level was apportioned into rural and urban areas giving weightage to rural and urban population and ratio of rural-urban per capita consumption of each commodity based on the 50th round of NSS. The projected aggregate foodgrains demand presented in Table 5 and direct human demand for rural as well urban areas are given in Appendix 2. The coefficients of expenditure elasticities of demand are positive for all the crops except coarse cereals (Appendix 1). However, seeing the elasticities during 1987-98 and 1993-94, the magnitudes of elasticities is expected to decline over years. As per assumption made in the methodology section on the rate of change in the elasticities, expenditure elasticity of wheat is expected to decline from 0.48 in 1993-94 to 0.19 in 2029-30 whereas in case of rice, it is expected to become

negative (-0.04) in 2029-30 which was 0.30 in 1993-94 in rural areas. So long as expenditure elasticity is positive, per capita demand will increase, however, with lesser growth. The table shows that the total foodgrains demand is expected to be 258.26 million tonnes by 2009-10 which includes 236.61 million tonees of cereals and 21.65 million tonnes of pulses. The demand is further expected to rise to 301 million tonnes by 2019-20 and to 330 million tonnes by 2029-30. These projections are on higher side as compared to the some earlier projections. For example, Paroda and Kumar (2000) estimated a total foodgrains demand to the tune of 264 million tonees with 3.5 per cent growth in per capita income for 2030. The difference in the projection made by different authors may be mainly due to base period of projection, assumptions about expenditure elasticities, population growth, etc. The total demand in 2029-30 will consist of 126.14 million tonnes of rice, 144 million tonnes of wheat, 20.57 million tonnes of coarse grains and 51.40 million tonnes of pulses. The total foodgrains demand in 2009-10 is expected to be higher by 27.63 per cent and in 2029-30 by 63.18 per cent over the base year's level.

Food security scenario

Table 5 shows that the total cereal demand is expected to fall short of expected supply by about 9 million tonnes in 2009-10. By the next decade ie, 2019-20, we would be able to produce what we would demand. However, by 2029-30, India is expected to become surplus in cereal production. As for as pulse is concerned, demand is expected to short fall of supply. This deficiency is expected to the extent of 4.73 million tonnes by 2009-10. The deficiency is further expected to increase to 14.8 million tonnes by 2029-30.

As far as cereal demand is concerned, as per our assumptions regarding the income elasticities, population growth, production growth of foodgrains, etc. there will be no danger to our food security. However, production at the assumed growth rate may

not increase in future because the past production growth factors in future may not work well in future also. Required production to meet the expected demand is possible only through improvement in productivity, as the possibility of area expansion under cultivation is almost nil. To meet the expected demand in case of rice, India must attain yield level of 2.69 tonnes/ha by 2029-30 compared to base level (average of 1996-97 to 1998-99) of 1.91 tonnes/ha.. For wheat, there is a need to achieve yield level of 4.4 tonnes/ha which is more than double to that of base year's level and for total cereals as a whole the average yield must increase to 2.53 tonnes/ha by 2029-30 against 1.85 in base year. In case of pulses, again there is a need to double the yield from the base year's level (0.61 to 1.42 tonnes/ha.). If we see our past yield performance it seems very difficult to attain the required yield level. Our national yield of most of the crops is very low compared to many regions which obviously indicate a gap in yield potential. Hence, there should be a location specific planning which means that regions with low yield must be identified and then efforts be made to improve yield. Some increments in production of superior cereals (rice and wheat) may come through area expansion as some area may divert from coarse cereals. The growth of agricultural sector depends largely on the rate of investments. Data show a declining trend in agricultural investment over the years. The share of agriculture and allied activities in the total investment during third Five Year Plan was 12.7 per cent which came down to about 5.2 per cent during eighth plan. So far as public sector investment is concerned, wages, salaries and maintenance expenditure have taken away the major portion of plan investment in irrigation and rural development projects.

Conclusions

The foodgrains production has increased at the rate of 2.68 per cent per annum during 1960-1999 which was mainly because of productivity growth (2.44%). The share of superior cereals (rice and wheat) in total foodgrains production has shown

an increasing trend whereas the share of coarse cereals and pulses has shown a declining trend during the last four decades. The study further reveals that the per capita cereal consumption showed a declining trend in both the rural as well as in the urban areas. The total per capita monthly consumption expenditure has increased by about six and seven times in rural and urban areas, respectively during this period. However, the expenditure on food items exhibited a declining trend during this period. The food basket was found to be diversified both in rural and urban areas with higher levels of per capita consumption expenditure on milk and milk products, fruits and vegetables and meat. A deficit of about 9 million tonnes of cereals is expected by 2009-10 but by 2029-30, India is expected to emerge as a surplus nation in cereals production. Pulses show a deficit of about 5 million tonnes in 2009-10 and quantum of deficit is expected to increase gradually to the extent of about 14 million tonnes by 2029-30. With the estimated foodgrains production there is no danger to food security but the estimated production can be achieved mainly through improvement in productivity. A high rate of increase in productivity calls for a priority in agricultural research system coupled with more capital investment stressing the development of new production technologies for main crops and farm products.

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Table 1: Average area and production of food grains in India

(Area million ha, Prod – million tonnes)

Crops	1960s		1970s		1980		1990s	
	Area	Production	Area	Production	Area	Production	Area	Production
Wheat	14.00 (11.84)	13.30 (15.65)	20.11 (16.11)	27.78 (24.91)	23.30 (18.38)	44.76 (30.54)	25.31 (20.44)	62.47 (33.55)
Rice	35.86 (30.34)	35.86 (42.19)	38.64 (30.96)	44.76 (40.13)	40.65 (32.06)	59.78 (40.79)	42.92 (34.68)	79.02 (42.44)
Coarse cereals	45.25 (38.28)	24.74 (29.11)	43.27 (34.67)	28.00 (25.10)	39.77 (31.36)	29.86 (20.37)	35.52 (20.27)	31.22 (16.77)
Bajra	11.82 (10.00)	4.18 (4.92)	11.71 (9.38)	5.39 (4.83)	11.04 (8.71)	5.57 (3.80)	9.90 (8.00)	6.93 (3.72)
Total cereals	95.11 (80.47)	73.90 (86.94)	102.11 (81.74)	100.54 (90.14)	103.73 (81.80)	134.39 (91.70)	100.77 (81.39)	172.71 (92.76)
Pulses	23.09 (19.53)	11.11 (13.06)	22.79 (18.26)	11.00 (9.86)	23.18 (18.28)	12.16 (8.30)	22.92 (18.51)	13.42 (7.21)
Total Food grains	118.20 (100.00)	85.00 (100.00)	124.81 (100.00)	111.53 (100.00)	126.81 (100.00)	146.55 (100.00)	123.82 (100.00)	186.19 (100.00)

Table 2: Annual compound growth rates of area, production and yield of foodgrains in India

(per cent)

Crops	1960s			1970s			1980s			1990s			1960-98		
	A	**P**	**Y**	**A**	**P**	**Y**	**A**	**P**	**Y**	**A**	**P**	**Y**	**A**	**P**	**Y**
Rice	0.83	1.19	0.36	0.87	1.90	1.01	0.41	3.62	3.19	0.53	1.80	1.27	0.63	2.70	2.00
Wheat	2.25	6.81	4.46	2.39	4.31	1.87	0.46	3.58	3.10	1.72	3.30	1.57	1.99	5.41	3.35
Bajra	1.41	3.85	2.40	-1.85	-31.8	1.36	-1.05	0.02	1.07	0.48	2.37	1.19	-0.43	1.40	1.74
Coarse cereals	0.66	1.51	0.91	-0.87	1.11	2.00	-1.34	0.35	1.71	-2.16	0.19	1.59	-0.78	0.78	1.77
Total cereals	0.96	2.33	2.02	0.43	2.33	1.58	-0.26	2.84	2.88	-0.05	2.02	1.60	-0.21	2.91	2.57
Pulses	-1.32	1.29	0.03	0.59	-0.39	-.98	-0.23	1.49	1.58	-0.15	0.66	1.01	-0.01	0.66	0.68
Total Food grains	0.52	1.85	1.32	0.46	2.07	1.61	-0.23	2.73	2.97	-0.10	1.92	2.02	0.17	2.68	2.44

A – Area, P – Production, Y – Yield

Table 3: Average per capita consumption of cereals in rural and urban areas

(kg/annum)

Year	Rice	Wheat	Coarse cereals	Total cereal
		Rural		
1972-73	80.17 (43.18)	47.21 (25.43)	58.28 (31.39)	185.66 (100.00)
1977-78	86.63 (46.69)	49.27 (26.56)	49.64 (26.75)	185.54 (100.00)
1983	80.66 (44.79)	54.27 (30.14)	45.14 (25.07)	180.07 (100.00)
1987-88	85.65 (48.42)	60.83 (34.38)	30.42 (17.20)	176.90 (100.00)
1993-94	85.41 (52.39)	53.53 (32.83)	24.09 (14.78)	163.03 (100.00)
		Urban		
1972-73	60.23 (44.04)	58.64 (42.88)	17.88 (13.08)	136.75 (100.00)
1977-78	66.67 (47.16)	59.26 (41.91)	15.45 (10.93)	141.38 (100.00)
1983	64.73 (47.08)	58.64 (42.65)	14.11 (10.27)	137.48 (100.00)
1987-88	66.22 (48.55)	60.59 (43.95)	10.34 (7.50)	137.85 (100.00)
1993-94	64.24 (49.67)	57.43 (44.41)	7.66 (5.92)	129.33 (100.00)

Note: Figures in parentheses indicate per cent to total.

Table 4: Monthly per capita expenditure on food items.

Year	Per cent of total food expenditure					Monthly per capita total food expenditure (Rs)	Total Consumption Expenditure (Rs.)
	Cereals	Pulses	Milk and milk products	Meat, egg fish	Fruits and veg.		
Rural							
1972-73	55.7	6.7	10.0	3.4	6.3	32 (72.8)	44
1977-78	51.0	6.6	11.9	4.2	7.6	44 (64.4)	69
1983	50.02	6.5	11.57	4.7	9.45	73 (65.57)	112
1987-88	40.92	6.6	13.50	5.06	10.7	101 (63.67)	158
1993-94	38.27	6.2	15.01	5.26	12.30	178 (54.65)	281
Urban							
1972-73	36.2	5.8	14.5	5.1	9.9	41 (64.5)	63
1977-78	34.1	6.4	15.9	5.7	10.6	58 (60.00)	96
1983	32.1	6.1	15.67	6.08	12.06	97 (59.15)	164
1987-88	26.45	6.3	17.05	6.33	13.88	140 (56.04)	250
1993-94	25.71	5.6	17.95	6.21	14.87	250 (54.65)	458

Note: Figures in parentheses indicate per cent to total Consumption Expenditure

Table 5: Projected supply and demand of foodgrains in India

(Million tonnes)

Year	Supply	Demand	Gap (Supply- demand)
2009-10			
cereals	227.59	236.61	-9.02
Pulses	16.92	21.65	-4.73
Total foodgrains	244.51	258.26	-13.75
2019-20			
cereals	271.73	271.89	-0.16
Pulses	19.71	29.19	-9.48
Total foodgrains	291.44	301.08	-9.64
2029-30			
cereals	319.16	292.86	26.30
Pulses	22.52	37.32	-14.08
Total foodgrains	341.68	330.18	-11.50

Appendix 1: Estimated expenditure elasticities of different crops in rural and urban areas in India

Year	wheat	rice	Coarse cereals	Total cereals	Pulses
			Rural		
1987-88	0.52	0.37	-0.10	0.36	0.71
1993-94	0.48	0.31	-0.14	0.31	0.71
			Urban		
1987-88	0.31	0.21	-0.74	0.20	0.57
1993-94	0.30	0.20	-0.68	0.20	0.53

Appendix 2: Projected foodgrains demand for direct human consumption in rural and urban areas in India

	Rural			Urban		
years	Cereals	Pulses	Total foodgrains	Cereals	Pulses	Total foodgrains
2009-10	151.22	12.96	164.18	55.82	5.99	61.81
2019-20	165.65	17.44	183.09	72.24	8.10	80.34
2029-30	168.03	22.52	190.55	88.02	10.14	98.16