Abstract of Studies Conducted by AERC since 2007

Study No. - 155

Name of the Study: Evaluation of Integrated Dairy Development Project (IDDP) in Non-operation Flood, Hilly and Backward areas: A Study in Sikkim

J. K. Ghosh, V. Datta, A. Sinha

Year of Publication: 2007

ABSTRACT

Status of Animal Husbandry and Dairying in Sikkim

In the State of Sikkim, the livestock production is the endeavour of small and marginal farmers (17th Indian Livestock Census, Sikkim, 2003). The rearing of cattle is an age old and integral component of the agricultural activities in Sikkim.

Allocation of State Budgetary Resources in Dairy Development

The expenditure on dairy development however varied over the years. Data pertaining to the period 2000-2001 to 2006-2007 revealed that expenditure on dairy development increased consistently from Rs.34.44 lakhs in 2000-2001 to Rs.65.00 lakhs in 2006-2007 accompanied by big jump (Rs.175 lakhs) during the year 2002-2003.

Growth and Composition of Livestock in the State of Sikkim

Livestock population in the state of Sikkim increased from 5.13 lakhs in 1997 to about 6.87 lakhs in 2003 recording a compound growth rate of about 6 per cent per annum. Bovine (cattle and buffaloes) population constituted 23.47 per cent of the total livestock in 2003. The cattle population shared the major in bovine population which accounted for 98.69 per cent of total bovine population. The fact is that by and large, the number of crossbred cattle has tended to increase over the period.

The bovine constituted 23.47 per cent, while ovine population (Sheep and goats) accounted for 18.88 per cent of the total livestock population. Population of in-milk bovine which includes lactating buffaloes and cows shared 25.53 per cent in total bovine population. Cattle constitute the major (98.69 per cent) in total bovine. Cows are preferred more than buffaloes and are the main source of milk production in the state of Sikkim.

Growth in Milk Production

It can be seen that during the Fifth Five Year Plan period average annual milk production was 10.95 thousand metric tonnes and it increased to 37 thousand metric tonnes annually during the 9th Five Year Plan period registering an increase of 8.81 per cent per annum. During the 8th Five Year Plan period (1992-97), annual milk production was of the order of 34 thousand metric tonnes when the scheme of IDDP was launched. It increased to 48 thousand tonnes in the year 2005-2006 and thus increased at the rate of 3.17 per cent per annum since the launching of IDDP programme in the state.

Integrated Dairy Development Project in Sikkim

In the year 1993-94, the Government of Sikkim received a grant of Rs. 217 lakhs from the Government of India for undertaking Integrated Dairy Development Programme in the north district.

The project is implemented in the state by the State Animal Husbandry, Livestock, Fisheries and Veterinary Services Department, Government of Sikkim. For implementation of IDDP in Sikkim, a Technical Management Committee (TMC) was constituted at the state level for monitoring the progress of the project. In addition to the state level TMC there is an implementing committee at district level to work out the modalities for implementation of the project in the concerned district.

Physical and Financial Performance of the Project

As of January 31, 2005(by the end of phase-II) 30 village-level dairy co-operative societies have been established with the total membership of 1000 village milk producers. Two milk chilling plants with the capacity of 500 LPD each and one milk processing plant with the capacity of 2000 LPD were established. The average liquid milk procurement and marketing was of the order of 1500 LPD respectively.

The total investment of the 2nd.phase of the project as of January,2005 was 266 lakhs. In the allocation of funds among various activities, 112.22 lakhs i.e. about 42.19 per cent was given for building up milk processing and marketing capacity. Milk production enhancement programme got 96.74 lakhs i.e. 36.37 per cent of the allocation. A sum of Rs.46.62 lakhs i.e. 17.53 per cent was spent on milk procurement. Manpower development received 2.25 lakhs i.e. 0.85 per cent of the allocation and the remaining was spent on working capital like purchase of cattle feed, purchase of heifers etc.

Performance of Dairy Co-operative Societies

In the present study, milk producers' co-operative societies receiving benefits only under IDDP form the sample frame for judging the performance of dairy Co-operative Societies. In all, three dairy co-operative societies are covered in the study namely Nampatam MPCS, Ringhim DUSS and Chandey MCS hereafter referred to as Society No.1, 2 and 3 respectively in north district of Sikkim.

At the time of survey, total members of the societies numbered 33, 50 and 49 in societies 1, 2 and 3 respectively while the corresponding figures at the time of inception of the societies were 19, 25 and 40 and thus recorded annual growth rate of 7.36, 10.00 and 2.25 per cent respectively.

Implementation of IDDP Scheme at the Farmers' Level: Its Economy and Impact

A total of 19 milch animals (cows) were provided to 19 beneficiaries out of a total of 36 who accounted for 52.78 per cent of the total sample beneficiaries. Inducted cows were in 1st lactation order. The lactation cycle of milch cattle provided under the scheme was reported to be duration of 415 days of which 230 days represented in-milk period and the dry period was duration of 185 days.

Out of a total of 19 animals assisted under IDDP project, 15 (78.94 per cent) were provided to small and marginal farmers. Again, as noted above, among the sample beneficiary households small and marginal landholders constituted the major.

Unit cost of investment under the scheme of IDDP included (a) cost of one crossbred cow (b) cost of construction of shed and (c) cost of equipments. The survey data revealed that the average actual unit cost of investment was Rs.10,755 covering cost of one milch animal (Rs.7105), cowshed (Rs.3500) and cost of equipment (Rs.150).

Out of the total sample beneficiary farmers selected for the study, 86.11 per cent are small and marginal who owned 82.67 per cent of total milch cattle. According to breeds, majority of milch animals kept by the sample beneficiary farmers are indigenous type having low milk yield potential. Out of 75 milch cattle possessed by the beneficiary households, only 32.00 per cent are crossbreed cows and 68.00 per cent are indigenous cows.

The overall average investment per household in dairy enterprise worked out at Rs.15100. Noticeably, investment per household increased with the increase in the size of milch animal from Rs. 14251 with less than 5 numbers of milch animals to Rs. 29525 when the size of milch animal herd increased up to 10 numbers. Average investment per unit of cattle population stood at Rs. 4150 being declined consistently with the increase in the size of milch animal.

IDDP programme has provided a dependable alternative channel for disposal of marketable surplus of milk at prices, which are considered fair for the producers. The benefits comprised of two components of income viz. annual milk production and the estimated value of young stock. The overall BCR worked out at 1.14 with the estimated figure of 0.94 for local cows and 1.41 for crossbreed cows. Thus investment in dairy activity is found to be economically viable in the study area.

The financial soundness of dairy units is examined by working out the Financial Rate of Return (FRR). The financial rate of return on investment in the acquisition of a crossbred cow works out to 19.62 per cent. The figure stood at 12.96 per cent while reckoned on total investment. This substantiates the financial viability of investment in dairy units.

The dairy sector provided employment opportunities to the beneficiary farmers ranging from 55.98 percent to 71.84 per cent of the total working man days depending on the size of milch animals with an overall average of 58 per cent for all the dairy farms together.

As a source of income, the dairy farming contributed the least for the non-beneficiary farmers. As evidenced by the overall estimate of benefit cost ratio, dairying did not turn out to be a sound economic alternative for non-beneficiary farmers.

Study No. – 156

Name of the Study: Estimation of Seed, Feed and Wastage Ratios for Major Food grains in West Bengal

Kazi M.B. Rahim, J. K. Ghosh, D. Majumder, A. Sinha

Year of Publication: 2008

ABSTRACT

- Seed, feed and wastage ratios in case of cereals (rice) were estimated to be 13.07 per cent whereas in terms of pulses (lentil) the ratio was estimated at 11.84 per cent.
- It is observed that the significant percentage of produce is lost during different operations at farmers' level stretching from harvesting to the market for sale.
- It is clearly revealed that the post harvest losses of cereal crop (rice) increased with the non-availability of storage facility.
- Threshing losses were higher when the produce is threshed by threshing machine as compared to manual threshing.

Study No. – 157

Name of the Study: State Budgetary Resource and Agricultural Development (West Bengal)

B.C. Roy, V. Datta, F. H. Khan

Year of Publication: 2009

ABSTRACT

- The real public expenditure on agricultural development in West Bengal indicated periodic ups and downs. In real terms, it had increased at higher rate in 1950's, 1960's and 1970's. After 1970's, particularly during 1980's and during mid 1990's and again during 2001-02 onwards it tended to decline sharply.
- Sector-wise composition of GSDP and workforce points to a significant transformation in West Bengal economy. The share of primary sector in GSDP after 1998-99 shows a steady decline. Accordingly, there was corresponding decline in the dependence on agriculture too. Though, the share of secondary sector in GSDP has reduced from 29 per cent to 19 per cent in 2005-06, the dependence of workforce on this sector increased from 3.67% to 9.37% in 2005-06. The share of tertiary sector both in GSDP as well as workforce dependence has increased throughout.
- Deceleration in the real government expenditure on agriculture is associated with decline in the growth rate in the agricultural output particularly the foodgrain output and slowing down the poverty reduction.

Study No. – 158

Name of the Study: Market Access and Constraints in Marketing of Goats and Their Products in West Bengal

R.C. Mondal, A. Sinha, K. S. Chattopadhyay

Year of Publication: 2009

ABSTRACT

- Goats are the main contributor of meat production of the state. The share of goat meat in total meat production of the state was highest (45.28 percent) in 2006. Maximum goat population is concentrated in Burdwan and Murshidabad in the state.
- Economic support can play an important role to intensify goat keeping. They cannot afford to maintain bigger flock & better management.
- At village level, there is acute crisis of pasture and grazing land.
- Marketing infrastructure for goat & skin and product is quite essential.

Study No. – 159

Name of the Study: Understanding the Growth and Prospects of Agro-Processing Industries in West Bengal

J. K. Ghosh, F. H. Khan, V. Datta

Year of Publication: 2009

ABSTRACT

- Within the group of food-processing industries, paddy-processing activity gave maximum return. Within the group of non-food processing industries, paper-based manufacturing unit gave highest net return.
- The state of West Bengal being blessed with largest production of paddy has the potentials for investing in paddy processing industry. However, this would be possible

if the units have access to information network to keep track of raw materials prices and availability.

- Within the group of non-food industries, textile and leather units yielded lower net income but have shown relatively better performance in terms of growth in number of units. They could enhance their earning capacity if they are provided with better infrastructure purveying market information for their processed products.
- The paper-based units yielding highest net return amongst the non-food processing units offers scope for investment in such units.

Study No. – 160

Name of the Study: Study on Impact Evaluation of National Watershed Development for Rainfed Areas Envisaged as WARASA JAN SAHBHAGITA during Tenth Plan (2002-07) in West Bengal

D. Sarkar, K. S. Chattopadhyay, D. Roy, R. K. Biswas

Year of Publication: 2009

ABSTRACT

- Size of holdings was lower in watershed area.
- Irrigated area was 37.05 per cent and 26.66 per cent in watershed and non-watershed area, respectively.
- No difference was observed in adoption of recommended technologies in both areas.
- Most of the soil and water conservation measures serve the purpose of conserving rain or runoff water.
- Copping intensity decreases with the increase in size of holding due to less irrigated area for higher holdings.
- Net income increased to the extent of decreasing cost of irrigation.
- Livestock number increased due to availability of fodder and common lands.
- Fairly equitable distribution of income in watershed area is observed.
- Watershed Development Programme (WDP) has been able to regenerate natural resources including land, forest and water to a large extent and it is playing a crucial role in augmenting agricultural growth, productivity and cropping pattern in West Bengal.

Study No. – 161

Name of the Study: Impact of Macro Management of Agriculture Scheme

Kazi M.B. Rahim, D. Roy, R. K. Biswas

Year of Publication: 2009

ABSTRACT

- The impact of interventions under the sub-schemes Sustainable Development of Sugarcane Based Cropping System, Special Jute Development Programme, ICDP-Coarse Cereals have manifested itself primarily through a marked increase in the area under sugarcane, jute and wheat cultivation respectively for the beneficiary farmers, especially through demonstration programmes.

- The sub-schemes ICDP- Wheat, though subsequently modified as Dissemination of New Technology through Diversification of Suitable Crops, has resulted into an increase in the production of wheat.
- Under the sub-scheme Balanced Integrated Use of Fertilizers, termed as Soil Health Management in West Bengal, has found to have played a significant role regarding positive changes in attaining a balance in fertilizer application among the beneficiary farmers and reviving soil health.

Study No. – 162

Name of the Study: Determinants of Stagnation in Productivity of Important Crops in West Bengal

Kazi M.B. Rahim, D. Majumder, R. K. Biswas

Year of Publication: 2010

ABSTRACT

It was firstly a bivariate and then a multivariate exercise.

Apart from total area under rice and annual rainfall, the other independent variables have a significant impact on changes in productivity of rice though each of the variables explaining partially the variability in productivity.

We carried out multiple regression exercise to assess the impact of the independent variables on productivity of rice.

The results express that independently all the variables have significant impact on productivity but taken together they show some differentiated impact. Nonetheless, these independent variables taken together explain 92.5 per cent of variability of the dependent variable.

There may be two reasons for such behaviour of the explanatory variables. Firstly, as the number of observation is rather small and the degrees of freedom goes down as we go on adding independent variables. Secondly, there exists some degree of multi co-linearity among the explanatory variables.

Study No. – 163

Name of the Study: Study on Impact Evaluation of National Watershed Development for Rainfed Areas Envisaged as WARSA JAN SAHBHAGITA during Tenth Plan (2002-2007) (Consolidated Report)

D. Sarkar, Kazi M.B. Rahim

Year of Publication:

ABSTRACT

West Bengal:

It has been observed that there is no difference in adoption of other recommended technologies in between WP and NWP farmers. It has been worked out that the overall adoption ratio of recommended watershed/agronomic technologies by WP and NWP farmers are 32.95 per cent and 27.68, respectively. It is evident that the quality of land available in WP area is suitable for agro-forestry and perennials and farmers are relatively more responsive to adoption agro-forestry and perennials.

The contribution of watershed as reflected in gross returns from rainfed crops was considered as the dependent variables, since the watershed impact is direct and implicit. Accordingly, gross returns from rainfed field crops in 2007 was regressed on dry land cropped area in hectares (X_1), human labour (X_2), bullock labour (X_3), seeds in Rs. (X_4) and fertiliser in Rs. (X_5). The adjusted R^2 for the watershed and non-watershed area was 87 per cent and 94 per cent which indicate adequacy of fit of the model.

The regression coefficients are the estimates of the elasticity of production with respect to the independent variables. In WP, elasticity coefficient for human labour, bullock labour and fertiliser are 0.02, -0.01 and -0.03, respectively, and are statistically significant at 5 per cent. For land, the elasticity coefficient is 1.01 and significant at 5 per cent. The coefficient for seed is -0.03 and is not significant.

In NWP, variables land and seed are significant and their elasticities are 0.93and 0.07. For human labour, bullock labour and fertiliser, the elasticity coefficients are 0.06, -0.03 and 0.01, respectively and significant at 5 per cent. The returns to scale are 1.01 and 1.04 in WP and NWP areas, implying constant returns to scale. This shows that the production technology used in watershed and non-watershed is scale neutral.

The geometric mean levels of gross returns for WP and NWP sample farms are Rs. 11500.83/- and Rs. 11764.65/-, respectively. The geometric level of inputs land, human labour and bullock, seed, fertilisers are computed both watershed and non-watershed sample farms as 0.49, Rs. 2300.87/-, Rs. 413.75/-, Rs. 172.43/- Rs. 612.60 and 0.48, Rs. 2302.69/-, Rs. 418.49/-, Rs. 163.07/- and Rs. 617.26/-, respectively in that order.

In watershed area, the major source of irrigation is groundwater from tank/ponds. All tanks were excavated before watershed development programme. The impact of WDP is assessed based on number of irrigation ponds. Another measure of impact of WDP is the increased water yield in the ponds. However, the average yield of ponds is not available. Out of the 65 total ponds in the selected watersheds, only 4 ponds are non-functional, whereas in NWP area 3 ponds are non-functional out of the 29 ponds. Average water area of the pond in WP area is 0.12 hectare, whereas it is 0.17 hectare in NWP area. The average command area and average depth of the tank in WP area is higher than that of NWP area.

Most of the soil and water conservation measures serve the purpose of conserving rain or runoff water and it is difficult to separate them and analyse their contribution to groundwater recharge. However, we can broadly divided them into (1) measures that increase in-situ water availability and (2) measures that increase availability of applied water stored off-farm or below the ground. The ubiquitous check dams and nala bunds, diversion channels and all their variants store water on surface or enhance subsurface storage. However, the use of farm ponds is for protective irrigation. The total investment on soil and water conservation structures in the selected watersheds is Rs. 35,52,403/- . The increased availability of groundwater due to WDP manifests in decreased irrigation cost. The net returns per farm has been observed to be Rs. 189.68/-, Rs. 518.48/- and Rs. 1057.91/- for marginal, small and medium farms, respectively. It has been observed that the cropping intensity decreases with the increase in size of holdings. This may be due to less irrigated area in higher holdings. It has been observed that the decrease in cost of irrigation and corresponding increase in net returns in WP is due to impact of WDP.

A large number of farmers in WP are rearing livestock on a small scale after the WDP. Farmers expressed during the discussion that due to availability of fodder on farm and common lands, the number of bullocks, cows, buffaloes, sheep, goat has increased. The net return from livestock per farm and per acre are Rs. 24.12/- and Rs. 38.22/-, respectively in WP area and Rs. 21.42/- and Rs. 5.15/- in NWP area.

The equity in the distribution of income among different categories of farmers due to WDP has been analysed using Gini coefficients. Gini coefficients are computed for marginal, small and medium farms. Gini coefficients for WP and NWP areas are 0.44 and 0.41 for all farms, respectively. This indicates a fairly equitable distribution of income in WP area than that of NWP area.

Rajasthan:

As compared to pre-project year, beneficiary households increased area under rabi crops by 5.26 ha. in 2006-07 as against 1.51 ha. by non-beneficiary households in Dhar watershed. A similar trend was witnessed in respect of GCA. In 2006-07, 20.13 percent of Kharif crop area was irrigated by beneficiary households as against only 3.03 percent by non-beneficiary households. This indicates positive impact of NWDPRA intervention on irrigation and cropped area.

In all 4 watersheds, compared to base year 2001-02, cropping intensity recorded notable increase in 2006-07 for beneficiary as well as non-beneficiary households. However, this increase in percentage and absolute term was much higher for beneficiary households. The NWDPRA intervention improved the ground water aquifers and soil-moisture which subsequently helped beneficiary households to increase double cropped areas and supplemental irrigation. This helped beneficiary households in enhancing cropping intensity.

As compared to 2001-02, the overall average cost of cultivation per hectare in 2006-07 for beneficiary shows an increase of 58.80 percent in Kirap, 43.56 percent in Sakariya, 48.29 percent in Modak-VI and 81.97 percent in Dhar watershed. For non-beneficiary, it ranged between 43.25 percent for Kirap and 86.10 percent for Dhar. The increase in cost of cultivation was mainly due to higher use of costly inputs such as HYV seeds, fertilizers, higher rate of application of inputs and increase in input prices. Thus, watershed treatments brought changes in use pattern of inputs and also enhanced cost of cultivation. In total cost of cultivation, most important items were human labour, bullock labour and machine labour.

In all the 4 watersheds, compared to base year, beneficiary and non-beneficiary farmers achieved higher yield for all crops (barring few cases) in 2006-07. In Sakariya, the incremental yields achieved by beneficiary farmers varied from 35.96 percent for gram to 188.46 percent for Isabgul. And for non-beneficiary, it varied from 3.98 percent for gram to 100 percent for Isabgul. In Kirap, for beneficiary farmers, it varied from 23.07 percent for Bajra to 58.18 percent for Udad. And for non-beneficiary, it varied from -22.50 percent for gram to 38.74 percent for Jowar. In Modak-VI, yield increment for beneficiary households varied from 15.01 percent for Soyabean to 90.02 percent for Jowar. In Dhar also, increment in yields of different crops (except gram) obtained by beneficiary households were far superior as compared to same for non-beneficiary. Thus, in all 4 watersheds, NWDPRA had noticeable positive impact on crop-yields. However, scale of impact varied across watersheds

due to variation in soil-climatic conditions, soil-moisture level, terrain, rainfall, inputs of pattern etc.

In all 4 selected watersheds, as compared to base year, value of gross produce per hectare of cropped area shoot up sharply for both, beneficiary and non-beneficiary households. Overall, for beneficiary farmers, it went up by 73.45 percent in Kirap, 111.21 percent in Sakariya, 175.62 percent in Modak-VI and 63.92 percent in Dhar watershed. For non-beneficiary households, it ranged from 51.92 percent in Kirap to 117.76 percent in Modak-VI. The significant upsurge in the value of gross produce was mainly due to higher farm harvest prices and higher yield achievement.

In all 4 sample watersheds, net farm income per hectare of GCA and output-input ratio (except Dhar) for beneficiary and non-beneficiary households in 2006-07 were found much higher than those in 2001-02. Further, net farm income and output input ratio for beneficiary households was found substantially higher than those for non-beneficiary households. This suggests quite positive impact of NWDPRA on net return from farm enterprise.

In selected watersheds, as compared to 2001-02, the average annual net income per household from various sources recorded impressive upsurge in 2006-07, for both, beneficiary and non-beneficiary households. For beneficiary, increase was Rs. 25427 in Kirap, Rs. 16068 in Sakariya, Rs. 37270 in Modak-VI and Rs. 13819 in Dhar. The corresponding numbers for non-beneficiary were Rs. 14489, Rs. 11144, Rs. 25745 and Rs. 10196 respectively. The sharp increase in the net annual income per beneficiary households shows positive impact of NWDPRA on livelihood security of different stakeholders of the watersheds.

As compared to non-beneficiary, assets investment per beneficiary household during 2001-02 to 2006-07 was found higher by Rs. 27260 in Kirap, Rs. 12638 in Sakariya, Rs. 18281 in Modak-VI and Rs. 20035 in Dhar watershed.

As compared to base year 2001-02, the average rise in water level in wells during Kharif-2006-07 recorded by beneficiary households ranged from 7.03 feet in Dhar watershed to 8.55 feet in Kirap watershed. During summer, it ranged from 1.88 feet in Dhar to 2.66 feet in Sakariya watershed. As compared to non-beneficiary, net increase in water table for beneficiary households was more than 4.43 feet in Kharif, 1.88 feet in rabi and 0.62 feet in summer season. This clearly indicates that water conservation technology adopted under NWDPRA is effective. This improvement in water table situation eased the drinking water problems of watershed community to some extent.

As expected, in all selected watersheds, number of milch animals and total number of livestock increased moderately in 2006-07.

In selected watersheds, requirement of human labour for farming sector shows noticeable upsurge in 2006-07. Compared to 2001-02, beneficiary households in 2006-07 generated per ha./annum additional farm employment of 42 mandays in Kirap and Sakariya, 36 mandays in Modak-VI and 56 mandays in Dhar watershed. Additional farm employment generation was observed relatively very low for non-beneficiary households.

In majority cases, the out-migration was of short duration. In selected watersheds, average period of out-migration in 2006-07 was somewhat lower for beneficiary as compared to non-beneficiary households.

Using 10 percent discount rate, BCR, IRR and NPV have been worked out for 10 and 20 years time horizon. For 10 years horizon, Benefit Cost Ratio (BCR) was 3.50 for Kirap, 3.82 for Sakariya, 9.02 for Modak-VI and 1.17 for Dhar watershed. And the Net Present Value (NPV) was Rs. 51.78 lakhs for Kirap, 60.05 lakhs for Sakariya, 83.11 lakhs for Modak-VI and 16.17 lakhs for Dhar watershed. The Internal Rate of Return (IRR) was 9 % for Kirap, 62% for Sakariya, 144% for Modak-VI and 23 % for Dhar. BCR, IRR and NPV worked out for 20 years horizon are higher than 10 years time horizon. For each selected watershed, IRR are greater than opportunity cost of capital and BCR are greater than one which clearly indicates that investment on NWDPRA is economically very attractive and viable. A positive and high NPV for each sample watershed implies positive worth of project in generating returns in excess of all costs.

Bihar:

The change in irrigational status of agricultural land in 2006-07 over 2001-02 of the watershed indicate marginal increase in irrigated area in all the selected watersheds and almost in all the crop seasons, which may be due to increase in number of water harvesting structures (tanks, check dams, ponds, etc.). The increase was mainly found to big farms, which showed that perceived benefits are concentrated on large farms.

The land development and creation of new water harvesting structures in all the watershed areas have not much effectively brought some additional areas under the important crops both in kharif and rabi. The data indicate that there is increase in the area under paddy crops from 0.64 per cent to 4.37 per cent, maize 0.65 per cent to 3.37 per cent, pulses 0.99 per cent to 2.08 per cent and oilseeds up to 1.85 per cent. Of course, there is increase in area of important crops but it is not much appreciable. It is worth to mention here that almost similar increase has been indicated by the non-beneficiary respondents.

The findings indicate that the production increase is higher in rabi season for wheat, pulses and oilseeds across all the watersheds and this indicates the overall effectiveness of the watershed activities. Similarly change was also indicated in case of non-beneficiary respondents, which related that benefits were not centered on the beneficiaries rather shared with non-beneficiaries also.

It is generally presumed that if the facilities are extended to farmers, the cost of the production of the crops will come down provided the prices of the inputs are constant. But things are different. Neither the cost fallen nor is the prices of any inputs constant. Among the beneficiary farmers, it rose at the overall level to 8.16 per cent in WS-I, 5.54 per cent in WS-II, 4.38 per cent in WS-III and 13.08 per cent in WS-IV. Among the non-beneficiary farmers, it increased to 8.53 per cent in WS-I, 12.36 per cent in WS-II, 12.39 per cent in WS-III and 5.16 per cent in WS-IV.

The disposal for all the crops level in WS-I is lower among the beneficiary households. However it is a bit higher among the non- beneficiary households. The reason behind low disposal may be lower production. Among the beneficiary households, the percentage of disposal is comparatively higher across all the three watersheds viz., 34.47 per cent in WS-II, 18.82 per cent in WS-III and 19.86 per cent in WS-IV. It is by 0.39 per cent in WS-I, 6.46 per cent in WS-II, 17.15 in WS-III and 21.93 per cent in WS-IV among the non-beneficiaries households.

The total average income of beneficiary group has increased in all the sample watersheds but it recorded higher in WS-III (25.24 per cent) followed by WS-II (19.22 per cent), WS-IV (11.30 per cent) and WS-I (0.31 per cent). Almost similar is the case of non-beneficiary group. It increased by 23.18 per cent in WS-IV followed by 14.72 per cent in WS-I, 5.13 per cent in WS-II and 2.56 per cent in WS-III.

In all the selected watersheds the total number of livestock increased. It increased as much as 73.00 per cent in WS-I, 30.74 per cent in WS-IV, 21.32 per cent in WS-III and 10.78 per cent in WS-II. It reveals that the project has facilitated in keeping larger number of livestock. But in absence of clear and agreed livestock holding and grazing practices there cannot be favourable long term impact on conservation of common land resources.

Irrigation, afforestation and availability of irrigation have changed positively to the tune of 17.50 per cent, absorption of women in various activities (7.50 to 15.00%), production (10.00 to 15.00%), cropping intensity (7.50 to 10.00%) etc. Non- beneficiary farmers also indicated positive change of the programme on improvement in groundwater conditions (7.50 to 15.00%), qualitative aspect of livelihood (5.00 to 12.50%), production (2.50 to 7.50), availability of irrigation (5.00 to 15.00%).

In the initial years of the programme no UGs/SHGs could be formed in any of the sample districts, which may be due to delay in launching of the programme. These could be formed after 2003-04.

It is noteworthy that the cost per hectare is helpful in assessing their cost effectiveness. It is calculated at Rs. 8213/ha in WS-I, Rs. 8144/ha in WS-II, Rs. 7103/ha in WS-IV and Rs. 6561/ha in WS-III. The programme has significant positive impact on creation of employment opportunities.

Maharashtra:

With regard to percentage change in the annual income in the ‘before’ the operation of watershed and ‘after’ its operation, it is reveled that the highest percentage of (146.92%) increased in the annual income has occurred during the period 2001-02 to 2006-07 in the watershed–IV (Nanded) followed by the watershed-II (Nagpur) with 139.48%. the watershed-III (Raigarh) demonstrates a record increase of 192.06% in the annual income during the period 2001-02 to 2006-07, followed by the watershed-II (Nagpur) with 67.24%.

As per the performance indicator of the selected watershed in Maharashtra, it reveals that the highest area has been developed in the watershed-II (Nagpur) (91.01%), followed by the watershed-IV (Nanded) (77.44%). In all the watersheds there has been encouraging number of man days employment generated, the highest position in occupies by the watershed-I (Kolhapur) with 46765 man days, followed by the watershed-IV (Nanded) with 36907 man days. The additional area brought under cultivation also indicates a growing trend the highest position occupied by the watershed-IV (Nanded) with 65 ha., followed by the watershed-III (Raigarh) with 49 ha.

The analysis in assessing the impact of NWDPRA on the rural agricultural economy of Maharashtra has concluded that watershed developments have greater potential to generate employment opportunities to the rural people. This is due to the increased availability of water resources, diversified cropping pattern including cultivation of labor-intensive vegetable crops and other horticultural crops. This additional employment generation from a

watershed program varies across regions depending on the cropping intensity, and the labor-intensity crops grown in that region. This additional employment generation in the villages led to minimizing migration of landless and other labour.

Study No. – 164

Name of the Study: Understanding the Growth and Prospects of Agro-Processing Industries (Consolidated Report for West Bengal, Bihar and Maharashtra)

J. K. Ghosh, F. H. Khan, V. Datta

Year of Publication: 2010

ABSTRACT

Status of Agro-based Industry

West Bengal:

As evidenced by Annual Survey of Industries data, the strength of agro-based industry is comparatively less than those of non-agro-based industries in the organised sector of manufacturing enterprises of the state. In the un-organised segment of manufacturing enterprises, the dominance of agro-based industry is clearly noticed. The un-organised segment of agro-industrial sector had as many as 86.30 per cent of total manufacturing enterprises, 81.54 per cent of employment of workers and 69.09 per cent of gross value added. During the reference period, agro-based enterprises (both food and non-food) witnessed increase in the number of units leading to an increase in their share in units from 80.51 per cent in 1994-95 to 86.30 per cent in 2000-01.

Bihar:

In Bihar, the unorganized manufacturing sector is characterized by the dominance of agro-based industries (including agro food and agro non-food) sharing 53.00 per cent in the number of total working units in 1994-95. Among the agro-based industries, the share of agro food processing industries was estimated to be higher (28.45 percent) than agro non-food processing industries (24.55 percent).

Data for the year 2000-01 be taken significant decline in the number of working units under the groups of ‘agro food,’ ‘agro non-food’ and ‘non-agro based industries’ as compared to that of 1994-95. Decline in the number of working units based on agro-food and agro non-food based processing activities, suggest a state of uncertainty in the field of unorganized manufacturing industries based on processing of agro food and agro non-food commodities (particularly OAMEs) during the period 1994-95 to 2000-01.

Maharashtra:

In Maharashtra, the unorganised sector clearly dominates the organised sector as far as the number of the units is concerned in both the years viz. 1994-95 and 2000-01. In the organized sector, non agro-based industries are dominating with their share being around 70 percent. However, in the unorganised sector, the agro-based industries are seen to be dominating the non agro-based industries and their number has greatly increased (92.87 percent) over the concerned period whereas that of non agro-based industries has fallen (the percentage change being –19.98 over the period). Further, in the organised sector, the share

of food processing industries in total agro-based enterprises has increased in the reference period while in the un-organised sector their share has declined.

Profile of Sample Entrepreneurs of Agro-Processing Activities

West Bengal:

In case of fish processing units, entrepreneurs are mostly from the SC and ST category. Educationally, majority of the entrepreneurs have their education attainment up to 10^{th} standard. However, entrepreneurs engaged in textile units which need technical know-how are better educated beyond the level of 10^{th} standard. Entrepreneurs of food processing units are found to have learnt and followed the activity traditionally while majority of the entrepreneurs of non-food processing units received institutional training and gained working experience in carrying out the activity. Previous experience in the business emerged as the important motivating factor behind choosing the activity in the case of food processing units. In contrast, the units engaged in non-food processing activities, reported higher profit margin as the major factor that has induced the entrepreneurs to take up the business activity.

Bihar:

As far as education is concerned, it is observed that majority of entrepreneurs are literates. Many of them have taken education above 10^{th} standard in case of food processing units while majority of entrepreneurs have been educated upto the 10^{th} standard in case of non-food processing units. As far as land holding is concerned, it can be observed that entrepreneurs engaged in non-food processing agro-based activities possess relatively smaller amount of land between 1-2ha as compared to those of households engaged in food processing activities. Non-food processing units are relatively new units although there are some instances of learning business activity traditionally.

Maharashtra:

As far as education is concerned, it can be observed that majority of the entrepreneurs are educated. Majority of them have been educated upto the 10^{th} standard. It can also be observed that the entrepreneurs possessing cashew-processing units, rice mills and paper-based (binding) units have taken education above 10^{th} standard. It is also observed that majority of the units are existing units and have experience of more than 5 to 10 years back. This is specifically true in case of fish and leather units as the business is carried on traditionally and hence the household members have learnt the business traditionally. It can be noted that the cashew units are the newly established units and all the entrepreneurs have been trained as running the business needs technical training and knowledge about the machinery.

Cost of Investment and Its Financing

Status of the Sample Units

West Bengal:

Status of the units was ascertained in terms of year of existence, average age of the units and registration status. In West Bengal, all the sample-processing units were existing ones, the average age of the unit being varied from 10 to 20 years in case of food processing units and from 3 to 22 years in case of non-food processing units.

Bihar:

In Bihar, most of the units are existing ones. Further, most of the surveyed processing units have been working in the unorganized sector tiny, small and artisan based enterprises and so they are mostly unregistered. Average age of the sample processing units ranged between 08 to 35 years.

Maharashtra:

In Maharashtra, majority of the units are the existing ones. It is the cashew processing units and the rice mills which are seen to be the new units. In the state, most of the units are registered. Four fish processing units and one OAME each from leather, textile and wood category are the unregistered units.

Cost of Investment

West Bengal:

The size of investment in units varies across the food and non-food processing segments of manufacturing enterprises. It is relatively higher in non-food processing segment as compared to its counterpart.

Bihar:

In Bihar, generally within a particular group of processing activity, investment increased with the size of the unit. OAMEs showed lower size of investments in comparison to those of NDMEs and DMEs.

Maharashtra:

In Maharashtra, within a category, investment is increasing with the size of the unit. The size of the working capital is seen to be lower for the OAME units as these units do not have to incur expenditure on wages/ salaries.

Financing of the Investment

West Bengal:

In West Bengal, food-processing industries with only exception of paddy processing enterprises met their investment requirement from own fund. For paddy processing unit, institutional loan contributed the major in financing their investment. For the units engaged in non-food processing activity, majority of the units are found to have financed the activity using their own funds. Only the paper-based industrial units have resorted to outside borrowing both from institutional and non-institutional sources in financing their investment.

Bihar:

In Bihar, the NDME and DME under cereal based processing activity and DMEs of horticultural crop based, wood based and leather based processing activities were found to have taken institutional loans in varying degrees.

Maharashtra:

In Maharashtra, all the units engaged in cashew processing, rice milling and one (DME) each in book binding and leather have taken loan to finance their own investments.

Economics of Investment in Agro-Processing Units

Production and Operation Cycle of the Activities

West Bengal:

For all the activities, it is seen that monthly working days ranged between 26 to 30 days. The difference is noted in the case of per year working days. The levels of working days per year for food processing units are observed to be relatively less than those of non-food processing units.

Bihar:

In Bihar, number of working days per month as well as working hours per day were seen uniform in most of the cases, except in horticultural crop (litchi) based, dairy products' based and textile products' based processing activities.

Maharashtra:

In Maharashtra, the number of working days per month as well as working hours per day is seen to be uniform for all the units. The difference is noted as far as working days per year are concerned.

Sources of Raw Materials and Marketing Linkages of the Processed Product

West Bengal:

In West Bengal, sample food-processing units being relatively smaller units have the limited capacity to reach out to various markets. They do not have strong linkages with input-market, rather they have obtained raw materials from the producers directly (72.22 per cent). Non-food processing units however directly came in contact with the input-market through established trade/ market channel for procuring raw materials.

Bihar:

In Bihar, livestock based activity procured raw materials mainly from farmers directly (05). Other two types of agro-food based processing activities' used all the three channels for purchasing raw materials although in the major, the units are found to have purchased the same from farmers directly. Among non-food agro processing activities, raw materials, were wholly purchased through established trade channels and market channels.

Maharashtra:

Units like rice mills, leather units, textile mills and furniture units which process only the raw material provided to them by the customers at their doorstep do not have strong linkages with either input or output markets. All the units except the cashew units have reported that they have only one source (market) for procuring raw material as well as selling their product.

Cost of Production

West Bengal:

In general for all the processing units, proportion of cost on raw material is found to have declined with the increase in the size of the unit in the category.

Bihar:

In Bihar, within each category, the quantum of fixed costs is seen to be increasing with the size of the unit. As far as recurring variable cost is concerned, it is seen that cost on raw materials is the major component of the variable cost for most of the activities, except DME of horticultural products (36.89 per cent) and NDME, (31.90 per cent), DMEs of textile (29.91 per cent) and NDMEs and DMEs of wood and leather based processing activities (18.61 per cent, 43.50 per cent, 21.52 per cent and 20.04 per cent) respectively. In all these cases, share of wages dominated the variable cost component.

Maharashtra:

In Maharashtra, within each category, the quantum of the fixed cost is seen to be increasing with the size of the unit. On an average, only 13 to 14 percent of the total costs have been contributed by own fund in case of food as well as non-food processing units.

Net Income from Investments

West Bengal:

In West Bengal, all the activities gave positive net income being varied among the activities depending upon the size of the investment. This is uniformly observable in the case of food processing units.

Bihar:

In Bihar, all the activities and units yielded positive net returns. Data reveal that except DME category of livestock based processing activity, in all other cases under agro food processing activities net returns increased with the size of the unit.

Maharashtra:

In Maharashtra, all the activities and units show a positive net return. For the food processing activities, the net return increases with the size of the unit.

Employment Generation

West Bengal:

In the food-processing category of enterprises, maximum employment generation from the investment was observed in the case of fish-processing unit. Among the non-food processing units, maximum employment generation by the activity was observed in the case of wood-based product manufacturing unit.

Bihar:

The highest number of total man days employed was seen in case of DME of horticultural products based activity. It could also be observed that only OAMEs of cereal based, horticulture and textile based processing activities engaged female family labourers.

Maharashtra:

The highest number of workers (9) is found in cashew processing DME unit. It is also observable that all the categories in the food-processing sector except one have engaged female family labourers.

Problems Faced by Manufacturing Enterprises

West Bengal:

Reportedly the problem of non-availability of raw materials throughout the year, variability of prices of raw materials and absence of information network to keep track of raw materials prices and availability came to be featured prominently in the array of problems faced by the entrepreneurs of sample processing units in West Bengal.

In the field of marketing of processed products, reportedly for food-processing units, the main problem was lack of proper domestic market of processed products (72.22 per cent) followed by absence of good network purveying market information (66.67 per cent) and dependence on middleman for marketing the processed products (66.67 per cent).

Bihar:

In Bihar, problems of non-availability of adequate raw materials due to lack of capital, supporting machines/equipments, and absence of required infrastructural facilities were reported by majority of the food processing units. Fluctuations in prices of raw materials, absence of information network and circumstantial purchase of raw materials from middlemen at higher rates were also prominently reported by the sample food processing units. Non-availability of skilled labourers, availability of raw materials (litchi) for a very short period and difficulty in determining prices of value added products were specifically felt by DMEs of agro-food processing activities.

Maharashtra:

In Maharashtra, within the food-processing segment, majority of the cashew and fish units have reported non-availability of raw materials throughout the year. As far as the cashew units are concerned, non-availability of good quality cashews is mainly due to inability of the small units to find agents or seller supplying good quality raw material. In the absence of information/ resources to find the same, these units are often at a disadvantage if the cashews supplied are not of good quality. The units have also reported non-availability of laborers during the peak season and variability of prices. The fish units also face this problem, as during the months of monsoon, fishing does not take place

Prospects of the Units

West Bengal:

The state of West Bengal being blessed with largest production of paddy has the potentials for investing in paddy processing industry.

Within the group of non-food processing industries, textile and leather units yielded lower net income, although, they have shown relatively better performance in terms of growth in number of units.

Bihar:

In Bihar, significantly large areas are under different top qualities of fruits viz. mango, banana, litchi, guava, lemon and pineapple. Quantum of production of these fruits is quite larger. Hence, there is great potential for installation of agro processing industries based on these fruits in areas/regions with their production in abundance. Among cereal based processing activities, apart from paddy and wheat, there is high prospect for agro-processing industries based on maize in Bihar. With regard to livestock based processing activity, dairy industry in the co-operative sector under the brand name Sudha has achieved marked success in Bihar. In unorganized sector, also there is great potential and bright prospect for processing of milk into khowa, ghee, butter, cream, paneer, lassi, etc.

Maharashtra:

The analysis of the data collected from the sample processing units in Maharashtra shows that cashew unit (DME) has earned highest net income followed by fish unit (DME). The cashew units are newly established units under DIC/KVIC schemes. Due to the increasing demand for the cashew nuts in the domestic as well as international markets and due to the existence of huge untapped potential for processing of the fruit, the units can in future also, take advantage of the expanding markets.

Study No. – 166

Name of the Study: Impact Study of the National Horticulture Mission

K. S. Chattopadhyay, D. Roy

Year of Publication: 2011

ABSTRACT

- It has been observed that during the period 2004-05 to 2009-10, both area and yield rate of mandarin oranges have increased significantly, though there has been a marginal increase in area and yield rate of pineapple.
- There has been a gradual increase in the coverage under certified inputs, which indicates a gradual shift of production technology with certified inputs in place of traditional inputs.
- The positive impact of the National Horticulture Mission can also be witnessed in case of area expansion by rejuvenation and protection.
- In case of sources of procurement of resources for pineapple and mandarin orange cultivation, informal sources like private nurseries and fellow farmers continue to play an important role.
- The extension activities provided by the district horticulture and agriculture officials under NHM make only a sorry figure, as very little has been done in case of dissemination of technologies through training and capacity building activities.
- There has been a complete absence post-harvest management facilities like packhouse, storage units, and mobile processing units formed under the NHM in the study regions of both of the districts.

- Nevertheless, it can be said that the NHM performed well by providing financial assistance to the farmers to boost up and motivate them towards diversification of cropping pattern in favour of horticultural crops.

Study No. – 167

Name of the Study: Impacts and Constraints Evaluation of Organic Farming in West Bengal

R. K. Biswas, D. Majumder, A. Sinha

Year of Publication: 2011

ABSTRACT

- **Status of organic farming in West Bengal**

The overall increase in area under organic farming has been found to be 6.57 per cent and 6.14 per cent in North 24 Parganas district and 2.12 per cent and 3.77 per cent in Jalpaiguri district for NGO (in more than 10 years) and Government (in 5 years) activity area respectively.

- **Comparative economics of crop production under organic and inorganic farming**

The cost of cultivation was higher and production was lower in organic than inorganic farms for lady's finger, potato and chilli, but price of the organic product was higher than inorganic in the study area. The return / cost ratio of organic cowpea was higher than inorganic cowpea in NGO area. In case of brinjal, though production was lower and cost of cultivation was higher in organic system, but as the price of organic product was higher than inorganic product, return/cost ratio for both organic and inorganic farming system was more or less same. The same fact was replicated for cauliflower in NGO area, but in Government area organic cauliflower exhibited lower production and same price with inorganic product and lower but favourable return / cost ratio.

- **Impact of organic farming in relation to quality of produces and price premium**

In organic farming system, market price for organic produce is one of the most effective tools for reducing the disparity of income between organic and inorganic farming. As compared to market area, the impact level of price has been found lower for Government activity area than NGO activity area. Perhaps it was the result of more intensive campaigning regarding consumers' awareness and the quality of organic farm products by the NGOs.

- **Farmers' awareness regarding organic farm practices**

Organic farmers in both NGOs and Government area were not motivated like a layman to adopt organic technology in their farm. But it was observed in the study that the organic farmers were much aware regarding good quality of organic product, beneficial role of organic crops in human health, high profitability of organic farming than other system, etc.

- **Constraints in adoption of organic farming**

The constraints like high cost of organic inputs, no market for organic product, unavailability of organic inputs , less yield and no price advantage for organic product are found to be the major constraints according to their ranking as first, second, third, fourth and fifth. The next important constraints are found to be no consumers demand for organic product. According to the ranking, the seventh position is obtained by less or equal profitability. Small holding size, inconvenience of organic techniques, unavailability of the scope, higher production risk, no suitable land for organic farming are the next important

constraints by obtaining the rank eighth, ninth, tenth, eleventh and twelfth, respectively. Lack of training of organic practices, more recurring cost for input are found to be the next important constraints by obtaining the rank thirteenth and fourteenth. The other constraints in order to importance are lack of awareness, low employment potentiality and lack of experience of organic farming as these constraints obtained the rank by fifteenth, sixteenth and seventeenth.

Study No. – 168

Name of the Study: Impact of emerging marketing channels in agricultural marketing: Benefit to producer-seller and marketing costs and margins of agricultural commodities – A study in West Bengal

D. Sarkar, R.C. Mondal

Year of Publication: 2011

ABSTRACT

Crops considered for EMC and TMC are Arum and Mustard respectively. Per hectare cost of cultivations of arum of the sample farmers as a whole is Rs. 60071.98 which varies marginally across marginal, small and medium farmers. On the other hand, per hectare cost of cultivation, on and average, for mustard is Rs. 37913.80. Out of the total cost, the share of paid out costs are 74.09 per cent in case of arum and 60.03 per cent in case of mustard.

Production and productivity of Arum is 4792.32 (qt.) and 242.04 (qt./ha.) respectively, while production and productivity of Mustard is 227.10 (qt.) and 14.34 (qt./ha) respectively. **N**et returns with and without the cost of labour / ha are Rs. 72568.00 and Rs. 88149.80 respectively for arum. Similarly, the net return with paid out cost and paid out plus labour cost results to Rs. 18613.27 and Rs. 3459.51 respectively for mustard.

Price spread and market efficiency of Arum in EMC

It is observed that by selling Arum in EMC, the sample farmers received an average price of arum at Rs. 548 per quintal from the contract traders, who purchase entire amount of Arum at post matured stage at field. In this process of transaction, no cost involves to farmer for harvesting and marketing of their cultivated crop. Hence, net profit (Rs. /Qtl.) incurs to the cultivators after ducting paid out cost is Rs. 364.20 per quintal.

The selling price per quintal of arum of the whole-seller is Rs. 973.35 in which their shares of market cost and market margin are Rs. 21.89 and Rs. 136.38 respectively.

The retailer's selling price of Arum is Rs. 1079.90 per quintal. In which market cost is Rs. 16.88. By selling Arum to the consumers, the retailer is able retain market margin of Rs. 89.67 per quintal.

The farmers' shares, market cost and market margin of different trading agents to consumer price are as follows:

- The share of farmer to the consumer price is 50.75 per cent.
- Market cost turns out to 8.64 per cent
- Market margins of different trading agents as a whole are 40.61 per cent and
- Ratio of market efficiency is 1.03

Price speed and Market Efficiency of Mustard in TMC

The selling price (Rs. /Qtl.) of mustard of the sample farmers a whole is Rs. 2876.28 and the marketing cost is Rs. 26.37 i.e. (20.53%) of total market costs. Hence, the net price realised by the farmer is Rs. 2876.29 and profit (net price minus paid up cost) is Rs. 1288.59.

The shares of farmers to processor's price, markets cost and market margin are as follows:

- The share farmers to the processor's price are 82.87 per cent.
- Market cost is 3.00 per cent
- Market margin of trader and whole-seller is 14.13 per cent and
- The ratio of market efficiency is 4.88

Benefit cost ratio for Arum & Mustard

The BCR is almost same for both the EMC and TMC crop.

- Cost of production/ha of Arum for EMC with paid out cost = 2.387
- Cost of production/ha of onion for TMC only with paid out cost = 1.24
- Cost of production/ha of Arum for EMC with family labour = 2.21
- Cost of production/ha of mustard for TMC with family labour = 1.09

Wastage of Crops

The extent of loss/wastage of Arum and Mustard during harvest threshing storage and transport etc. is 2.86 per cent and 0.55 per cent respectively. Wastage occurs for Arum during harvesting (2.61%), storage (0.20%) and retail marketing level (0.05%) while wastage occurs for Mustard during threshing (0.30%) and storage (0.25%).

Reasons of Preferring Existing Marketing Channel

The sample farmers of both the EMC and TMC inform the following reasons to word preferring marketing channels, which are habit (18.89% for EMC and 17.69 % for TMC) followed by higher/fair price (16.36 % for EMC and 15.44% for TMC), low cost of marketing (12.89% for EMC and 11.27% for TMC) and time taking in other channel (12.22% for EMC and 11.56% for TMC). Apart from these, other reasons for preferring this channels are less physical hazards in marketing commodities, proximity, absence hidden cost etc. supervising service and better infrastructure.

Study No. – 169

Name of the Study: Impact of NREGA on wage rates, food security and rural-urban migration in West Bengal

J. K. Ghosh, F. H. Khan, V. Datta

Year of Publication: 2011

ABSTRACT

Primarily the implementation of NREGA can be evaluated in terms of jobs demanded and provided. The official data in this connection shows that during the financial year 2010-11 (till December 2010) a cumulative total of 44.21 lakh households demanded employment and among them 43.80 lakh households (99.1 percent), were provided wage employment under the scheme in the state. In terms of person days of employment generated under the scheme, the state of West Bengal generated a cumulative total of 910.65 lakh person days

during the financial year 2010-11 (till Dec' 2010) under NREGA out of which 328.35 lakh person days (36.1 percent) has been for scheduled caste, 98.85 lakh days (10.9 percent) for schedule tribe and the rest 910.65 lakh days (53.1 percent) for people belonging to other castes.

Across the districts, in terms of average person days generated per household, Bankura stood first (29 days) and Coochbehar stood last (11 days) among all the 18 districts in west Bengal during the year 2010-11.

The act mandates that at least one-third of the workers should be women. Notably, in the state, 284.08 lakh days of employment were generated for women which imply that women obtained 31.2 percent of the wage opportunities with their male counterpart getting the remaining 68.8 percent.

The works undertaken and completed during the financial year 2010-11 indicated that agricultural development related activities accorded top priority which accounted for the maximum share in total number works completed during the year.

As far as quality of assets is concerned, the majority of households reported that the quality assets created under NREGA is good.

In all the sample districts, wages received under NREGA were found to be less than the stipulated minimum wage of Rs. 96.00.

Manual works provided under NREGA are expected to bring down the level of out-migration. Evidently, however it is seen that among the five surveyed districts, out-migration has taken place mainly in three districts viz. Jalpaiguri, Malda and Nadia and marginally in Purulia district. Of course such migration has been the result of lack of employment opportunities within the village.

NREGA through generating incremental income is expected to bring about changes in the food security situation. Evidently, 70.50 per cent of households reported that they got full two meals throughout the year 2009 while the rest 29.50 per cent of households did not get full two meals throughout the same year. Out of the households who are not having full two meals, 11.86 per cent did not get sufficient food for one month, 62.71 per cent for two months and the rest 25.43 percent for period of more than two months. However, although some of the households reported worsening situation of food security even after the introduction of NREGA, the overall impact NREGA on food security is positive as it has improved the food security for majority of households.

Due to the implementation of NREGA there has been sharp increase in the wage rates during our reference periods pertaining to the years 2005 and 2009. The present study finds that both male and female wages have gone up after the implementation of NREGA.

NREGA is expected to bring about changes in the standard of living of village people. In this regard, all respondents feel that living standard in general improved after the introduction of NREGA. The responses show that due to incremental income obtained from NREGA activities, households were able to spend more on food, clothing, housing and

education and thus improvement in the living standard since the introduction of NREGA is noticed specifically in terms of these aspects. After introduction of NREGA, household daily consumption is increased as reported by 11.93 per cent of households. About 8.91 per cent of households reported improvement in health treatment condition. Households able to spend more on consumer goods and social ceremony are also noticed.

In the education front, all households reported that they are investing more money on children's education due to extra income earned from NREGA. Reportedly, awareness about education is also improved after the introduction of NREGA (6.08 per cent).

Overall, the scheme of NREGA has the great potential in enhancing income and livelihood security of the rural poor. The present study, in an attempt to evaluate the impact of NREGA has identified the key areas of progress as well as the shortcomings of the programme. Notably, NREGA has not been able to provide the employment that one would have expected. Despite making provision of 100 days of employment in a year, actual employment generation has been much below than 100 days in a year. In the matter of wage payment, in many cases, delay in wage payment is noticed. Procedural irregularities are also noticed at the stage of implementation of the scheme such as irregularities in conducting social audits and gram sabhas. True that NREGA addressed many of the weaknesses of the earlier wage employment programmes through introducing several features in its design. However, as evidenced by the present study, NREGA is also not free from limitations despite having its positive impact on income generation, asset creation and above all improving standard of living. Obviously, if the remedial measures are taken to address the limitations, the effectiveness of NREGA would increase with experience and would go a long way in ensuring livelihood security to the rural poor in a sustainable manner and in altering the balance of power in rural society. The key lies in proper implementation and planning of the scheme as per the guidelines laid down in the Act.

Study No. – 170

Name of the Study: Impact of NREGA on Wage Rates, Food Security and Rural Urban Migration in Sikkim

J.K. Ghosh, S. Karmakar

Year of Publication: 2012

ABSTRACT

Since Independence the country's strength is derived from the achievements of planning. The policies and programmes have been designed with the aim of alleviation of rural poverty which has been one of the primary objectives of planned development in India. But employment programmes were not perceived as major instrument of poverty alleviation until the beginning of the 1980s in most states of the country. For the first time, the National Rural Employment Guarantee Act, 2005 provides employment opportunities of rural labourers as a matter of right. The act was enacted to enhance livelihood security in rural areas by providing 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work.

In the state of Sikkim, NREGA became operational from February 2006. The scheme had been introduced in phases. Initially, in the first phase, the scheme was introduced in north Sikkim. In the second phase, from 1st April 2007 two more districts namely, East and South Sikkim districts were brought under its coverage. One more district viz. West Sikkim was added in the third phase from 1st April 2008. Thus the scheme is operational in all districts of the state of Sikkim w.e.f. 1st April 2008.

The present study, in an attempt to evaluate the impact of NREGA has identified the key areas of progress as well as the shortcomings of the programme. NREGA had a positive impact on income generation, asset creation and above all improving standard of living However, NREGA is not free from limitations and has not been able to provide the employment that one would have expected. Despite making provision of 100 days of employment in a year, actual employment generation has been below than 100 days in a year. In the matter of wage payment, in many cases, delay in wage payment is noticed. Procedural irregularities are also noticed at the stage of implementation of the scheme such as irregularities in conducting Village Monitoring Committee meetings which needs to be conducted for the participation of affected persons in the process of decision making and validation. It is true that NREGA addressed many of the weaknesses of the earlier wage employment programmes through introducing several features in its design. However, if the remedial measures are taken to address its limitations, the effectiveness of NREGA would increase with experience and would go a long way in ensuring livelihood security to the rural poor in a sustainable manner and in altering the balance of power in rural society. The key lies in proper implementation ensuring participation of affected persons and planning of the scheme as per the guidelines laid down in the Act.

Study No. – 171

Name of the Study: Assessment of Marketable Surplus, Marketed Surplus and Post-Harvest losses of Paddy in West Bengal

D. Sarkar, D. Roy, A. Sinha

Year of Publication: 2013

ABSTRACT

After a detailed analysis of data by conducting primary survey of about 318 farm households in six eminent blocks from over three major paddy producing districts in West Bengal, the study makes a number of crucial observations. Based on those findings, the following specific observations can be made:

- Average marketed surplus ratio, taking all farms together, stands at 55.30% of net availability of paddy (or 61.19% of current production of paddy). In contrast, average marketable surplus ratio stands at 43.49% of net availability of paddy (or 36.43%of current production of paddy).
- Marketed surplus ratio for the marginal farms stands at 44.15% of net availability of paddy, which for the small, semi-medium and medium farms stand at 58.66%, 64.77% and 69.12% respectively. As proportion to current production, the marketed surplus ratio for the marginal farms turn out to be 46.59%, which for the small,

semi-medium and medium farms are found to be 65.18%, 74.55% and 78.56% respectively.

- Marketable surplus ratio for the marginal farms is estimated at 23.91% of net availability, which for the small, semi-medium and medium farms turn out to be 50.05%, 59.96% and 66.04% respectively. As ratio to current production, the marketable surplus ratio for the marginal farms stands at 20.15% of current production, which for the small, semi-medium and medium farms turn out to be 41.86%, 48.19% and 59.17% respectively.
- The marketed surplus ratio is found to be influenced positively by farm-size, average price received, access to credit and possessing permanent storage facilities, while it is negatively related to household size and indebtedness of farmer households.
- Estimated total post-harvest loss stands at 3.42% of current year production on an average; showing a decreasing trend over increase in farm-size.

Study No. – 172

Name of the Study: Assessment of pre and post harvest losses in rice and wheat in West Bengal

D.Sarkar, V. Dutta, K. S. Chattopadhyay

Year of Publication: 2013

ABSTRACT

As perceived by the respondents, cent per cent of the farmers are facing constraints in rice and wheat cultivation. However, the degree of severity of these constraints varies. Among these constraints, high cost of inputs and low output price ranked first and pest and disease problems ranked second both in rice and wheat. Similarly, farmers perceived water deficiency as one of the most important constraints in rice cultivation and poor quality of seed in wheat cultivation.

The magnitude of crop loss due to pests, disease and weed infestation in paddy is very high. The actual production with attack is varied from19.36 quintal to 20.88 quintal per acre. The overall loss with attack has been found to be 3.54 quintal per acre. However, the percentage loss over normal production is less (15.05 per cent) than that of percentage loss over actual production.

Similarly the magnitude of crop loss due to pests, disease and weed infestation in wheat has also been found very high. The actual production with attack is varied from 3.90 quintal to 5.96 quintal per acre. The overall loss with attack has been found to be 0.92 quintal per acre. However, the percentage loss over normal production is less (15.29 per cent) than that of percentage loss over actual production.

It has been observed that the quantity lost in harvest is 0.78 kg in rice and 1.26 kg per quintal of harvest in wheat. Quantities losses during threshing in rice and wheat are 0.32 kg and 0.26 kg, respectively. Similarly, 0.13 kg and 0.12 kg are lost during winnowing of rice and wheat. Thus winnowing is one of the post harvest operations that incur high amount of loss. These losses were attributed to improper handling and inefficient machine. Care should be taken to properly handle the machine during winnowing. The transport lost varies from 0.55 kg in rice to 0.83 kg in wheat. Quantity losses in handling are 0.31 kg in

rice and 0.63 kg in wheat and quantity lost during storage is 1.78 kg in case of rice and 3.93 kg in case of wheat. The total post harvest loss in rice has been found to be 9.39 kg per quintal and 76.84 kg per acre, whereas it is 7.22 kg per quintal and 30.59 kg per acre in case of wheat. It is worthwhile to note that the total post harvest loss increases with the increase in farm size. Therefore, it has been observed that post-harvest handling has led to considerable loss in rice and wheat. The share of storage loss has been found to be maximum than that of other losses. The improvement in storage facilities required immediate attention of the policy makers for reducing post-harvest loss in rice and wheat. There is a need to impart training to the farmers, traders and extension officials at the block level on the practical aspects of storage and preservation of food grains. It is also essential to popularise scientific techniques of storage amongst farmers, etc through demonstrations and wide publicity and to develop selected villages to serve as model villages. There is also need to arrange facilities for farmers for purchase of improved types of storage structures and to maintain liaison with State Governments and to arrange steady supply of storage structures and pesticides to the users.

In general and according to the suggestions of the respondents, provision of pest and disease resistant quality seeds along with technical know-how, soil testing facility etc. are call for the day to minimize the losses at pre-harvesting stage of rice and wheat. Similarly, provision of infrastructural facilities including ware houses, marketing infrastructure and good condition of road can restrict the losses at the post-harvest stage of rice and wheat.

In view of the above, it can be concluded that if pre and post harvest losses are reduced, the farm income can be increased substantially without cultivating additional acres of land or increasing any additional expenditure on seed, fertilizer, irrigation and plant protection measure to grow the crops.

Study No. – 173

Name of the Study: Problems and prospects of oilseeds production in West Bengal

D. Sarkar, F. H. Khan, D. Roy

Year of Publication: 2013

ABSTRACT

Trends and Pattern of Growth of Oilseeds

Over the decades, there has been a shift in the cropping pattern in West Bengal agriculture, wherein area under oilseeds increased considerably (about 4 times). The relative share of oilseeds (comprising mainly of rapeseeds and mustard) in total cropped area also increased considerably from 2.8% to 9.8%. Net positive changes in relative terms for oilseeds during TE 1993-94 and TE 2009-10 has been particularly prominent in districts South 24 Parganas (163.53%), Midnapore (89.62%) and Murshidabad (61.80%). For the state total, net change during the period stated for oilseeds stands at 28.58%.

Comparative Economics of Oilseeds vis-à-vis Competing Crops

Cost of production per hectare of oilseeds (sesame) is much lower than that of its competing crop (summer paddy). In particular, while cost per hectare of sesame turns out to be 23,364/- per hectare, that for summer paddy turns out to be 33,203/- per hectare. Net Profit per hectare for oilseeds (sesame) is much lower than that of its competing crop (summer

paddy). In particular, while net profit for sesame stands at about 6,468/- per hectare that of summer paddy stands at 19,052/- per hectare. This phenomenon of lower cost per hectare as also lower profit per hectare for oilseeds (as compared to those of competing crop of summer paddy) arises particularly because of the fact that value of output per hectare (main product + by-product) is much less for oilseeds than that of summer paddy.

Constraints in the Production of Oilseeds

Technological Constraints- The major technological constraints comes out to be poor crop germination (96.30%), followed by non-availability of suitable varieties (88.50%) and incidence of deceases (79.30%). Agro-climatic Constraints- Major agro-climatic constraints include drought at critical stages of crop growth (91.20%), followed by excessive rain (91.00%) and extreme variation in temperature (75.20%). Economic Constraints- The major economic constraints in cultivation of oilseeds are low and fluctuating prices (92.50%), followed by shortage of human labour (80.60%) and high input costs (80.10%). Institutional Constraints- In case of institutional constraints, it is observed that timely availability of seed (90.90%) comes out to be the most severe constraint, followed by inadequate knowledge about disease and pest management (73.80%) and Non-availability of institutional credit (67.30%). Constraints in post-harvest management, marketing and value addition- The major post-harvest problems include exploitation by market intermediaries (98.40%), followed by lack of processing facilities in the area (57.30%) and inadequate storage facilities (55.80%).

Study No. – 174

Name of the Study: Baseline Data on Area, Production and Productivity of Horticulture Crops in Sikkim

D. Sarkar, D. Majumder, R. K. Biswas

Year of Publication: 2013

ABSTRACT

It should be noticed that only 0.76%, 2.06%, 0.52% and 0.31% area in East, North, South and West districts, respectively had been surveyed as compared to the area estimated by the agency across the district. So, a variation in results of productivity between the survey and estimate is quite natural, especially for the group of crops, like, kharif vegetables, rabi vegetables, etc. Though, the productivity of rabi vegetables in North Sikkim was almost same for these two estimates. On the other hand, individual crop like, mandarin orange, ginger and turmeric exhibited parity in result of productivity between survey and estimates. But there was a vast gap in productivity of cymbidium orchids and large cardamom between village and district level estimates. Fruits other than orange exhibited almost equal productivity in village and district level estimates in East Sikkim, but not even almost equal in West Sikkim. However, only 260.56 ha area in four districts of Sikkim was surveyed and it was only 0.82% of the area that was estimated by the agency across the districts. This small area of course showed a compatible result of productivity as compared to district level estimates in a number of horticulture crops in Sikkim state.

We came across a number of crops that could not register their share in the horticulture estimate. In East Sikkim were crops like Leafy vegetables and Tomato, while in

North were Leafy and Mixed vegetables, Brinjal, Tree Tomato, Chayote, Chilli and in South were Cabbage, Chilli and Tomato.

In the grass root, the Horticulture Inspectors did opined having no exact and updated record about the area under various horticultural crops. Though the Village Level Officers under the Department of Revenue have some records of area, but it seems deficient. The record there is kept for major field crops. Secondly, there is no agency other than the horticulture department, except for RKVY and VIUC in South district, which is collecting these data. So, no cross verification of the estimates could be made to ascertain authenticity.

In the East district Cymbidium orchid present separate problems. Cymbidium orchids are planted in pots – one pot for one plant. The plants starts flowering after 3-4 years of plantation. From 5-6th year onwards production increases till about 10th year. After 10th year production once again declines. Fully grown plant give 5-6 spikes per plant but for the older and younger plant productivity is low. Moreover, the spikes vary in size across the plants. So, it becomes difficult to estimate the exact productivity. Hence, four spikes per plant on an average is assumed to estimate productivity of Cymbidium orchid.

Large Cardamom, cultivated extensively in the North District, has different specificities and problem of its own in the process of estimation. Large Cardamom plantation is done in the undulated terrains of the hills. It is difficult in such a tract to estimate the area under cultivation. Hence, in crop cutting experiments an indirect method is applied. Taking the standard spacing norm for Large Cardamom about 55-60 plants are selected that are supposed to cover an area of 5 metre square. Productions from those plants are measured and productivity thus estimated. But under such circumstances the level of exact productivity cannot be estimated. Though record of area under Cardamom plantation is kept by the revenue officials, the information is not updated at regular interval.

In South and West Sikkim, however, the basic problem remains the same – dearth of reliable area estimate. In Southern district there is abundance of different kinds of vegetables both under sole and mixed cropping practices. Under such circumstances, with no reliable estimate of area under crops, it becomes difficult for the horticulture department to estimate area, production and productivity (Table 8.2c). The West district, however, presents shortage of trained personnel as one of the main problems (Table 8.2d). Another important problem for Ginger lies in the fact that during crop cutting experiments the weight of Ginger that is recorded gets reduced with passage of time as it becomes dry. This results in a difference in productivity estimates which does not get its reflection.

Study No. – 175

Name of the Study: Effect of farm mechanization on agricultural growth and comparative economics of labour and machinery

D. Sarkar, K. S. Chattopadhyay, D. Roy

Year of Publication: 2013

ABSTRACT

- In case of trends of growth in mechanization in West Bengal, it comes out that except for potato, costs of machinery has grown much faster than costs of bullock labour,

human labour as well as value of production over the period 1996-97 to 2009-10. This perceivably acts as a major constraint in the spread of mechanization of farming in the cultivation of crops like paddy, wheat and mustard.

- It comes out that ownership of expensive machines like shallow tube wells, tractors, etc. is fairly limited in numbers owing to involvement of higher capital cost, but they are extensively used on hiring basis to perform various farming operations in the study region. As such, ownership and use of machinery is two completely different aspects, especially in case of a highly marginalised economy like West Bengal.
- The study observes that 70 percent of the farmers held time-efficiency of mechanized farming as the prime reason (rank I) behind mechanization. This is why we find that with comparable costs, the tractor operated machines are gaining popularity in the study region especially in operations like ploughing, marketing and transportation.
- However, among the major problems faced in mechanization, about 26 percent of the farmers consider tractor operated plough as expensive to purchase, while another 14 percent considered that it is expensive even to hire tractor operated plough. Further, about 26 percent of the farmers responded that tractor operated plough is not readily available for hire at a time when it is actually needed the most.

Study No. – 176

Name of the Study: Spread of New Varieties of Hybrid Rice and their Impact on the Overall Production and Productivity in West Bengal

D. Sarkar, J. K. Ghosh

Year of Publication: 2013

ABSTRACT

- ***Extent of adoption of hybrid rice at the farm level***

  It can be seen that during the year 2009-10 the proportion of rice area allocated to hybrid rice accounted for 18.03 per cent in marginal sized land holdings which declines consistently with the rise in the size of holding to 11.52 per cent. Similar relationship is also observed during the year 2010-11. Considering all the farm sizes together, the percentage of rice area allocated to hybrid rice is 21.09 per cent in 2010-11, which was 14.72 per cent in 2009-10. The small and marginal farmers who produce mainly for household consumption have shown interest in hybrid rice. Needless to say, hybrid technology has vast potential for improving the level of productivity of rice.

- ***Yield performance of hybrid and HYVs***

  Overall, rice hybrid performed better with an average yield of 6408.53kg per ha than average yield of 5377.60kg per ha for HYVs during the 2009-10. During 2010-11, too hybrid rice recorded higher yield at 6551.28kg per ha as against 5340.89kg per ha for HYVs. Among various farm size groups, smaller sized holdings obtained highest yield in both the years. The mean yield of HYV rice however increased with the increase in the size of farm over the years. In other words, mean yield levels of HYVs were higher on larger sized holdings as compared to smaller ones in case of HYVs.

- ***Yield Gain from Hybrid Rice over the Inbred Rice Varieties***

On an average the yield gain of hybrids over HYVs was 19.17 per cent in 2009-10. During 2010-11 it was about 22 per cent. Across farm sizes, smaller sized holdings obtained higher yield gain as compared to larger sized holdings in both the years under study. Thus based on farm level performance of hybrid rice over the period it is clearly indicative of the fact that hybrid rice technology has its higher yield potential under the production environments prevailing in West Bengal.

- ***Economic Returns to Hybrid and Inbred Rice Cultivation***

  During the year 2010-11 the farmers growing hybrid rice realised a gross return of Rs.67, 583.51 per hectare while the gross return realised in inbred varieties was Rs.61, 327.32. Thus the gross return was 10.20 per cent higher in hybrid rice cultivation. However the profit (net return) realised in hybrid rice and inbred rice was of the order of Rs.38,696.10 and 37,776.32 per hectare respectively. Thus the profit gain realised in hybrid rice production was only Rs.919.78 per hectare or 2.43 per cent over inbred varieties of rice. Consequently the benefit cost ratio was also lower in hybrid rice cultivation (2.34:1) in comparison with that for inbred rice (2.60: 1). Inter-temporarily net return from hybrids over the reference periods has increased from Rs.35, 549.76 per hectare in 2009-10 to Rs.38, 696.10 per hectare in 2010-11. Correspondingly for inbred rice, the net return decreased from Rs.38, 383.69 per hectare to Rs.37, 776.32 during the same period. The net result has been increase in benefit cost ratio for hybrid rice cultivation from 2.24: 1 in 2009-10 to 2.34: 1 in 2010-11. Correspondingly, there has been decline in benefit cost ratio from 2.63: 1 to 2.60: 1 during the same period.

- ***Famers' overall perception of hybrid rice cultivation***

  Analysis of farmers' overall perception about hybrid rice cultivation hinted that future research on hybrid rice development should focus on improvement of grain quality besides yield in the next generation hybrids.

- ***Reasons for non-adoption of hybrid rice cultivation (non-adopters' experience)***

  The main reasons for non-adoption of hybrids were lower price of hybrid rice as compared to inbred, poor extension activities by the government for the popularization of hybrids, un-availability of quality hybrid seed, higher seed cost, higher yield loss for hybrids due to pests and diseases and higher risks associated with hybrid rice cultivation. Though higher seed cost is considered a constraint, it was given the least importance compared with other constraints. The foremost constraint confronting the diffusion of hybrid rice technology is poor grain quality and as a result lack of market acceptance leading to lower price fetched for hybrid rice as compared to inbred variety.

Study No. – 177

Name of the Study: Spread of New Varieties of Hybrid Rice and their Impact on the Overall Production and Productivity (Consolidated Report)

P. K. Basu, D. Roy

Year of Publication: 2013

ABSTRACT

- Yield and productivity under paddy in all states together increased in all the periods. Area fluctuated and there was no upward trend. In fact the area under paddy at the end of the

entire study period was lower than at the beginning. This indicates that the scope of increasing output through extension of area has been exhausted and it is imperative to concentrate on yield improvement, through Hybrid seeds, etc. It is also noticeable that yield and productivity performed substantially better during the pre-hybrid period (1984-85 to 1993-94). This probably indicates the fact that HYV performance tapered off since the 90s. Hybrid cultivation did not spread sufficiently so as to compensate.

- It can also be observed that the increase in production can be attributed more to gain in productivity than to increase in area under crop, which in fact declined, as we have already indicated. Both yield and production showed similar and substantial gains.
- For both years surveyed the receptivity by size class to hybrid cultivation takes the form of a U, with the size class 2 to 4 ha being the least receptive***. This suggests that there is a conflict between equity and efficiency in the case of hybrid cultivation.***
- In striking contrast the receptivity to HYV takes the form of an inverted U, with the same size class being most receptive.
- Further apart from the largest farms, area under hybrid cultivation has increased between 2009-10 and 2010-2011. Correspondingly, there has been a decline in area under HYV. Though the time span is too short, the result is intuitively expected. With time information about and confidence in hybrid cultivation is likely to increase.
- A significantly higher proportion of head of households adopting hybrid farming belong to the *younger generation*.
- The ability to read literature on hybrid cultivation is *sufficient* for adoption of new technology and that higher formal education is unnecessary.
- A significantly larger proportion of SC, ST farmers compared to general caste cultivators go in for hybrid cultivation.
- The state plays predominant role in dissemination of information of new agricultural technology mainly through extension workers and, next through training programmes. ***So the spread of this technology cannot be entirely entrusted to the private sector.***
- ***Training programmes have to be toned up***, as the extension workers are more effective in persuading farmers to adopt appropriate input mix, while participation in training programmes yields much poorer results. Participation in demonstration programmes is even less effective for disseminating knowledge about proper input mix.
- There is also great regional variation in effectiveness of government servants and programmes in disseminating information. ***This suggests that some monitoring devise has to be positioned.***
- Hybrid technology is substantially more productive compared to HYV across farm sizes. It is noticeably more productive in the largest farm size. ***This suggests that the spread of the technology may have regressive impact on distribution.***
- Hybrid cultivation is more labour intensive than HYV cultivation. Hybrid rice cultivation also involves greater use of female labour. ***Hybrid rice cultivation is thus likely to generate additional employment opportunities for workers in general and specially for female labour rural areas.***

- Area wise the cost of hybrid cultivation was significantly higher. But the higher productivity compensated. Thus the cost per quintal was lower for hybrid. ***This suggests that to popularise hybrid cultivation credit needs have to be addressed.***
- The average rate of return on working capital was higher for hybrid cultivation, though in some states the opposite obtained.
- Grain quality of hybrid rice, in terms of hulling and milling ratios is inferior to HYV rice. ***This suggests that research must concentrate on improving this aspect of hybrid rice.***
- A greater percentage of hybrid output is marketed compared to HYV. ***This suggests that hybrid cultivation is suitable to the expansion of grain markets.***
- The price of hybrid rice is lower than that of HYV rice, on an average.
- Though government is the main source of hybrid seeds, there is great regional variation in the proportion of seeds supplied by government sources. ***There is, therefore, scope for improving government intervention in this area.*** Also seeds are not often supplied in time. ***This needs to be looked into.***
- There is a perception of poor quality of seeds supplied. The reasons for this are not clear. This needs investigation.
- Hybrid cultivators are often using inputs in incorrect proportion. Though lack of financial ability has been indicated as a reason, lack of knowledge has also played a significant role. ***Thus the government needs to improve the quality of knowledge dissemination and also provide sufficient credit. The need for proper credit provision is more pronounced because hybrid cultivation is costlier.***
- The quality of hybrid rice, in the perception of the consumer, is poorer than HYV rice. This makes marketing difficult. ***This suggests that research should concentrate on improving quality like decreasing stickiness of cooked hybrid rice. The rate of degeneration or 'keeping quality' also needs to be improved.***

Study No. – 178

Name of the Study: End Term Evaluation Study in Respect of the Implementation of Bringing Green Revolution to Eastern India (BGREI) Program (Consolidated Report)

Edited: D. Majumder D. Roy, R. K. Biswas

Year of Publication: 2013

ABSTRACT

BGREI program and changes in Cropping Intensity:

The results of CI across rice ecologies indicate differentiated pattern between BGREI beneficiaries and non-beneficiaries. On the whole it can be said that there has been marginal changes over two years in cropping intensity for both beneficiary and non-beneficiary farmers with variations across states. The change in CI in the states (as derived from sample survey results) cannot be attributed to the program of BGREI. There may have been some other factors influencing the cropping intensity in the states in the years of reference. Over and above, the BGREI program as conceived had focused on increasing the yield of crops of which we shall be discussing presently.

BGREI program and rise in grain yield:

It is revealed from the mean yield achieved by the beneficiaries and non-beneficiaries that there exists a difference in grain yield between them. In most of the states the average yield of crops among beneficiaries was substantially higher than their counterparts (i.e. non-beneficiaries).

Yield Gap analysis amongst BGREI beneficiaries and non- beneficiaries:

The ecology specific yield gap analysis in rice and wheat crops in BGREI States except eastern Uttar Pradesh reveals that wide gap exists across ecologies and districts within a state and between states too. This exercise, however, was not carried out by AER Centre, Allahabad. Normally yield gap is the difference between yield obtained at the farm level and the potential yield of a particular variety on the experiment station. Differences in yield gap between beneficiary and non-beneficiary farmers would suggest the impact of changes brought about in terms of yield enhancement. However, the yield gap analysis has been made differently for different states with differential benchmark. On the whole substantial yield gap is observed between beneficiaries and non-beneficiaries, the former registering higher yield.

Hence, it can be said that the beneficiary farmers in general in all the BGREI States had an edge over the non-beneficiaries in enhancing the yield of crop.

Recommendations and Policy Suggestions

- Efforts should be made to reduce the gaps between recommended, promoted and implemented strategies.
- In course of dissemination of technology, provision of Progressive Farmers and regular monitoring from State agriculture departments can play vital role. As such, such links between the beneficiaries and State machineries should be encouraged.
- Interventions through crop demonstrations has helped decline the gap between ecology specific potential and actual yields across beneficiary farms. Hence, such demonstration programs should be encouraged.
- Eastern India covered under the BGREI program has exhibited a glimpse of a high potential for yield enhancement of rice, wheat and *Rabi* pulses through a favourable positive crop response. There is a huge scope to exploit this potential through scientific and technological intervention like BGREI, and hence the program should continue with greater effort and coordination.
- An all round effort should be made to ensure the timeliness of input delivery system prescribed under the recommended technology.

Study No. – 179

Name of the Study: Adoption of recommended doses of fertilizers on soil test basis by farmers

V. Dutta, D.K. Mondal, S. Ghosh, R. Mukherjee , K.S. Chattopadhyay, S. Chakrabarti

Year of Publication: 2015

ABSTRACT

- Soil testing and adoption of recommended doses of fertilizers among paddy and jute farmers have significantly raised both the production and productivity but numbers of such farmers are found negligible.
- The study has identified factors like non-availability of report card after testing, poor extension facilities, distant location of soil testing laboratories etc for poor adoption of Soil test programme.
- The study has noted that the small number of soil test farmers who adopted the recommended doses of fertilizers could enhance their production and productivity and were significantly capable of diminishing the costs of other factors of production.
- It is found from Table- 1.6.5.2 that most important change observed by the paddy farmers is 'increased in crop yield' (81.81%) and next important is 'decreased in application of other inputs like seed, labour, pesticide etc' (27.27%).
- It implies that if the farmers are pursued with technical efficacy of soil testing with appropriate administrative and extension services to them and the application of appropriate doses of fertilizers; agricultural sector could get rid of initial inertia and be transformed into self sufficient food economy needed for sustainable development.

Based on the findings of the study, the following policy prescriptions have been made to make the programme more a success.

- As the Soil testing Laboratories are situated in the long distances and as the Farmers collect sample on their own, the Extension Personnel in the District Agricultural Offices need to be more careful and attentive during implementation of this important programme.
- Sources and Availability of fertilizers in time is a great concern to the Farmers, Government sources need to provide NPK in time with an adequate amount. .
- Continuous mining of nutrients with inadequate doses of replenishment inputs make soil more and more susceptible to infertile, application of recommended doses of fertilizers with an admixture of manure and Bio-nutrient is capable to maintain and regain the soil health. Propagation of Organic Farming among the farmers is essential.
- Kisan Call Centre should be set up in all Panchayat offices to enable the farmers about the recent modern techniques being prescribed by the experts .

Study No. – 180

Name of the Study: Impact on National Food Security Mission on Input Use, Production, Productivity and Income in India

D. Majumder, R.K. Biswas, D. Roy, S. Ghosh

Year of Publication: 2015

ABSTRACT

The Green Revolution of Indian agriculture had certain deficits and did not succeed in achieving self-sufficiency in food across all the states. National Food Security Mission (NFSM) was launched in 2007- 08 with a view of increasing the production and productivity of rice, wheat and pulses in some of the states.

Productivity of rice in particular has responded positively to NFSM programme in West Bengal. The NFSM technology with its provision of subsidized improved seeds, INM and IPM measures has had its impact in increasing productivity and income of the beneficiary farmers. Out of 300 beneficiary farmers, 88.7 per cent had the opinion that the new and improved variety has been effective in increasing the productivity of rice.

It was revealed that the state department of agriculture has been instrumental in imparting awareness among the farmers regarding NFSM.Financial achievement was on the better side registering about two-third utilization. Component specific outlay centered mainly around crop demonstration, plant protection and nutrition.

Despite its positive productivity response there had beensome information gap regarding proper and comprehensive knowledge of NFSM among the farmers. Complains were also received about untimely distribution of inputs andat the same time they were found unhappy as regards to the market prospects of hybrid seeds.

Study No. – 181

Name of the Study: A Study on Productivity and Profitability in Agriculture and Horticulture in Eastern Himalayan Region

Santadas Ghosh, K.S. Chattopadhyay, D. Majumder,
F.H. Khan, V. Dutta, A.Sinha, D. K.Mondal, S. Ghosh

Year of Publication: 2015

ABSTRACT

Agriculture in eastern Himalayan hill area in absence of major industrial activity in that region is a very important source of livelihood. Available agricultural statistics lacks micro level details of productivity and profitability of major crops in the area. Aggregated data at block level often miss out the factors that might affect household level decision making on crop choices. Further, altitude and climate have major impacts on agricultural productivity and crop choice. Unlike in plains of India, such parameters vary widely within a small administrative unit in eastern Himalayan hills.

This study provided new insight into genetic diversity of different crops and use of chemical fertilizers in hills, which has implication for environmental sustainability. Productivity and profitability of some crops are found to be significantly variable across altitudes.

Crop cycles vary significantly with altitude in terms of its sowing and harvesting time. The hilly terrain doesn't allow large land parcels and hence farm mechanization is almost absent in hills. There is no canal or groundwater irrigation facility. In absence of large fields and with little control on irrigation by individual farmers, application of chemical fertilisers is naturally not viable. Modern HYV seeds for staple food crops like rice are also not suitable in hills.

Though there is a large variety of agricultural and horticultural crops produced by the farming households, farmers are increasingly shifting to high value commercial crops such as large cardamom and ginger. Food crops like rice and maize require more labour and more prone to wild animal raids. Therefore, farmers are moving away from these food crops, compromising with local food security. In this backdrop, this study was aimed at estimating agro-horticultural productivity and its returns in the hilly regions of North Bengal (Darjeeling) and Sikkim through a carefully designed primary survey. It is found that despite better state support to Sikkim farmers, productivity and profitability of most of the crops is better in Darjeeling compared to Sikkim. Besides other factors, this might be the result of better rainfall in Darjeeling and its proximity to the city of Siliguri, nearest trading point in plains. State support in Sikkim is being directed towards high value commercial crops like large cardamom and ginger, and hence there is a declining interest in cultivation of staple food crops like rice and maize.

Study No. – 182

Name of the Study: Evaluation and Assessment of Economic Losses on Account of Inadequate Post-Harvest Infrastructure Facilities for Fisheries Sector in West Bengal

K.S Chattopadhyay, Vivekananda Datta, Ashok Sinha

Year of Publication: 2016

ABSTRACT

Fisheries sector is being considered as one of the most important economic activities in Indian economy. A little over 14.5 million people in India depend of Fisheries for their livelihood. According to the National Marine Fisheries Census 2010, the marine fishermen population in India is estimated at 4.0 million, of which 0.99 million are active fishermen. Among the active fishermen, 33% are employed in the mechanized sector, 62% in the motorized sector and 5% in the artisanal sector. Of the total marine fish production, 75% comes from mechanized sector, 23% from motorized sector and 2% from artisanal sector. The pattern of marine fish landings in India during the past fifty years clearly reveals that the contribution by the artisanal sector to the total production was significant up to the sixties.

The mechanized trawl fishery is now the most important among various fishing methods in India and contributes about 55% to the total marine fish production in the country. (GOI)

The study was conducted in the eastern coasts of west Bengal to assess the extent of post harvest losses of marine fisheries. Post harvest losses are caused generally due to poor handling, improper method of processing, inadequate packaging and lack of suitable storage facilities and all these lead to early decomposition and rapid bio–chemical and microbiological spoilage. According to a sector-specific analysis by the Associated Chambers of Commerce and Industry 'post-harvest fish wastage leads to annual losses worth over Rs 15,000 crore in India's marine and inland fisheries sector. The present study attempts to examine all the technical, institutional and economic factors responsible for huge losses in marine fisheries sector.

Study No. – 183
Name of the Study: Farmer Suicides in West Bengal

A. E. R. Centre

Year of Publication: 2017

ABSTRACT

Farmers' suicide is a social menace and a very sensitive issue in India that require immediate attention and sympathy of the policymakers for coping over with the situation at the earliest. The present study is an attempt to develop an in-depth understanding of agrarian distress and farmers' suicide in West Bengal and to make some policy suggestions to prevent such incidences in future.

The National Crime Records Bureau (NCRB), the main official agency in the country responsible for collecting and analyzing suicide data changed the methodology as well as parameters for compiling farmers' suicide since 2014. This change in parameters led to reporting zero farmers' suicide by as many as 12 States and 6 Union Territories including West Bengal in-spite of several news and media reports claiming farmer's suicides in these states. The present study reveals that, the incidence of farmers' suicide in West Bengal is lower than the national average and much lower as compared to several other states like Maharashtra, Telengana, Madhya Pradesh, Chhattisgarh, Karnataka, Andhra Pradesh, etc. But the claim of 'zero farm suicides' as reported in the official documents does not match with the ground realities.

The study revealed that farmers' suicide in West Bengal is not necessarily linked with backward regions or crop failures due to flood or drought rather it is more common with market failure in cash crops that required substantial borrowing to purchase farm supplies. Low and insufficient income from the farming enterprises; increasing cost of living and lack of non-farm employment opportunities are the root cause of farmers' suicide though manifested by indebtedness and family related problems. Therefore, policies towards risk management in agriculture should not only address the climatic and financial risks but also risks associated with distress sale, sudden decline in price due to glut in the market, and income uncertainties. Development of rural infrastructure, particularly, irrigation, storage and

cold chain system will help to mitigate risk to a large extent but this should go hand in hand with creating non-farm employment opportunities in the rural areas.

Study No. – 184

Name of the Study: Indigenous Rice Varieties in Sundarban delta and their role in ensuring local security in the face of climate threats

Santadas Ghosh, K.S. Chattopadhyay

Year of Publication: 2017

ABSTRACT

The low-lying Sundarban delta is one of the most vulnerable coastal regions in India in the face of Climate Change scenario, which predicts future Sea Level Rise and increasing cyclonic activities in the Bay of Bengal. Both of these predictions imply increasing salinity ingress on agricultural lands for this densely populated area, which in turn is a grave threat to local food security. One viable adaptation strategy might be to promote the practice of salt tolerant rice among farmers in the region. It also calls for active research on production and promotion of such varieties. This in turn needs the creation of a knowledge bank on the existing such varieties.

With this database, agricultural and soil scientists could enhance their capacity of prescribing suggestions for better production of indigenous rice varieties with modern techniques in coastal regions. It will cater to the State and National Bio-diversity Board and Agricultural Directorate for providing proper guidance to the farmers in regular manner.

There are a large number of salt tolerant varieties of rice are being preserved cultivated, and the cost of cultivation of these varieties is significantly less and farmers do not need to depend on outside agencies or government departments for obtaining the seeds. The cultivation practice for these varieties is mostly organic in nature and requires little or no chemical fertilizers or pesticides. These varieties are mostly of low productivity, but are important for the local food security and hence to be propagated among local farmers through policy measures.

Study No. – 185

Name of the Study: Economic Analysis of Cost and Return of off -Season Vegetables with Focus on Poly Houses Effect in Sikkim

K.S Chattopadhyay, Ranjan Kumar Biswas,
Ashok Sinha, Debajit Roy, Debanshu Majumder

Year of Publication: 2017

ABSTRACT

The off-season vegetables‟ farming refers to the production of vegetables by using different agro-climatic condition, adjusting the time of transplanting, selecting and improving the varieties and/or creating a controlled environment. In fact, the agro-climatic condition of the hills is conducive in the production of vegetables such as tomato, cauliflower, cabbage, vegetable pea, cucumber, French beans, capsicum etc. in different zones in the hills. Farmers also have higher incentive to grow off-season vegetables since they get higher value from producing these vegetables during summer and rainy season. This is because the off-season

vegetables that are raised in the hilly areas are made available to the consumers in the plains at the time when these cannot be grown there due to hot climatic condition.

In spite of significant contribution of Horticulture Sector to Sikkim state's economy of North Eastern Region, there is dearth of authentic data related to cost and return in this sector.

Cultivation of vegetables under polyhouse cover in organic cultivation technique comes out to be a remunerative proposition for the resource poor farmers also, generating greater employment opportunities for marginal farmers, especially for the female family members. Marketing of Vegetables and role of FPO (Farmer Producers' Organization) to ensure efficient marketing mechanism were also analyzed in this study.

Study No. – 186

Name of the Study: An Economic Analysis of Protected Cultivation under MIDH in Sikkim

Vivekananda Datta, K.S Chattopadhyay, Debajit Roy, Debanshu Majumder

Year of Publication: 2017

ABSTRACT

In case of polyhouse development under MIDH in Sikkim, we can see that the Centrally Sponsored Scheme of Horticulture Mission for North East and Himalayan States (HMNEH) is being implemented in all the districts of Sikkim.

- An area of 415.96 ha has been covered under protected cultivation, while 48835 farmers have been trained under various horticulture activities.
- An amount of Rs. 373.47 crore was released to the State till 2014-15 and the State Government has reported an expenditure of 328.97 crore.

- This study has come out with interesting findings that though cost of cultivation for jarbera under protected condition is significantly higher in comparison to carnation, percentage of net returns in jarbera over carnation is also higher and it is due to higher value of output.
- In case of vegetable crops under polyhouse cover, viz. capsicum and tomato, it has been observed that net returns in case of tomato is marginally lower than in case of capsicum .
- As far as productivity of crops on unprotected condition of farming is concerned, it is observed that apart from paddy, productivity of all crops in marginal farms is marginally higher than small farms.

Based on the findings of the study, the following policy prescriptions have been made to make the programme more a success.

- As Sikkim has the favourable climatic conditions for growing vegetables, flowers and horticultural crops, Policy makers should consider allocating a higher budget under MIDH for this state so that the excess labour force can be optimally utilized in agriculture at large.

Cultivation of vegetables under polyhouse cover in organic cultivation technique comes out to be a remunerative proposition for the resource poor farmers also.

As such, steps to promote off-season vegetable cultivation under poly house cover should be taken up, so that the redundant labour force can be optimally utilized in agriculture at large.

Study No. – 187

Name of the Study: Assessment of the Status of Dairying and Potential to Improve Socio-Economic Status of the Milk Producers in West Bengal

Debanshu Majumder, Ranjan K. Biswas,
Bitan Mondal, Ashok Sinha

Year of Publication: 2017

ABSTRACT

Dairying plays a vital role in rural economy by providing employment and income generating opportunities particularly for small, marginal and women farmers and landless labourers. Over the periods since independence shift from cultivators to agriculture labourers has been significant in West Bengal. Dairy farming may become an alternative way of livelihood.

The State policy has been providing some support for dairy development in the state of West Bengal through co-operative sector. However, the cooperative structure has been rather weak in these parts of the country in terms of coverage of dairy cooperatives in villages.

In West Bengal productivity levels of milch animals were quite low and that the genetic pool of the milch animal population was of low quality, with high incidence of non-descript cows in comparison with the crossbred varieties.Rural households took up dairy enterprise as their subsidiary source of incomerun solely by family labour. Procurement price of milk had been less-remunerative for the farmers whether purchased by cooperatives or private vendors.

As of infrastructure, the households suffered from lack of improved equipment, training facilities, irregularity of supply of cattle feed, vaccines, semen at AI centre and infrequent visit of veterinary staff.

The scope and coverage of central and state sector schemes for dairy expansion seemed somewhat restrictive. Policy re-orientation might be sought for rejuvenating the dairy sector in the villages of West Bengal.

Study No. – 188

Name of the Study: Performance Evaluation of Pradhan Mantri Fasal Bima Yojana (PMFBY) in west Bengal

Bidhan Chandra Roy, Bitan Mondal, Sabyasachi Ojha,
Ranjan Kumar Biswas, Vivekananda Dutta

Year of Publication: 2018

ABSTRACT

Agriculture being highly prone to various kinds of risks and uncertainties, there is a necessity to protect the farmers from natural calamities and market failures. The risk confronted by the resource poor small and marginal farmers, who are the majority in West Bengal, is of particular importance as it not only affect the poor farmers but also the whole value chain and consumers. The Pradhan Mantri Fasal Bima Yojana (PMFBY), rechristened as Bangla Fasal Bima Yojana (BFBY) in West Bengal, is in operation since Kharif 2016 and is being provided entirely free of cost to the farmers, except in case of potato and sugarcane.

The present study is an attempt to evaluate the performance of the scheme in West Bengal in terms of issues related to governance, implementation and uptake behavior among the farmers and to make some policy suggestions for its better functioning. The study revealed that so far as promoting crop insurance among the farmers in West Bengal is concerned, the scheme is a huge success as more than 4.1 million farmers were enrolled in the very first year of its implementation. But in terms of governance and implementation, there are enough scope for further improvements in future particularly in increasing the awareness among the farmers, and in the use of smart technologies in estimating crop loss and in reporting claims. The key problems with poor governance and implementation of the scheme was related to delay in estimating yield data, poor land records or flawed land titles, and lack of awareness and ignorance among the farmers. Implementing IAs (barring AIC), have been found not to play an active role except for providing application forms and their presence at local level was very poor. The study calls for an integrated approach involving all the stakeholders with multi-pronged emphasis on the larger issue of improving governance, implementations, and impact of PMFBY scheme in the state. The existing institutional arrangements are not sufficient to cater the growing requirement of the farming community. To ensure the same, transparency and accountability on the part of government, implementing agencies, and farmers are of paramount importance. Therefore, strategies for effective awareness campaign and mechanism for a transparent and accountable system of speedy payment of compensation should be evolved that could make a difference in terms of increasing the uptake and enhancing efficiency of the scheme.

Study No. – 189
Name of the Study: Rural Livelihood Diversification in West Bengal
Bidhan Chandra Roy, Dilruba Khatun, Arnab Roy
Year of Publication: 2018

ABSTRACT

Livelihoods of rural people do not depend on a single source of employment. Also it includes various aspects of life apart from income or occupation. Livelihood strategies are characterized by the allocation of assets (natural, physical, financial, public, social and human), income-earning activities (on farm, off farm), and outcomes (food, income, employment, consumption, security). Together these determine the well-being attained by an individual or households.

The present study is a longitudinal study and was conducted in the state of West Bengal during the period 2007-18. In order to examine the changing dimensions of rural livelihood, a repeated field survey was undertaken in an interval of 10 years. The first survey

was conducted for the agricultural year 2007-08, and the second survey was undertaken with the same households for the agricultural year 2017-18. It is an attempt to explore the changes in livelihood sources, its determinants and impact on sustainable rural livelihood in West Bengal.

The findings of the study shows that the rural livelihood in West Bengal is fast diversifying though job creation has mainly been shifted towards casual and marginal works. But the silver lining is that livelihood diversification represents a promising opportunity to enhance household income in rural areas. In general, the capacity of agriculture sector in providing employment to the rural masses reached saturation, but there are still scope within agriculture to increase the farm income through development of irrigation facilities and promoting diversification towards high value crops and agri-business activities. So far, the growth in non-farm employment opportunities remained inadequate to absorb the surplus labour left agriculture sector due to push factors. Therefore, creation of off-farm and non-farm employment opportunities for rural households holds the key for a sustainable livelihood. It is a challenging task but employment opportunities need to be created, otherwise the goal of doubling farmers' income will remain as a slogan only.