Role of Women in Ensuring Food Security-
A Study of Farrukhabad District Uttar Pradesh

Babu Singh, Rakesh Kr. Singh, Birendra Kumar and Santosh Kumar*

The study analyses the key role of women in agricultural development and their vital contribution in the field of agriculture, food security, horticulture, processing, nutrition, sericulture, fisheries, and other allied sectors. Specifically it aims (i) to study the socio-economic structure of selected farm workers households, including availability of female farm workers and (ii) to study the role of participation of farm women workers in various field operations of different crops under changing conditions. Out of the total workforce, 55.36 per cent were males and the remaining 44.64 per cent were females. The ratio of working force was found to be almost equal being 0.53 and 0.52 in both blocks under study. The intensity of cropping which was 247.83 per cent due to readjustment of area and introduction of new crops and late wheat as third crops generally grown by the households. The total employment was 236.29 days for production of crops (average area 1.15 ha) during the crop production. Female workers shared for more than 47 per cent in the crop production as a whole during the study period. However, the number of days female workers was employed on farm came to 112.07 days. So far as the participation of female workers on farm is concerned, it is highest in sowing, followed by threshing, interculture and harvesting respectively. The total income was observed on selected farms and average production of district level farms. Total production on sampled farms was nearly 37 per cent higher than district level average farms. Generally more women workers took up most of the operations on the farms. Thus rural women are the most important productive work force in the economy. The study clearly indicate the women took part in increasing the production of farms. With this way food security increased and livelihood improved of the farming community. So women participation is a important key for improving food security.

Food Security and Public Distribution System in India –
Policy Challenges and Reforms

Pradeep Hadke†

Intellectuals throughout the world as also important institutions including the UN have been expressing concern over the increasing population and food crisis. Our

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Constitution guarantees human values and gives its every citizen the right to live with self-respect. India currently has the world’s largest food insecure population with more than 260 million people facing hunger and deprivation. According to the Global Hunger Index (2008), India ranks 66 among 88 countries surveyed by the Washington-based International Food Policy Research Institute. India comes below Sudan, Nigeria and Cameroon. According to IFPRI India is in ‘alarming’ situation of hunger. Under the proposed legislation for food security to India’s teeming millions, the expert committee has estimated procurement and distribution of food not less than 64 million tonnes, increasing to 73.98 million tonnes by 2016-17 against the likely procurement of 57.61 million tonnes in 2013-14. As about 800 million are sought to be covered under the proposed Food Security Act, it is necessary to substantially increase food productivity per unit of resources and output to facilitate the estimated level of procurement, create additional facilities for transport, processing, storage and evolve transparent public distribution mechanism as an integral part of food management system.

Challenges towards Food Security in India: A Study in the Context of Agricultural Productivity and Financial Capability

Debisree Banerjee and Uttam Kumar Bhattacharya*

Food security has become a serious concern for most of the developing counties including India. Agricultural sufficiency is the pre-requisite for food security. It can be achieved through sustained agricultural development. Even if there is an increase in foodgrain production in India it is not proportionate with the growth rate of population. Small land holding, reduced public investment in agriculture, shift of cultivation from foodgrain to non-food grain are some of the major constraints towards sustaining agricultural development and food sufficiency. In order to reduce those constraints financial support for agriculture is essential. The planners in India have taken several steps to broaden the institutional credit framework in agriculture. Though there has been substantial increase in institutional credit, existence of non-institutional credit indicates its insufficiency. The poor capability of the farmers to meet their farming requirements often forces the cultivators to be the victim of various informal financial arrangements. Moreover, agriculture involves a variety of risks which cannot be covered by formal credit institutions alone. Insurance could be another financial tool which could be utilised to cover up some major gaps in the agricultural credit market and provide complementary support. So a consistent effort to include more and more farmers within the ambit of easy formal financial institution and insurance management could be the answer to meet partly the challenges of food security of the country.

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Food Demand Pattern, Dependence on Public Distribution System and Food Insecurity of Rural Households in Puducherry Union Territory

A. Pouchepparadjou, P. Vinothini, L. Umamaheshwari and V. Chellamuthu†

The issue of food security in recent years has become emotional since it is concerned with the life of people in India, where nearly one-third of the population is estimated to be absolutely poor. The paper has analysed the different aspects of demand pattern, dependence on public distribution system, food security and food crisis situation of rural households at the Ozhukarai commune in the Union Territory of Puducherry. A total of 130 respondents, 65 each from farm households and non-farm households constituted the sample framework both in farm and rural non-farm households. Food demand estimates obtained through Almost Ideal Demand System revealed that rice exhibited its staple nature in both the households through its income inelastic nature. Regarding the own price elasticities, the results showed the fact that the farm households were more responsive to the food items own prices compared to non-farm households. In examining the cross price elasticities, the food items rice and other cereals were substitutes in both the households but their magnitude was more in farm households. Any increase in the household size would tend to reduce the demand for milk proportionately in farm households while the same was in the case for vegetables and oils in rural non-farm households. The share of PDS in the purchase was very meager in the case of rice, wheat, kerosene and it was more than half of the total purchase in the case of sugar. The public distribution systems share was higher in low income groups than in high income groups. The developed cumulative food security index indicated that the non-farm households were more food secured than the farm households. The policy suggestions were given for the improvement of food security in rural areas.

An Evaluation of Working of Public Distribution System in Providing Food and Nutritional Security in India vis-à-vis Bihar

Hem Chandra Lal Das*

This paper has two components of study – one pertaining to the states of India under National Food Security Mission (NFSM), and the other relating to the assessment of the functioning of the public distribution system (PDS) in India with focus on Bihar. The NFSM was launched in 2007-08 in 312 identified districts of 17 major states covering 136 districts under rice, 141 districts under wheat and 171 districts under pulses. At least 20 million tonnes additional foodgrains production

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were to be realised by 2011-12, with a break up of 10 million tonnes of rice, 8 million tonnes of wheat and 2 million tonnes of pulses. Out of the 10 million tonnes of rice production, Uttar Pradesh had to produce 1700 thousand tonnes at 4.99 per cent compound growth rate. Bihar had to produce 1000 tonnes of rice at 12.56 per cent compound growth rate. The compound growth rates of the states varied from 3.61 per cent in Andhra Pradesh to 15.83 per cent in Gujarat. Out of the 8 million tonnes of wheat production, 3120 thousand tonnes were to be produced by Uttar Pradesh at 4.17 per cent compound growth rate, followed by Madhya Pradesh and Punjab. Bihar had to produce 800 thousand tonnes of wheat at 6.29 per cent compound growth rate. The required growth rates of wheat production varied from 0.64 per cent in Gujarat to 8.88 per cent in West Bengal. Again, for pulses, states like Madhya Pradesh, Uttar Pradesh, West Bengal, Rajasthan, Karnataka, Maharashtra, etc., were the major contributors to produce 2 million tonnes. Bihar had to produce 10 thousand tonnes of pulses at the compound growth rate of 11.22 per cent per annum. The weighted index of regional inequality in respect of per capita availability of foodgrains in 1988 was observed to be 0.5079 for rural areas and 0.0224 for urban areas. The corresponding figures declined to 0.2301 and 0.0121 respectively for rural and urban areas in 2002. The weighted index of regional inequality in respect of per capita availability of k-calories for rural areas in 1993-94 was 350.61 and for urban areas it was 6.45 in the same year. While the index for rural areas declined to 52.77 in 1999-2000, the same for urban areas increased to 9.52 in 1999-2000. India has a large public distribution system (PDS) through which foodgrains are distributed to the poor at subsidised rates. In Bihar an ambitious reform of the PDS was launched on January 26, 2007: a coupon system. The state government claimed that the coupon system would empower the poor and stop black marketing, and that it was not a simple coupon but a powerful weapon in the hands of the poor. The coupon system of Bihar has failed to prevent corruption for at least three reasons. First, government officials can still divert foodgrains from godowns to open market instead of delivering it to dealers. Second, the dealers can sell foodgrains in the open market after forcibly collecting the coupons. Finally, it is easy for the dealers to give cardholders only a part of their entitlements while charging more prices. The lessons for Bihar from other better performing states include deprivatisation of PDS shops, computerisation of records and regular monitoring, establishing effective grievance redressal mechanism, and reducing the prices of commodities provided through the PDS. Bihar currently focuses on ‘targeting effectively’, but despite considerable efforts by the state, the BPL list is unreliable with large exclusion errors. These can be avoided only with a much expanded BPL list. There are also important lessons for policy makers and politicians about the ability of coupons, food stamps, smart cards or the unique identification number (UID) to root out corruption. In the context of Bihar, it is easy for a PDS dealer to take coupons while delivering partial entitlements, or for that matter to get thumb impression on biometric device without delivering any amount of foodgrains.
Production, Consumption and Prices of Rice – A Macro Perspective

B. Sheshagiri†, V. Sharada‡ and L.D. Vaikunthe§

In this paper an analysis of growth trends in world rice price during 1994-95 to 2008-09 has been made to find out if there is any systematic relationship between the movement of production and price of rice. It is interesting to note that the annual average growth rate in yield of rice during the 1980s to 1990s was 3.19 per cent which declined to 1.34 per cent during the next decade. However, it showed signs of marginal increase by rising to 1.61 per cent during 2000-09. Looking to the trends in CAGR, it reveals that in the decade of first reform period, i.e., from 1991-2000, compound annual growth rate was 1.87 per cent, and it decreased to 0.64 per cent during 2001-10. World price of rice showed continuous increasing trend from 1991-2010, during 2005 to 2007 the world price of rice has almost doubled itself when compared to 1990-91 prices. This is due to lack of proper rice policies which resulted in imposing a heavy burden on poor consumers necessitating the government to provide for food distribution programmes. The study then analyses the trend in rice consumption in major rice growing countries, followed by the trend in rice production and the factors contributing to the recent deceleration in the growth of rice production and its impact on prices. The last part is devoted to suggesting perspective fruitful rice policies. The overarching purpose of this study is to consider the impact of international rice trade policies on the patterns of production, consumption and prices.

Foodgrains Utilisation and Availability in India and Punjab

Sukhjeet K. Saran and Richa Sharma*

An attempt has been made to explore the trends in population growth, foodgrain production and per capita utilisation and availability of foodgrains in India and Punjab during the period 1960-61 to 2010-11. The study has identified the food grain surplus and deficit states based on nutrition norms and age sex composition of India with special reference to the state of Punjab. In India, after the Green Revolution in the sixties, foodgrain production has increased substantially and per capita food availability has increased in most of the states of the country till 2000-01. This has happened inspite of the continued population growth in the country and an increasingly larger percentage of area under non-food crops. A substantial decrease

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in the growth rate of foodgrain production was observed both in India and Punjab after 2000-01. Still per capita availability of food grains per annum in India and Punjab was higher than that of utilisation throughout the study period. In 1960-61, the per capita availability of food grains was 179 kg per annum in India which increased to about 196 kg, 190 kg and 208 kg per annum during 1970-71, 1980-81 and 1990-91 respectively. In the 1990s, especially during the latter half of the decade, it had declined sharply. The per capita availability of food grains registered a decline of 22.6 per cent during the period from 1990-91 to 2002-03, the highest decline since 1991. During the period 2010-11, per capita availability of food grains again reached to 199 kg per annum. The increase in area under non-food crops has decreased the per capita availability of food supply in many states of India. The study has identified that Punjab is self-sufficient in foodgrain production and is a food grain surplus state of India. The study also projects the food grain utilisation of India and Punjab by the year 2021 and 2031 and explores the possibility of augmenting foodgrain production in India as well as in Punjab in future.

Managing the Foodgrain Economy: The Paradox of Food Security in India

Jayanti Kajale and Sangeeta Shroff†

The paper attempts to study the role of and problems associated with the procurement and distribution mechanisms of the government in achieving food security. The study shows that whereas the demand for foodgrains is increasing with increase in the size of population, the sluggish growth in supply of food grains is posing a threat to India’s self sufficiency in this regard. It is revealed that the activities of Food Corporation of India (FCI) such as procurement and public distribution of grains under food management policy through its instruments of buffer stocks, minimum support prices and issue prices have not been able to meet the demand for foodgrains in the open market segment as well as in the controlled segment adequately. This has resulted not only in coexistence of widespread hunger with adequate food stocks with the government but also in rise in open market prices of foodgrains and ever mounting food subsidy bill. It appears that the policy mix adopted at different points of time has not been able to fulfill the objective of stabilising the food economy so as to mitigate the adverse impact of a shortfall in production. In order to solve the issue of food security, reforms such as strengthening of the PDS, timely release of the buffer stocks, improvement in the storage facilities for maintaining quality of stocks, extending and strengthening procurement operations of FCI to the North Eastern states etc., have to be undertaken so that the country becomes self-sufficient in foodgrains and will no longer have to resort to export bans to safeguard domestic requirements.

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Governance of Technology Dissemination System for Increasing Chickpea Supply to Meet India’s Nutritional Security Concerns

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The paper attempts to examine the governance aspect of the R&D and technology dissemination system in operation for improving the chickpea production and supply in the country. The declining trends in area under chickpea was reversed by 2001 and the area allocation has increased by 4.02 million ha during last 10 years by registering a compound annual growth rate of 4.61 per cent. The scenario at the regional level highlights a major geographical shift in chickpea production towards rainfed/dry region of southern and central India or the semi-arid tropical (SAT) region. All the major chickpea producing states in the Indo-Gangetic Plains (IGP) have shown negative compound growth rates in area and production ever since the onset of Green Revolution. The chickpea area in IGP has reduced to its one-fifth level at 0.772 million hectares while in SAT region, it more than doubled to 7.643 million ha by TE 2010-11. The total production of chickpea at all time high level of 8.25 million tonnes in 2010-11 is still less than the total annual demand for chickpea in the country. The per capita availability of chickpea has also declined to 13.5 grams per day in 2010. The shortage has been met from imports and the total quantity imported during TE year 2009 was 218.3 thousand tonnes valued at 113.13 million US dollars. The imports as proportion of chickpea production has remained at 2 to 4 per cent during the period from 1991 to 2009, and reaching up to 13 per cent in deficit years. The main technology dissemination system envisaged for improving the sluggish yield growth of chickpea in the country is the conduct of frontline demonstrations (FLDs) under the close supervision of the scientists. FLDs have established that there was a yield advantage of 21-25 per cent over the local varieties every year. The mean yield of chickpea FLDs under improved management and close supervision of the scientists have been in the range of 13.57 to 16.17 qtls/ha. Thus the emphasis in FLD design in IGP region should be prioritised towards the maintenance of fragility of the agro-ecosystem for pulse production. Sugarcane based production system of IGP has great scope for area expansion under chickpea, and the FLDs need to be carried out in these areas to prioritise research accordingly. Effective efforts to control the menace of blue bulls posing serious threat to chickpea cultivation and price incentives are the other ways to restore the declining area of chickpea in IGP region.

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Scenario of Nutritional Food Security of Farming Families in Himachal Pradesh

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An attempt is made to examine the growth, production, consumption and analyse the extent of availability of cereals and pulses in Himachal Pradesh. A sample of 60 households was selected, i.e., 20 each from low, mid and high zones of Himachal Pradesh. The information about the consumption pattern was collected by cost accounting method for the agricultural year 2009-10. Efforts have been made to work out the calorie intake per person in different age groups on different size of holdings in different zones of Himachal Pradesh. In case of per capita availability of cereals, Himachal Pradesh occupies a better position which is not the case for pulses. In the case of net availability of cereals at farm level maize is surplus at all sizes of farms in all zones, while wheat and rice crops in most of the cases are in deficit. The study reveals that large farmers had more calorie intake than that of small farmers in all the zones. In low hill zone, the calorie intake of male population on small farms is 2483 calories. While in mid-hill zone male population of large farms consumed 3005 calories while the male population of small farms consumed 2968 calories. Likewise the calorie intake of male population in high hill zone was 3679 calories as compared to small farms, i.e., 3478 calories. It was also observed that cereals are the main ingredients of total energy intake. The proportion of cereals intake decreases as farm size increases and the intake of calories increases as elevation increases. In Himachal Pradesh, the quantity of calorie intake is below the recommended quantity. Even then it can be inferred that the food security scenario is much better in the case of Himachal Pradesh. The study suggests that the practice of intercropping and double cropping must be encouraged to meet food challenges and awareness regarding nutritional food security must be promoted on a large scale among the farm households.

Role of Women in Providing and Improving Household Food Security in Rural India: Implications for Reducing Hunger

Anindita Sengupta and Panchanan Das*

The study has highlighted on the situation of food availability in three eastern region states, namely, Orissa, West Bengal and Assam with a view to examine the factors responsible for higher incidence of chronic and seasonal hunger in these states. Specifically the study attempts to carry out empirical investigation on the
contribution of the major factors likely to have some effects on the incidence of hunger among agricultural households, particularly among female-headed households, in rural India with 59th Round NSS unit level data. It has analysed the situation of food availability in female and male headed households in relation to source of income of the household, education, credit availability, access to technology, pattern of expenditure etc. in the rural areas of India as a whole and three maximum hunger affected states of India, namely, Assam, Orissa and West Bengal using an Ordered-Logit model. It is observed that there had been a significant difference between female and male headed households in agriculture in terms of food security with the same access and control of productive resources. But the difference was attributed to the differences in access to resource caused by gender discrimination.

**Coarse Cereal Production and Sustainable Food Security**

**Deepa B. Hiremath and R.L. Shiyani†**

The conceptualisation of food security has evolved over time, partly preceding and partly paralleling similar evolutions in poverty. Since the World Food Conference of 1974, food security paradigms have shifted from the global and national level to the household and individual level; from a ‘food first’ to a ‘livelihood’ perspective and from the objective indicators to subjective perceptions. Indian agriculture at the beginning of 21st century is faced with major challenges. The country has an excess of foodgrains in public stock and yet every fourth Indian does not even get a minimum caloric intake. Over the years, India is witnessing a decline in production and productivity of coarse cereal grains. The farmers also are moving from food crops to more remunerative but resource dependent commercial crops. It is crucial for a country like India where a major landmass of 92.3 ha. of cultivable area, constitutes rainfed region, that dry land farming of food crops especially coarse cereals must be encouraged. A specific focus on rainfed regions is all the more important as these regions continue to accommodate a large number of people. The study concluded that whatever be the strategy to ensure food security it should be safe, socially acceptable and eco-friendly through a sustainable food system that maximises community self-reliance and social justice.

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Food Security in India- Problems and Solution from Farming Perspectives

Shiv Raj Singh and K.K. Datta*

Based on National Sample Survey data, the study examines why food insecurity prevails among the farm households. Nearly 52 per cent of households were food insecure at country level. Food insecurity among the households was mainly explained in terms of seasonality of agricultural production. The paper develops an approach to estimate the marginal effect of an increase in income on income distribution so that focus can be made on a particular income generation activity to ensure food security and income distribution at the household level. It was observed that out of 52 per cent food insecure households around 27 per cent and 40 per cent households did not produce enough food for its self-sufficiency in Visit I and Visit II, respectively, whereas about 25 per cent and only 12 per cent households who were even able to produce enough food but they were not able to obtain sufficient calories. The food accessibility and food availability at households’ level differ and behave differently across the regions and even within the states in the same region of India. The analysis provides evidence that accessibility of food at household level is very closely related with available resources (land) and income. Also higher household income always did not ensure the food accessibility which mainly depend on the nature (daily, monthly and annual) of income from different sources. In relative terms, stable and regular sources of income especially from livestock sector ensure the food security at household level especially from the evidences of Rajasthan. Decomposition analysis suggested that income from livestock activities and, wages and salaries is more inclusive in terms of ensuring the food security at household level because, income from these activities is on a daily or monthly basis. The binary logit estimates shed light on the determinants of food security and it indicated that household food security is positively related with the household characteristics (self employed in agriculture), farm assets (dairy animals, farm size), modern agricultural practices (use of fertiliser and improved seeds) and livelihood activities (dairying, non-farm business and, wages and salaries).

Role of Women in Improving Household Food Security in India

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The study focuses on the role of women in improving food security for the households in rural areas of North coastal Andhra Pradesh. The specific objectives of

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the study are (i) to determine how women’s role in food production contributes to improving household food security; (ii) to examine the gender roles within households such as responsibility sharing and decision-making process which influence food security and (iii) to make policy suggestions to improve women’s contribution in improving food security. Using multi stage random sampling method the data was collected from 300 households from Chodavaram mandal, Visakhapatnam district during May and June 2011. Here improvement of the household food security refers to the expanding availability and accessibility of nutritional food on sustainable basis. The income generating activities along with other possible income sources, viz., cash crops, tree products, pension, assets, remittance from migrants, and savings sources provide household with income to afford food. The findings of the study indicate that in most rural areas women are more capable than men in terms of the ability to use and allocate the available resources for the purpose to improve food security for their families. Therefore, based on the findings of the study, the major policy implication is that the crucial role of women can greatly be enhanced through adoption of supportive national policy. This potentially contributes to increase their role in improving the food security at the household level. Technologies could be designed specifically to address women’s needs, give them more time to increase their productivity and reduce their workloads. Improving their access to simple appropriate technology like alternative sources of the cooking fuel shortens the process of food preparation, reduces the need for daily firewood collection, and provides additional time. Strengthening women’s status through developing local grassroots organisations such as self-help groups should provide them with more links to the formal government institutions and hence better access to resources and services. Therefore, forming and developing women grassroots organisations could be a key to improving household food security.

**Alarming Status of Nutritional Security and Widening Supply – Demand Gap of Pulses in Tamil Nadu**

S. Angles, M. Chinnadurai and A. Sundar*

A study was undertaken to investigate the pulses production and supply-demand scenario in Tamil Nadu using secondary data. The performance of the pulses area, production and yield in Tamil Nadu were assessed using compound growth rate and instability index was employed to assess the growth and risk. To study the supply-demand gap, the supply of pulses in Tamil Nadu is projected using ARIMA model. The results revealed that the area, production and productivity of total pulses in Tamil Nadu registered negative growth and there was high instability in productivity compared to area. The area under irrigation was low and it does not exceed even 5

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per cent of the total pulse area. The total demand for pulses was projected using ARIMA model which revealed that during 2025 the demand for pulses will be around 10.46 lakh tonnes and supply would be only 2.10 lakh tonnes, leaving a gap of 79.94 per cent of total state demand. An integrated approach of Governmental support, research in pulse yields improvement and fulfillment of the requirement of pulse producers through price support is the only way to attain the nutritional security of the vulnerable sections of the State.

Food Security in India: Challenges and Opportunities

S.C. Srivastava†

The study aims to examine the performance, challenges, and policies in food security in terms of availability of food over the last three decades. The study is based on secondary data collected from published sources. It has been observed that the foodgrains, pulses, oilseeds, sugar, fruits and vegetables, poultry, dairy, meat, fish, etc., constitute the bulk of the output in the agricultural sector. The performance of agriculture is important for availability and access to food as more than 55 per cent of people in the country are dependent on this sector. The challenge to food security comes mainly from the slow growth of purchasing power of the people in the rainfed eco-systems. There study suggests the need to step up efforts to help them by developing drought resistant seeds, cost-effective dryland farming techniques. In addition, rain water harvesting techniques, moisture conservation, inter-cropping are imperative to stabilise and improve the production in the dryland areas. It is also essential to explore the possibilities for cost-effective expansion of irrigation. Appropriate pricing of water, electricity and fertiliser and rationalisation of minimum support prices would augment resources available for investment in irrigation, rural infrastructure and prevention of soil degradation.

Food and Nutritional Security Among Female Headed Households:
A Case Study of Rural Punjab

Jatinder Sachdeva, Baljinder Kaur, Satwinder Singh and Jasdev Singh*

The paper attempts to assess the role of women in achieving the household food and nutritional security in rural Punjab. Specifically it seeks to determine the role of women in improving household food security and to compare male- and female-headed households with respect to asset position, income, expenditure on food,
clothing, etc. which influence household food security. The results indicated that the educational level of female respondents was comparatively lower than their male counterparts. It is evident that the living standards maintained by the female headed households was lower as indicated by the acquisition of assets. The men to women employment ratio were 1: 0.65, reiterating the low level of employment among women. The annual income of only 32 per cent of female headed households was more than ₹ 50,000 per annum, whereas it was about 84 per cent in the case of the male headed households. To account for access to food for women and children, their monthly expenditure on food was taken as a proxy to nutritional security which was 32 per cent less than the male headed households. On an average, the monthly expenditure of female headed households was ₹ 3176 which was quite less than the male headed counterparts (₹ 4861). The female headed households who received remittances from migrated husbands was found to be better in asset position. The study revealed that food insecurity is higher in female headed households than in their male counterparts and the state needs to take rigorous steps to design policies that aim to improve women’s health.

Sustainability of Food and Nutritional Security of India: Challenges and Emerging Trends

M.S. Toor, Tajinder K. Dhaliwal and Prabhjeet Kaur†

Our country has made great strides towards increasing foodgrains production since mid-sixties. Today, India ranks high in the production of various commodities such as paddy, wheat, milk, fruits and vegetables. However, the technological breakthrough achieved in the 1960s is gradually waning. The need for a second green revolution is being experienced more than ever before. Increasing agricultural production and productivity is a necessary condition not only for ensuring national food security, livelihood security, and nutritional security but also for sustaining the high levels of growth envisaged in the current plan. Capital investment in agriculture as a percentage of the gross domestic product (GDP) has been stagnating in recent years, although the capital expenditure in agriculture as a percentage of the GDP in agriculture has shown some improvement in the current five year plan. A targeted development of rainfed areas should be prioritised. With increasing income and population, demand for processed food is likely to increase. It is necessary to cater to this changing demand and at the same time enhance the income of the farmers. To fulfill the requirement of sufficient food along with nutritional security, a thrust on horticulture products is required. To conclude, raising farm productivity with adequate focus on rainfed areas, diversification of agriculture from just crop farming to livestock, fisheries and poultry and horticulture while simultaneously addressing

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environmental concerns should be the focus for the agriculture sector. Higher levels of investments are required for not only increasing farm productivity but also for creating adequate infrastructure for transport, storage and distribution of agricultural produce. Another very important policy initiative in this direction is the consolidation of land holdings in the rest of the country for proper utilisation of natural as well as other resources in the agriculture sector.

**Food and Nutritional Security in India: Pulses – A Weak Link**

Shalendra, Purushottam Sharma and K.C. Gummagolmath*

An attempt has been made in the paper to study the consumption pattern of different food items with a focus on pulses along with various other related aspects so that appropriate policies can be suggested to enhance the production and availability of pulses. The findings of the paper are mainly based on the information collected from various Rounds of NSSO survey pertaining to the years 1999-2000 to 2009-10. The study revealed a shift in the consumption of food items away from cereals towards high value crops, food of animal origin and processed products. Consumption of pulses also has witnessed a decline during the period under reference. This calls for immediate attention with the focus on production technology for pulses along with effective extension, institutional arrangements and policy support at both ends, i.e., production as well as consumption.

**An Assessment of Food and Nutritional Security of West Bengal and India**

S. Maji, B.K. Bera and A.K. Nandi†

The paper seeks to assess the food and future nutritional security with special reference to people below poverty line in India in general and the state of West Bengal in particular from the viewpoint of recommended calorie intake required to maintain an active and healthy life as well as project future requirement of food crops at both levels using projected population. The study based of secondary data collected from various sources reveals that the percentage of people below poverty line are consuming less than recommended calorie norm (2400 kcal per capita per day) is accelerating with varying magnitude and the dependence on cereals including cereals substitutes and foodgrains for supply of needed body energy and protein are marginally decelerating, although it remains more than 75 per cent, over the periods under study in both rural and urban areas both at the state as well as all-India level. Per capita per day consumption of total cereals, the main source of body fuel, has declined by 17.33 and 0.09 per cent respectively, in rural and urban India. The trends

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in foodgrains production indicates that the increase of total cereals production of more than 3.5 per cent enables food production to register a growth of 2.73 per cent which is higher than population growth of India during the period 1980-91. Declining trend in foodgrains production as a result of dismal performance of productivity of major cereals, population growth surpasses the food production rate in period 2001-08. In spite of this, the country has experienced food surplus status because of unequal distribution and inaccessibility to food by a larger section of population. Now, the country is confronting dual problems of retardation of yield of major food crops and inability to eradicate hunger and malnutrition by enhancing the access of majority of population to adequate and nutrient rich food. To meet the food and nutritional demand, India needs to produce 206.51, 222.29, 236.37 and 248.65 million tonnes of total cereals (average annual compound growth of 1.36 per cent over production of 2007) and the requirements of West Bengal are 15.17, 16.70, 17.50 and 18.10 millions tonnes (annual average compound growth of 2.24 per cent over base period, 2007) for periods 2011, 2016, 2021 and 2026 respectively assuming equitable distribution and access to sufficient and nutrient rich food by every educated and health conscious person of India. Proper implementation of existing food based programmes coupled with Mahatma Gandhi National Rural Employment Guarantee programmes introduced with the aim of increasing purchasing power of nutrient deficit food starved people may reduce the percentage of under-nourished population, but complete alleviation of hunger and malnutrition necessitates the introduction of universal public distribution system (PDS) in place of targeted PDS and target-oriented region specific programmes with more emphasis on dry land areas for augmenting productivity of major foodgrains through extensive research and extension service, farm investment and infrastructural development.

Food and Nutrition Security in India

S.S. Kalamkar*

An attempt is made to review the extent of food and nutrition insecurity in India. Improving the food security is an issue of considerable importance for the developing countries like India where millions of people suffer from hunger and malnutrition. Though India has made impressive strides on the agricultural front during the last four decades, it is still home to the largest number of poor people of the world. The chronic food insecurity which is primary associated with poverty, still persist in the country. The per capita per day availability of food grains in India is almost stagnant during last decade. Though physical access to food was achieved, economic access at the micro-level lagged behind indicating food and nutritional insecurity. India is one of the few developing countries, which have experimented with a broad spectrum of programmes for improving food security. It has already made substantial progress in

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terms of overcoming transient food insecurity by giving priority to self-sufficiency in foodgrains and through procurement and public distribution of foodgrains, employment programmes, etc. The poor agricultural productivity and production, and low level of foodgrain outputs resulting from the low level introduction of agricultural/crop technologies; poor rural infrastructure; high vulnerability of crop production to natural disasters such as floods and droughts; and high rates of unemployment and poverty, are some of the reasons for the high degree of food insecurity. In order to ensure food security on a sustainable basis, importance should be given to the adequate supply of irrigation water to sustain the growth in agricultural production; water security for poor farmers to grow food for subsistence, and adequate economic incentives for farmers to maximise their production from the available land and water with least environmental consequences. The challenge to food security comes mainly from the slow growth of purchasing power of the people in the rain-fed eco-systems. Efforts should be made to help them by developing drought resistant seeds, cost-effective dry-land farming techniques. In addition, rain water harvesting techniques, moisture conservation, inter-cropping are imperative to stabilise and improve the production in the dryland areas.

A Study on Food Security of Rural Households – An Application of AIDS Model

T. Ponnarasi and K. Sita Devi†

The paper attempts to study the food security status among the rural households with the specific objectives as (i) To estimate the household demand for food in the rural households and (ii) To derive the food security situations of rural households. Using multistage random sampling technique 300 rural households were selected from six villages of two blocks, viz., Koliyanur and Vanur of Villipuram district in Tamil Nadu. The results are based on the primary data collected from the sample respondents by personal interview with the help of a comprehensive and pre-tested interview schedule. Though the sample is homogeneous there existed variations within the sample, hence the data was post stratified into three categories of households, i.e., cultivator households, agricultural labour households and other worker households. The results of the study indicated public distribution system was utilised to its fullest extent by the rural households notwithstanding the occupational categories. The Almost Ideal Demand System (AIDS) analysis to estimate the household demand revealed that in all the three categories of households, any higher level of income would influence the pattern of rice consumption followed by vegetables and milk. Fruits were found to be an inferior good for all the three categories of sample households. Oil, pulses and vegetables were found to be the

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complementary goods in all the three categories, showing a dismal state, since these goods are the most important dietary components for all age groups. Regarding food security, the agricultural labour and other worker households are found to be food insecure. Hence, a revamped direct food assistance programme by the government along with its other safety net programmes for rural poor can be oriented in order to address these serious food security issues in the rural areas.

Food Security and Poverty in Market Oriented Economy in India

A.N. Shukla*, Anil Kumar*, Rojani Mishra* and P.P. Dubey**

An attempt is made to analyse the impact of change in Government expenditure and investment in agriculture and on the food situation in India and the impact of economic policy on food security. The problem of hunger in India is definitely not one of scarce food production. As with many other aspects of poverty, the problem of food insecurity is often one of governance. Purchasing power is the root cause for the declining food security in our country, especially among the rural poor. To a large extent, the neo-liberal policies pursued in the post-1991 period has aggravated the situation by the shrinking demand due to lack of purchasing power. The decline in the public expenditure has affected the food security both from the demand and supply side though the demand side problems are more severe. Further, investment in agriculture as per cent of gross domestic production is declining over time which is a great cause of concern of food productivity and food security. To counter this situation, what is urgently needed is a rise in government expenditure, especially on rural development. This must include setting up of irrigation works, extension of and provision of adequate credit facilities and provision of subsidies on farm inputs. The initiatives like government run ‘food for work’ programmes should be revitalised. This will provide adequate purchasing power in the hands of the rural masses and will also reduce the excess buffer stocks of foodgrains of the central government. Active state intervention is thus the cornerstone of improving food security in India.

The Impact of Social Welfare Programmes on Household Food Security – An Economic Analysis in Tamil Nadu

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An attempt has been made in the paper to find out the household income, consumption expenditure on food and non-food items and calorie acquisition of the

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participants and non-participants of Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) in Tamil Nadu. Further, it has measured the household nutrition security of the rural households. The study is based on data collected from a total of 360 households, comprising 180 each of participants and non-participants of NREGS selected from three districts, viz., Cuddalore, Thiruvarur and Thirunelveli of Tamil Nadu. The study pertained to the year 2007-08. The results of the study revealed that the number of migrants in the family, number of livestock units owned, number of man-days employed in agriculture, non-agriculture and NREGS were significantly influenced by the household income of the participants and non-participants of NREGS. The analysis of household food security showed that the expenditure for all commodities, viz., leisure, cereals, pulses, oils, fruits and vegetables, milk, chicken, fish were positive and significant in the case of participants of NREGS whereas, the expenditure variable was significant only for two commodities, viz., cereals and oils in the case of non-participants of NREGS. It clearly showed that the participants of NREGS are consuming more high value commodities like milk, chicken and fish when compared to NREGS non-participants due to their lack of income. The results of calorie acquisition of NREGS participants covered more than 85 per cent of the requirement of the average recommended calories per capita per day than the NREGS non-participants (76 per cent). Hence, the NREGS participants consumed more calories due to relatively higher purchasing power. This development is due to availability of guaranteed employment and regular wages through NREGS to the rural households.

Present and Future Challenges of Agriculture in Meeting the Food Availability in India

Renu Martolia*

The study has examined the present and future status of agricultural food items and consumption pattern of consumers in terms of food availability. Food availability provides access to food and in turn increase the nutrition status among the households. Food availability is a necessary condition for food security. India is more or less self-sufficient in cereals but deficient in pulses and oilseeds. Due to changes in consumption pattern, demand for fruits, vegetables, dairy, meat, poultry and fishery products has been increasing. There is a need to increase crop diversification and improve allied activities. The issue of food security is not so much about availability of foodgrains but the composition of the overall food basket from the point of changing consumption patterns. It is commonly observed that as economic growth picks up there is a change in the dietary patterns wherein people substitute cereals with high-value food. Even though self-sufficiency in food

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production has been achieved, the population still lacks access to balanced food. It is a matter of concern that even though cereal production has kept pace with the increasing requirements and average per capita intake of cereals have remained satisfactory, these has been a fall in the per capita consumption of pulses. It is important not only to improve pulses production but also to be make them available at affordable cost. The production and consumption of vegetables and fruits continue to remain low. Specific efforts have to be made to improve production and access of vegetables at affordable cost both in the rural and urban areas. A breakthrough in the production technology is necessary to keep pace with rising demand for these commodities.

Food and Nutrition Security in India: Performance, Challenges and Perspectives with Special Reference to Odisha

Kartik Prasad Jena†

The objective of the paper is to examine the current state of food and nutrition security and its future in India with special reference to Odisha. It also assesses the challenges and performance in food nutrition and security in terms of government policies, programmes and schemes in India with special reference to Odisha. India has witnessed high economic growth in the last decade, but the problem of food and nutrition insecurity still remains as a great threat to a large number of poor and vulnerable sections in the country. Foodgrain production is now well over 244 million tonnes but we are facing double digit inflation in case of food items. A paradox of endemic mass-hunger co-exists with mounting foodgrains stock. There is an extremely high prevalence of hunger and malnutrition. Nearly 50 per cent of the world’s hungry lives in India. About 35 per cent of India’s population is food insecure. India ranks an abysmal 67th in the Global Hunger Index 2010 among the BRIC countries. The position of Odisha is worse. To meet this challenge, recommendations made by the National Commission on Farmer (NCF) need urgent and concurrent attention. The immediate challenge before India is to face the anticipated food crisis arising due to the possible steep rise in food prices during 2011. The hurdles in achieving food security essentially lie with the policy shortcomings and shortfall in delivery mechanisms of food grains under PDS. Agriculture will continue to play a central role in tackling the problem of food insecurity. To meet the future needs of providing food security greater attention needs to be devoted to the agricultural sector through larger investment in rural infrastructure including research and development of new technologies and by checking the diversion and plugging the leakages of foodgrains suggested through public distribution system.

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Role of Gender in Ensuring Food and Nutritional Security: A Case Study of Tribes of Meghalaya


A study was conducted in the year of 2011 in Garo hills of Meghalaya to demonstrate the vital and often unacknowledged role that tribal women play in agriculture as well as highlight their critical role in ensuring sustainable agricultural development in household level improvement in food and nutritional security. The study indicates that occupational migration is common in the study area but a locational migration is negligible for their livelihood. This is due to the fact that Garo tribes generally prefer to stay with their families and not to live elsewhere. Moreover, despite poverty, they prefer to live within their means rather than be in debt. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is the most popular social scheme in the study area as maximum of the respondents acknowledged receiving support from the scheme. Public distribution system (PDS) is next to MGNREGA in providing support to the farmers. Further, the study suggests introducing improved rice varieties which have higher yields and more importantly are tolerant to drought. Awareness programme for good health and nutrition, employment generation activities within the village such as MNREGS and SHGs needs to be strengthened. Special attention is to be given for PDS system which needs to made strong, particularly for tribes in the state.

Nutritional Status vis-à-vis Technology Adoption: A Study of Punjab Cultivators

Arjinder Kaur and Amarpreet Kaur†

The paper attempts to study the consumption behaviour of farming households in the state of Punjab in terms of their income and consumption status, and the composition of their consumption expenditure. For the purpose of the study data was obtained from four selected bullock operated, 76 semi-mechanised and 76 tractor operated holdings and the study pertained to the year 2007-08. The impact of technology adoption was evident on income from farm cultivation across the three categories. It is found to be maximum on mechanised farms and the least in the case of non-mechanised farms. However, net returns were found to be positive in all the three categories under study, though in the case of bullock operated farms, the maximum proportion of total income accrued to non-farm sources. Food emerged as

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the main component of domestic expenditure in all the three categories, though its proportion decreased at higher level of mechanisation. Within food segment, milk and milk products, wheat and sugar have shown a higher share in total food expenditure. The value of food items furnished by the farm itself was found to be higher on semi-mechanised farms and mechanised farms as compared to the non-mechanised farms. In the case of wheat consumption, the main staple diet of Punjab, 91 per cent was self produced in all the categories. The nutritional status of selected cultivators when compared with Recommended Dietary Allowances (RDA) depicted the same pattern across the categories with a bias towards high energy food items like cereals, milk and fats, but is deficit in protein rich and protective food materials like fish, meat, eggs etc.

**Impact of Reforms on Targeted Public Distribution System in Chhattisgarh: A Case Study**

**A.K. Gauraha, K.N.S. Banafar, H. Pathak and M.R. Chandrakar**

A study was conducted in Raipur district of Chhattisgarh in order to assess the impact of reforms on public distribution system (PDS) in the State. For the purpose of study 120 households and 8 fair price shops (FPS) owners were interviewed. The results revealed that majority of the beneficiaries were satisfied with the way their ration shops functioned and were friendly against the proposal of cash transfer and welcomed the Core PDS Smart Card Yojana to be introduced by the State Government from the month of June 2012 which would be helpful for both consumers and shop keepers. Through smart card beneficiaries get their entitlement from any FPS. A large majority of the respondents, especially, women preferred to receive in kind food transfer rather than cash transfer as they perceived that money intended for buying food would be spent on non-food items, particularly alcohol. PDS dealers complained about low commission, low weight of commodities supplied by government agencies, mixing up of waste material (dust particles) in foodgrains, delay in supply and commission payment etc. In spite of these positive developments, there remains much scope for improving the PDS, especially in terms of supplying better quality of food grains, inclusion of other basic food commodities like pulses, cooking oil and such other nutritive products in order to ensure both, food as well as nutritional security among the under privileged and poor people, in particular.
Inter-Regional Variations in Agriculture Performance and Its Implications on Food Security in Uttar Pradesh

Rooba Hasan and H.P. Singh

The paper examines the inter-regional variations in agricultural performance in the state of Uttar Pradesh which would facilitate in framing suitable policies for ensuring food security in the nation. Though Uttar Pradesh is a major contributor of nation’s food security, there exist wide variations in natural resources, agricultural infrastructure and thus agricultural performance across different regions. The western region was found to be most developed region while Bundelkhand was least developed in terms of agricultural performance. Irrigation development, yield of major crops, cropping intensity, etc. was comparatively higher in the Western region as compared to other regions. On the other hand, scarcity of water resources is the major challenge in Bundelkhand region which requires interventions of water saving technologies backed by policy support for adoption of such technologies. Crop diversification was found to be a coping mechanism by the farmers of Bundelkhand region. The eastern region of the state needs creation of irrigation infrastructure and storage facilities to avoid the water-logging and flood situation. Crop yield also varied across the regions and found to be comparatively higher in the Western region. However, over the years, stagnation in yield was observed which needs to be checked through location-specific technological and policy interventions in the light of available natural resources and socio-economic constraints.

Implications of MNREGS on Rural Food Security in Arid Region of Rajasthan

Khem Chand and Shalander Kumar

An attempt has been made to study the impact of MNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme) on the socio-economic status and food security of people in arid region of Rajasthan. Data were collected through specially designed interview schedule, participatory rural appraisal, focused group discussions and case studies. A total of 92 sample respondents representing different land holding categories, caste/community and settlements were selected randomly from Luni and Bilara tehsils in Jodhpur district in Rajasthan. Secondary data were collected from district and tehsil offices. The detailed information on MNREGS activities were collected from village and block level officials. Data were analysed using tabular analysis and farmers’ perception was measured with a three point rating

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scale. The arid region of state has cropping intensity of about 117 per cent wherein farmers are mainly dependent on other sources of earning to sustain their life round the year. In the rural areas of this region such programmes has great significance as a large segment of rural population in the arid region is under-employed and vulnerable to drought and other weather aberrations. MNREGS project came as a boon for arid zone people living in rural areas as they were now able to get assured work in this programme at least for 100 days in a year in the village itself. The study reveals that the landless, marginal and small farmers had 29, 59 and 37 per cent share of their total income from MNREGS earnings, respectively. Rural people especially women were major the beneficiaries of this scheme as more than 80 per cent work force belonged to this category. The earnings from this scheme which is directly deposited into bank accounts of the beneficiaries has not only improved the general living standards of people but has improved nutritional security of poor people as major share of the MNREGS earnings were spent on arranging food for the family. They are now able to purchase some green vegetables and fruits which otherwise was very rare in the absence of regular cash income to the farmers. MNREGS not only provided employment opportunities during lean agricultural seasons but also created rural infrastructure to help cope with floods, droughts and other natural calamities, which supported further economic activity. These programmes also put an upward pressure on market wage rates by attracting people to public works programmes, thereby reducing labour supply and pushing up demand for labour. Provision of private works on SC/ST farmers’ field like construction of tanks (water harvesting structure), orchard plantations, other NRM works are very useful not only in improving the economic status of these farmers but will also help in improving the agricultural infrastructure as well as productivity.

Dietary Pattern, Nutritional Status and Food Security of Farm Households in Maharashtra

M.N. Waghmare and S.N. Tilekar†

The paper attempts to examine the dietary pattern, nutritional status and food security of farmers by using the farm level data from three regions of Maharashtra. The study is based on the primary data collected from 90 cultivators from the selected centres of the comprehensive scheme spread over three regions in Maharashtra. The data pertained to the agricultural year 2007-08. The analysis indicated that there was dependence on plant products in diets. The diets in Maharashtra were mainly based on cereals. There were deficiencies in food consumption and nutrient intake when compared with the recommended dietary allowance. It is important to emphasise that although the proportion of population was consuming less than the dietary

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requirements, the greatest relative gaps were observed in meat, egg and fish. Similarly, the major nutrition problem was calorie deficiency. Cereals constituted the major source of nutrients. They supplied 70 per cent of the energy, 57 per cent of proteins and 20 per cent of fats. The intake of foodstuffs varied among the size groups of farms and regions. Diet diversification increased with increase in the land holding and income. The main policy measures for improving the nutritional status of cultivators include improved agricultural technologies and plans and programmes for increasing incomes of poor farmers. Dairy enterprises should be given more priority in diversifying agriculture and diets and raising both income and nutritional status of the farmers. The increased diversification of land from food to non-food crops; implementation of minimum support price policy for food grain crops and assured procurement combined with low cost of inputs has forced the farmers to follow fixed cropping system regularly.

Value Chain Optimisation in Agriculture Supply Chain for Food Security

G.P. Reddy*

The aim of the paper is to analyse the patterns of value chain sharing along food supply chains, so as to explore the agro-good enterprises capacity to be competitive and sustainable. The study has identified an agenda for research and policy dialogue that address an overarching theme for successful transitions and change. The dynamic interplay between agri-food supply chains of value chains and agri-biotechnology development in India can and should be harnessed to generate wealth, income and stability and hence ensure food security. Whether India benefits from these interplay depends on the net benefits to producers and consumers through better prices, time costs, food safety as well as access to markets and on employment generated, skills and wage effects in the whole agri-food supply and value chain. It will also depend on how well India develops and manages the supply chains and integrates them into the overall economy as well as international networks. Hence, it is critical to understand the dynamics of the interplay of key factors, its implications and adjustments required and to take a holistic perspective. Consequently, closer monitoring, more empirical studies and more rigorous policy analysis are required.

Nutritional Vulnerabilities and Food Security- A Critical Analysis

Kailas C. Thaware†

The paper examines the calorie consumption norms and trends since 1972-73. The Indian calorie norms are compared with the FAO norms. Both the norms are

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critically examined to find out whether the new FAO norms suit the Indian working population. However, it appears that various data sets have provided very dismal picture on the progress of achievement minimum standard in calorie consumption which have declined since 1972-73. Even FAO put forward its new nutritional norms for Indians, but it seems very low to accept as at that calorie level, they find it difficult to work for about 7-8 hours with full energy. As estimated, at least, 2100 kcal for urban and about 3000 kcal for rural adults are required to work with full efficiency. The norms suggested by FAO are just for survival without any work. These norms cannot meet the safe and nutritious food for an active and healthy life for the Indians. The food security concept suggested that the rights of everyone for a better standard of living and adequate facilities for the health and well-being and right of everyone to be free from hunger needs to be fulfilled.

**Changing Consumption Pattern and Food Security in India**

S.K. Govil, K.S. Suhag and Jitender Bhatia*

The main purpose of this paper is to examine the production scenario, changing consumption pattern and food security in India. The data for the purpose were collected from different published sources for the period from 1960-61 to 2010-11. India’s total foodgrain production has increased at an annual growth rate of about 2 per cent during the period 2000-01 to 2010-11 which is mainly due to increase in productivity. The study reveals that the per capita cereal consumption showed a declining trend in both rural as well as in the urban areas. The total consumption expenditure has increased many times both in the rural and urban areas during the period under study. 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, meat, etc. The per capita calorie intake declined by 5.25 per cent in rural areas whereas in urban areas, it increased slightly by 0.75 per cent during 1972-2010. Similar to calorie intake, protein intake has also shown a declining trend and fat intake showed an increasing trend in rural areas whereas in urban areas, both the protein and fat intake indicated increasing trend. As diets are diversified, the consumers derive their increasingly share of nutrients from milk, fish, meat, eggs, fruits, etc. The per capita availability of foodgrains has been continuously declining particularly since 1991. As per Planning Commission estimates the incidence of poverty has declined over the years but about two-thirds population is consuming less than what is required. For ensuring nutritional security, it is not only

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important to increase per capita availability of foodgrains but also to ensure balanced food.

**Optimisation of Food Consumption and Nutrient Intake in Karnataka State: A Case Study of Koppal District**

**V.R. Kiresur, Raghavendra Chourad and S.M. Mundinamani†**

The paper attempts to analyse the food consumption pattern in rural and urban areas of Koppal district of Karnataka state, assess the present nutritional status of the people in relation to nutritional recommendations, and find out the optimal food mix for minimising the food expenditure given the minimum nutrient requirement. Linear programming model was used to minimise the per capita per day food expenditure subject to the constraints of energy requirement, the Recommended Dietary Allowances (RDA) and the Desirable Dietary Pattern (as recommended by FAO). The macro level analysis revealed that the monthly per capita expenditure (MPCE) on both food and non-food items together in urban areas was almost double than in the rural areas. Secondly, in the rural areas, the MPCE on food items is higher than on non-food items, while in urban areas, it was reverse. Urban people consumed relatively slightly less cereals than their rural counterparts, while their intake of pulses was much more than in the rural areas. Though the farmers produce these items, and sell their produce due to immediate cash needs, they need to be educated on the nutrition front, to ensure that they use their farm produce appropriately for balanced nutrition. Arresting the food inflation needs utmost and immediate attention. Stability in food consumption and prices especially in rural areas are also of prime importance to ensure balanced diet. Any government policy aimed at achieving nutritional security should have different strategies for different income categories.

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