

MACRO MANAGEMENT OF AGRICULTURAL SCHEMES IN KARNATAKA : AN ASSESSMENT OF IMPACT

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ABSTRACT

Agriculture sector in India has been beset with conspicuous problems like declining area of cultivation, productivity and increasing cost of cultivation. These problems have caused a serious threat to household income of farming community. Macro Management of Agricultural Schemes (MMASs) is one of the corrective interventions, implemented successfully throughout the country in the last decade, including the State of Karnataka. The experience of the State clearly indicates a multi-pronged positive impact on the agriculture sector and benefited all sizes of the farmers. There have been increases in the area, yield and productivity under the scheme apart from a significant decline in the cost of cultivation due to adoption of new techniques, which contributed to the increasing household income of the farmers. However, farmers have been bogged down by a number of new problems associated with the scheme and correspondingly, the paper offers a number of policy alternatives to the scheme for effective implementation.

Introduction

The importance of agriculture sector in the Indian economy can be understood from the fact that it contributes to 18.5 per cent of GDP and 58 per cent of employment in the country. In order to supplement the efforts to promote agricultural production and productivity through technical and financial

interventions, formulation of new policies and programmes have been initiated at regular intervals. These policies have been aiming at achieving rapid agricultural growth and development through optimum utilisation of agro-based resources of the country. One of the major initiatives formulated towards this endeavour is the introduction of Macro Management of

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Agriculture Schemes (MMAS) in 2000-01, which have three-pronged objectives to achieve. First, to move away from the schematic approach to the work plans of the State in the implementation of the MMASs; second, to ensure that the Central assistance provided under various schemes is spent on focused and specific interventions for the development of agriculture; and third to alleviate the rigidity in the uniformly structured Central sponsored schemes, which has hitherto resulted in large amount of unutilised balance (Gol 2000)¹. Under the new schematic design of the MMASs, the states have freedom to develop and pursue activities on the basis of their regional priorities through their own work plans. Originally, under the MMASs, 27 Centrally Sponsored Schemes were included in 2000-01 to cover both agriculture and horticulture sectors. But with the introduction of National Horticultural Mission in 2005-06, 10 schemes have been excluded from the agriculture sector and only 17 schemes are being implemented, including the (a) Integrated Cereal Development Programmes of Rice, Wheat and Coarse Cereal based Cropping System Areas, (b) Sustainable Development of Sugarcane Based Cropping System (SUBACS), (c) Balanced and Integrated Use of Fertiliser (BIUF) or Integrated Nutrient Management (INM) and (d) Scheme for Foundation and Certified Seed Production of Vegetable Crops, which form the main focus of this paper.

The funding pattern for these schemes is like any other MMASs. The Central government provides 90 per cent of the expenditure and the state government contributes 10 per cent from their own resources. Out of Central government's assistance, 80 per cent is grant and 20 per cent is loan (Gol 2000). In case of the North-Eastern States, the entire expenditure will be borne by the Central government. In the

revised Macro Management of Agriculture (MMA) Schemes, it is attempted to avoid overlapping and duplication of efforts and to make them more relevant to the present agricultural scenario in the states and thereby to achieve twin objectives of food security and to improve the livelihood system for rural mass. Thus, the practice of allocation of funds to the states on historical basis under the erstwhile MMA scheme has been replaced by a new allocation criteria based on the 50 per cent weightage to the gross cropped area and 50 per cent weightage to the area under the small and marginal holdings in the state (Gol, 2008). The new criteria would facilitate allocation of more resources to the states having larger cropped area and also larger concentration of small and marginal farmers.

The funding pattern of the MMAS in the country indicates that Centre and the State Governments have funded the schemes in accordance with the guidelines, although similar concern has not been exhibited in its implementation. It is evident from Table 1 that a total amount of ₹ 4976.49 crore have been allocated for the implementation of the MMASs between 2005-06 to 2009-10 and Central Zone account for 21 per cent, followed by Southern Zone (19 per cent), Northern Zone (17 per cent), North-Eastern Zone (16 per cent), Western Zone (14 per cent), Eastern Zone (12 per cent) and the Union Territories (2 per cent). One of the in-built features of the implementation is that 'unspent balance of the previous years is being carried forward to the total allocation under the schemes', which has been in the order of over 20 per cent. In other words, about 80 per cent of the allocated funds have been used. Secondly, it should not be misconstrued that the funds allocated are released entirely for the implementation of the schemes, as is clear that only 72 per cent of the funds have been utilised. Across the

Table 1 : Zone-wise Allocation of the Funds Under MMA Schemes in India from 2005-06 to 2009-10

(₹ in Lakh)

Zones	Allocation (Central share)	State share	Total allocation	Unspent balance carried forward	Total funds available (Col 3+4)	% of Unspent balance carried forward	Releases	Total expenditure	Releases as % of total funds available	Expenditure as % out of the released amount
Northern zone	76960 (90)	8551 (10)	85511	26522	112033	23.7	72513	80034	64.7	110.4
Southern Zone	85550 (90)	9506 (10)	95056	35551	130607	27.2	86832	92005	66.5	106
Eastern Zone	53310 (90)	5923 (10)	59233	12120	71353	17	52102	52172	73	100.1
Western Zone	64190 (90)	7132 (10)	71322	12400	83722	14.8	76921	78609	91.9	102.2
Central Zone	93845 (90)	10427 (10)	104272	24738	129010	19.2	89029	97127	69	109.1
North-Eastern Zone	81162 (100)	0 (0)	81162	14017	95179	14.7	73382	76410	77.1	104.1
Union Territories	1065 (97.4)	28 (2.6)	1093	543	1636	33.2	181	230	11.1	127.1
Total	456082 (91)	41567 (8.4)	497649	125891	623540	20.2	450960	476587	72.3	105.7

Note : Northern Zone - Haryana, Himachal Pradesh, Punjab, Jammu & Kashmir, Rajasthan
 Southern Zone - Andhra Pradesh, Karnataka, Kerala, Tamil Nadu
 Eastern Zone - Bihar, Jharkhand, Odisha, West Bengal
 Western Zone- Goa, Gujarat, Maharashtra
 Central Zone- Chhattisgarh, Madhya Pradesh, Uttar Pradesh, Uttaranchal
 North-Eastern Zone - Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura.
 Union Territories - Puduchery, Andaman & Nicobar, Chandigarh, Dadra & Nagar Haveli, Lakshadweep, Delhi.
 Figures in the parentheses are percentages.

Source : Department of Agriculture and Cooperation, Ministry of Agriculture, Gol.

country, excepting the Western Zone, which has released about 92 per cent of the allocated funds, all the other zones have been lagging behind in making use of the funds available to them under the scheme. The Union Territories have earned the distinction of releasing the lowest funds to the extent of only 11 per cent for the implementation of the MMASs. Excepting these two extremes, all the other zones have registered an average unspent balance of 30 per cent funds allocated to them, as they have released only 70 per cent of the total funds for the implementation of the schemes.

Karnataka is one of the major states to have implemented the MMASs since their inception. The State has incurred a total public expenditure of ₹ 321.51 crore for the implementation of MMASs during the period 2005-06 to 2008-09, which is 6.65 per cent of the total expenditure in the country (GoK 2007). The amount released as percentage to the total funds available under the same is around 69, as against the national average of 7.4 per cent. The total expenditure incurred on the implementation of the Sustainable Development of Sugarcane Based Cropping System (SUBACS), Integrated Cereal Development Programme (ICDP), Foundation and Certified Seed Production of Vegetable Crops (FCSPVC), and Integrated Nutrient Management (INM) are in the order of ₹ 17.60 crore or 5.47 per cent of the total allocation for the entire MMASs in the State. Having implemented these schemes for almost a decade in the State, there has not been any attempt to assess the impact on the agriculture sector as well as on the farming families. Capturing the impact of the selected MMASs, in terms of the additional area brought under cultivation, yield of the crops, cost of cultivation and income is the main objective of this paper.

Methodology

This paper is based on a study (2010) undertaken in four districts of the State viz. Mandya, Tumkur, Haveri and Dharwad. Considering the physical and financial progress achieved under the MMA Schemes, four blocks representing two from north and two from southern districts were selected for the study of four schemes. Mandya was selected for the study of sustainable development of Sugarcane Based Cropping System (SUBACS), Tumkur district for the Integrated Nutrient Management (INM), Haveri district for Foundation and Certified Seeds Production of Vegetable Crops (FCSPVC) and Dharwad district for the study of Integrated Cereal Development Programme (ICDP). Beneficiary list under the schemes were obtained from the government departments at the district, block and at the panchayat level and samples were randomly selected across the social groups and size of the holdings. A total of 240 farmers were selected for the study, representing 60 beneficiaries from each scheme and from each block². The study used secondary as well as primary data for its analysis. Secondary data pertaining to the zone-wise funds allocated under the selected MMASs in the country during the study period, scheme-wise financial target and achievement across the districts of Karnataka State and the progress of the line departments have been collected from the official records, as maintained by the respective departments of the Government of India and the State of Karnataka. Primary data relating to the area under cultivation, total yield, cost of cultivation, total income and net returns to all sizes of farming, including the problems encountered have been collected from the selected farmers of the study region. In order to do so, a tested questionnaire was administered to all the selected farmers and their responses were analysed and presented.

By social group, the beneficiary samples have been drawn from the four categories in the study region. The beneficiary farmers belonging to Other Backward Class (OBC) constitute the largest sample with 59.16 per cent (142) in the total, followed by the Scheduled Castes (39 farmers or 16.25 per cent), Scheduled Tribes (34 farmers or 14.17 per cent) and others (25 farmers or 10.92 per cent). By farm size, majority of the sample farmers constituted of small (42.92 per cent), followed by marginal (21.67 per cent), semi-medium (19.58 per cent), medium (10.83 per cent) and large farmers (5.00 per cent). Educationally, excepting the 45 beneficiary farmers (18.75 per cent) all the other respondents are literates and a majority of them have educational attainment up to primary (35.42 per cent) level. 26.25 and 11.25 per cent of the respondent farmers studied up to pre-matriculation and matriculation level, respectively. Also, a little over 8 per cent of the sample farmers have had university level education in the study region. In addition to the primary data, secondary data have also been collected from the official sources as well as from the different nodal offices at state, district and block levels. Primary data have been collected through a stratified sampling survey method from four blocks by a tested questionnaire on various socio-economic activities.

Overview of the Selected MMASs

Sustainable development of Sugarcane Based Cropping System (SUBACS) has been implemented in all sugarcane growing districts of the State. The main objective of this scheme is to increase the production and productivity of sugarcane to meet the domestic demand and export need (Gol 2000). The scheme intends to transfer the improved production technology to the farmers through field demonstration, trainings, supply of farm implements,

enhancing production of planting materials, efficient use of water, treatment of planting material etc. (Kazim Rahim et al 2009). This scheme is being implemented through Indian Council of Agricultural Research (ICAR), Krishi Vijnana Kendras (KVKs), State Agricultural Universities (SAUs), Directorate of Agriculture/ Directorate of Sugarcane Development and other agencies like sugar mills, farmer cooperatives/associations etc. In Karnataka, it has been implemented by the Department of Agriculture. Further, on the basis of the major cropping systems followed over centuries in the country, various crop development schemes have been formulated by the Crop Division of the Ministry of Agriculture, Government of India. A recent addition to such developments is the Integrated Cereal Development Programme for Rice, Wheat and Coarse Cereals based cropping system. In order to meet the regional and the area-specific needs, this scheme gives thrust to a) varietal replacement and popularising of new varieties, b) improving soil fertility through micro-nutrients and soil amendments c) popularisation of new production and protection techniques and d) integrated Pest Management and training of farmers. Integrated Nutrient Management (INM) mainly advocates appropriate nutrient application methods and transfer of the knowledge to farming community, as a balanced application of appropriate fertilisers is a major concern to minimise the negative externalities (Singh and Sharma 2004). Over-application of fertilisers, induces neither substantially greater crop nutrient uptake nor significantly higher yields. Rather, excessive nutrient applications are economically wasteful and can damage the environment. On the other hand, under-application can retard crop growth and lower yields in the short term and in the long term jeopardise sustainability through soil mining and erosion (Smaling and Braun, 1996). In this context,

Integrated Nutrient Management is a major initiative that has been taken to promote balanced and integrated use of fertilisers. The government is also promoting the soil test based balanced and judicious use of chemical fertilisers, bio-fertilisers and locally available organic manures like farm yard manure, compost, vermi-compost, green manure and press mud etc. to maintain soil health and productivity. Foundation and Certified Seed Production of Vegetable Crops (FCSPVC) was launched in 1995-96 for the production of certified seeds of important vegetable crops. The objective of the scheme was to increase the availability of foundation and certified seeds of vegetable crops and to create infrastructural facilities for processing and packaging of the seeds. The scheme was introduced to make available in sufficient quantity of the foundation and certified seeds to the farmers, by ensuring the maximum area under the notified varieties of vegetable crops (Gol 2006).

The Public Expenditure : Implementation of the MMASs can be better judged by its financial allocation and expenditure made under each of the schemes in the State. It must be seen in view that these schemes are implemented in suitable agro-climatic conditions. A total amount of ₹ 17.60 crore has been allotted under the three MMASs in the State during the period 2004-05 to 2007-08 of which ₹ 13.48 crore has been spent with 76.58 per cent of fund utilisation. Out of ₹ 17.60 crore, the Integrated Cereal Development Programme (ICDP) has had a major share of ₹ 7.96 crore which works out to 45.19 per cent of total fund. This is followed by SUBASC with an amount of ₹ 7.58 crore (43.04 per cent), and Foundation and Certified Seed Production of Vegetable Crops has been given an amount of ₹ 2.07 crore, which is 11.77 per cent of the total allocated fund. The overall financial achievement of all the

schemes was around 77 per cent in the State with some exceptions of higher achievement in a few districts. They include Kodagu district, which achieved highest financial target with 99 per cent with only two schemes, followed by Koppal (96.75 per cent), Raichur (94.89 per cent), Bangalore Urban (94.49 per cent), Shimoga (91.04 per cent), Udupi (90.93 per cent) and Bagalkote (90.71 per cent). On the contrary, a few other districts have been far behind in their achievement. Bidar district is the lowest among the group with only 29.43 per cent of financial achievement, which is over two folds lower than the State average, followed by Kolar with 56.62 per cent, Bijapur (59.88 per cent), Belgaum (68.28 per cent), Davanagere (68.18 per cent) and Hassan (67.03 per cent). Incidentally all the three schemes have been implemented in these districts (Table 2).

SUBACS was initially introduced in 15 districts of the State (Belgaum, Bijapur, Bagalkote, Bidar, Bellary, Dharwad, Davanagere, Gulbarga, Haveri, Hassan, Kolar, Mandya, Mysore, Shimoga, Chikkamagalur). Among these districts, Belgaum had a lion's share in the total allocation of funds since the inception of the scheme. It reveals that the district had been allotted a highest amount of ₹ 2.26 crore, out of which ₹ 1.5 crore have been utilised with the 68.15 per cent of achievement followed by Bagalkote (₹ 1.47 crore), Bijapur (₹ 0.77 crore), Bidar (₹ 0.71 crore) and Mandya (₹ 0.61 crore). In fact, these five districts account for 77 per cent of the funds allotted and have together achieved 83 per cent of their target, which is well above the State average of 61 per cent. Contrary to this, the Haveri district stands in the bottom in regard to the fund allocation with an allotment of ₹ 0.03 crore, out of which only ₹ 0.01 crore has been utilised, followed by Chikkamagalur and Dharwad districts with ₹ 0.05 crore each. It is important to note that the allocation of funds for

Table 2 : Financial Target & Achievement of SUBACS, ICDP and FCSPVC in Karnataka (2004-05 to 2007-08)

(₹ in Crore)

Districts	SUBACS		ICDP		F&C		Total		% of Ach.
	Tar.	Ach.	Tar.	Ach.	Tar.	Ach.	Tar.	Ach.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Belgaum	2.26	1.51	0.16	0.14	0.11	0.09	2.54	1.73	68.28
Bijapur	0.77	0.40	0.14	0.13	0.04	0.03	0.94	0.57	59.88
Bagalakote	1.47	1.34	0.09	0.08	0.03	0.03	1.59	1.45	90.71
Bidar	0.71	0.09	0.12	0.13	0.03	0.03	0.85	0.25	29.43
Bellary	0.10	0.04	0.33	0.29	0.04	0.04	0.47	0.37	79.38
Dharwad	0.05	0.02	0.21	0.19	0.07	0.05	0.33	0.26	79.93
Davanagere	0.41	0.18	0.36	0.34	0.03	0.02	0.79	0.54	68.18
Gulbarga	0.23	0.08	0.23	0.21	0.04	0.03	0.50	0.32	63.91
Haverly	0.03	0.01	0.35	0.26	0.11	0.11	0.48	0.38	79.49
Hassan	0.11	0.03	0.46	0.33	0.05	0.05	0.62	0.41	67.03
Kolar	0.25	0.00	0.32	0.29	0.08	0.07	0.65	0.37	56.66
Mandya	0.61	0.53	0.61	0.54	0.04	0.04	1.26	1.10	87.84
Mysore	0.28	0.13	0.49	0.48	0.05	0.03	0.81	0.64	78.89
Shimoga	0.24	0.23	0.57	0.51	0.03	0.03	0.84	0.77	91.1
Chikkamagalur	0.05	0.04	0.36	0.29	0.04	0.03	0.45	0.37	82.84
Koppal	0.00	0.00	0.51	0.49	0.02	0.02	0.53	0.52	96.75
Bangalore (Rural)	0.00	0.00	0.24	0.21	0.09	0.08	0.33	0.29	88.44
Udupi	0.00	0.00	0.18	0.16	0.03	0.03	0.21	0.19	90.93
Bangalore (Urban)	0.00	0.00	0.18	0.16	0.06	0.06	0.24	0.23	94.47
Tumkur	0.00	0.00	0.45	0.34	0.07	0.06	0.52	0.40	76.51
Chitradurga	0.00	0.00	0.14	0.12	0.06	0.05	0.20	0.17	84.74
Kodagu	0.00	0.00	0.09	0.09	0.02	0.02	0.12	0.12	98.98

(Contd.)

Table 2 : (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Raichur	0.00	0.00	0.38	0.36	0.03	0.03	0.41	0.39	94.89
Chamarajanagar	0.00	0.00	0.29	0.25	0.02	0.02	0.32	0.27	84.57
D.Kannada	0.00	0.00	0.19	0.18	0.05	0.03	0.25	0.21	85.05
U.Kannada	0.00	0.00	0.38	0.32	0.02	0.02	0.40	0.35	86.58
Gadag	0.00	0.00	0.14	0.11	0.05	0.05	0.18	0.16	86.8
Chikkaballapur	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	72
Directorate	0.00	0.00	0.00	0.00	0.76	0.65	0.76	0.65	85.63
Total	7.58	4.64	7.96	7.02	2.07	1.82	17.60	13.48	76.58

Note : This information is only for schemes namely SUBACS, ICDP. Rice (Work plan paddy) and Foundation and Certified Seed Production of Vegetable crops of MMASs. The information relating to Integrated Nutrient Management (INM) is not maintained by the Department of Agriculture, GoK for the period under review. The information regarding the Foundation and Certified Seeds (Development of Vegetable Crops) are considered only for the years 2004-05 and 2005-06.

Source : Calculations are based on information provided by the Department of Agriculture and Horticulture, Government of Karnataka.

Dharwad, Chikkamagalur and Haverly districts has been contracted from the year 2007-08 due to poor performance of these districts under the scheme. It is evident from Table 2 that the financial target under SUBACS has been gradually increased from ₹ 0.45 crore in 2004-05 to ₹ 5.57 crore in 2007-08. But significantly, the target achievement is considerably low at 61 per cent, owing to erosion of interest in the crop itself and some districts (Dharwad, Haverly, Kolar, and Chikkamagalur) did not even get the allocation during 2007-08, under the scheme. However, Bagalkote, Shimoga and Mandya have shown a satisfactory progress under the SUBACS.

Integrated Cereal Development Programme (ICDP) which was later merged with the work plan of paddy has been given a total assistance of ₹ 7.96 crore during 2004-

05 to 2007-08 out of which ₹ 7.02 crore have been spent on various paddy promotion programmes with 88.27 per cent of financial achievement. It has been implemented in all the paddy growing districts of the State in which Mandya has got the highest allocation of funds to the tune of ₹ 0.61 crore followed by Shimoga (₹ 0.57 crore), Koppal (₹ 0.51 crore) and Mysore (₹ 0.49 crore). The fund utilisation of these districts also remains acceptable with ₹ 0.57 crore, ₹ 0.51 crore, and ₹ 0.48 crore, respectively. On the other hand, districts like Bagalkote (₹ 0.09 crore), Kodagu (₹ 0.09 crore), Bijapur (₹ 0.13 crore), Udupi (₹ 0.18 crore), Dakshin Kannada (₹ 0.19 crore) and Dharwad (₹ 0.21 crore) have lowest allocation of funds under the scheme.

In 2007-08, Chikkaballapur has been given a separate allocation of ₹ 1 lakh under

ICDP in order to encourage the paddy growers and at the same time has gradually been condensed for Bijapur, Gulbarga, Raichur, Bangalore Urban and Rural districts following non-satisfactory performance. It reveals that as high as ₹ 2.07 crore have been allotted to the State under the foundation and certified seed production of vegetable crops, of which ₹ 1.82 crore has been utilised with a satisfactory progress of 87.91 per cent of the funds. A careful examination of the funds allocation shows that the Directorate of Horticulture Crops (Lalbagh) has been given prominent importance and has been allotted ₹ 0.76 crore, which is 37 per cent of total amount released. Among the districts, Belgaum and Haverly have been provided higher allocation, followed by Bangalore Rural (₹ 0.87 crore), Kolar (₹ 0.70 crore), Tumkur (₹ 0.69 crore), and Dharwad (₹ 0.68 crore) have had a higher share in the allocation of funds. Their share works out to be 25 per cent of the total allocation. However, in terms of achievement, Haverly (₹ 0.11 crore), Belgaum (₹ 0.87 crore), Kolar (₹ 0.73 crore), Bangalore Urban (₹ 0.62 crore) Tumkur (₹ 0.59 crore), and Chitradurga districts have shown a convincing rate of fund utilisation under the scheme. It can be seen that although the funds in the beginning years were concentrated to a few districts like Haverly, Kolar, Bangalore Urban and Rural districts, the other districts were also brought under the purview of the scheme over the years. At present, the scheme has been implemented in 27 vegetable growing districts of Karnataka and the fruits are reaching the farmers through various components of the scheme.

Five government departments (Agriculture, Watershed, Agricultural marketing, Cooperation and Horticulture) have played a significant role in the implementation of the MMASs in Karnataka (Table 3). Department of Watershed has been a leader, which has got funds to the tune of

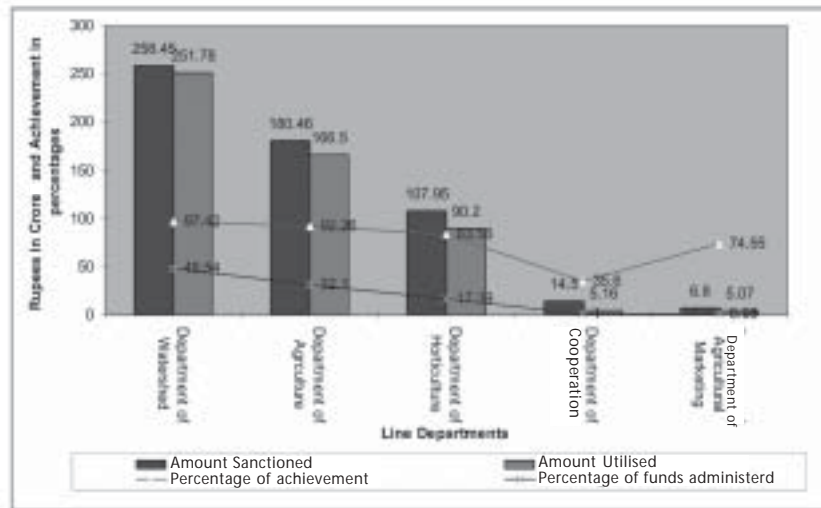
₹ 258.45 crore under the MMASs. The total share of the department in the total expenditure was in the order of 48.54 per cent. This department has been able to utilise the allocation up to ₹ 251.78 crore (97.42 per cent). This department has spent ₹ 31.47 crore annually to implement various MMASs coming under its purview. Implementation of National Watershed Development Programme (NWDP) in rainfed areas and River Valley Project are the main thrust, for which MMAS funds have been made available. Department of Agriculture is the second in line with a resource control of ₹ 180.46 crore (32.10 per cent). This fund was made available to continue the existing schemes under the Central sector. Continued implementation of ICDPS, Sugarcane development, INM and mechanisation of agricultural activities was the other objective. In addition to these, new schemes for extension activities, establishment of market analysis wing, quality control of seeds and pest management scheme are also included. This is followed by the Horticulture department with funds of ₹ 107.95 crore (17.39 per cent), which is the third in the implementation of MMASs. This department is being supported mainly to develop vegetables, spices, cocoa, commercial floriculture, cashew and mushroom crops besides development of tropical and arid zone fruits and aromatic and medicinal plants. About 84 per cent of the funds are reportedly utilised. Department of Cooperation accounted to total sanctioned funds of ₹ 14.50 crore under the scheme, but has utilised only ₹ 5.16 crore (35.60 per cent), which is lowest among the line departments. Organisation of cooperative societies among the weaker sections, including grant-in-aid support to Large Sized Agricultural Multipurpose Cooperative Societies (LAMPS)³ has been a major thrust of the department. Also, providing subsidy, share capital assistance and loans for the above societies

Table 3 : Financial Achievement under MMAs by Line Departments in Karnataka 2000-01 to 2007-08

(₹ in Crore)

S.No.	Departments	Amount Sanctioned	Amount Utilised	% of achievement	% of funds administered
1	Department of Watershed	258.45	251.78	97.42	48.54
2	Department of Agriculture	180.46	166.50	92.26	32.10
3	Department of Horticulture	107.95	90.20	83.5	17.39
4	Department of Cooperation	14.50	5.16	35.60	1.00
5	Department of Agricultural Marketing	6.80	5.07	74.55	0.98
Total		568.16	518.71	91.30	100

Source : Department of Agriculture, Government of Karnataka.



Source : Table 3.

was the major concern of the department⁴. Interestingly, since 2005-06 the department has not incurred any expenditure. Finally, Department of Agricultural Marketing has had only ₹ 6.80 crore for providing infrastructure, developing revolving fund in the Agriculture Produce Marketing Committee (APMCs). Over three-fourths of the sanctioned amount has been utilised by the department.

Distribution of Benefits : Sugarcane seedling and bio-agents are the main facilities made available to the farming community under SUBACS. Because of the complementary nature of these two inputs, the distribution of them has been separately done to various categories of farmers. In the case of the sample farmers, both sugarcane seedling and bio-agents have been distributed. It is found that a majority of the farmers (65 per cent) have received sugarcane seedlings across different holdings. In the case of the bio-agents about 97 per cent of the farmers reportedly received the same, excepting a few semi-medium farmers, under the scheme. Further, 80.83 per cent sugarcane growers have received both sugarcane seedlings and bio-agents together. Apart from the distribution of sugarcane seedlings and bio-agents, a number of other agricultural implements have also been distributed to the sugarcane growers. Puddles have been distributed to the extent of 42 per cent of the farmers, followed by cultivator to nearly 37 per cent, whereas the disk blades have been distributed to a very small segment of the farmers (3 per cent), particularly of the small holding segment. Assistance for agricultural implements across the farming community indicates that about 91 per cent of the semi-medium farmers have turned out to be the main beneficiaries, followed by medium (83.33 per cent), small (82.76 per cent) and the marginal farmers have received these assistance to the extent of 76.92 per cent.

Similar to the agricultural implements, about 17 per cent of the beneficiary farmers have got subsidy for the diesel pumpsets, and 8.33 per cent of the farmers have availed of subsidy for the drip irrigation. Nevertheless, lack of awareness has impeded the remaining 72 per cent of the farmers from availing of the subsidy under the scheme.

Considering the indispensable nature of soil structure, ameliorants like gypsum, zinc, lime, dolomite and organic manure are applied for reclamation of saline and alkaline soils through blocks as per the recommendation of soil test reports. Naturally, these ameliorants contain calcium, sulfur, salt and other chemicals, which are used to correct deficiencies in the soil structure (Barett 2003). The growing awareness about the scientific farming technology is one of the positive notes observed among the beneficiary farmers. The use of the soil ameliorants like zinc, gypsum and lime is increasingly growing. In fact, zinc sulfate has been growing and the same has been supplied by the government at subsidised rates to the farmers. Half of the sample farmers have used zinc sulfate in their farm land. The percentage use of the ameliorant is higher among medium (77.78), followed by semi-medium (50) and large (50) farmers than in the marginal and small farmers to the tune of 46.15 and 40.91, respectively. It was found that all the farmers have got zinc ameliorant from the nearby Raitha Samparka Kendra of the concerned block.

Soil testing is one of the components of all the four schemes, which is intended to correct the soil acidity/alkalinity. It has been observed that 51 per cent of the beneficiary farmers have got their soil tested, of which the medium and large farmers constitute the majority. At the same time, lack of awareness about the advantages of soil testing has impeded 48.30 per cent of the beneficiaries

from testing its salinity. Of the total farmers who got their soil tested, 38 per cent of them have got their soil test done by the department of agriculture, while 13 per cent of the sample farmers have got soil tested by their own initiation. However, even though there are several opportunities for the farmers for soil testing, still 38 per cent of the farmers have not got their farm soil tested, which needs a serious attention by the concerned department. An attempt was made during the field survey to know the reasons for not getting the soil tested. It is significant to note that 28 per cent of the beneficiaries have expressed their disinterest on soil testing and 6 per cent of them are found to be not aware of the soil test at all. Under the ICDP scheme, about 37 per cent of the beneficiaries have got their farm soil tested. It was found that half of the semi-medium, medium and large farmers have got the soil tested although the preparedness of the small and the marginal farmers for soil testing is still below the average level. On ascertaining the reasons for disinterest on soil testing, a few farmers maintained that they would rather prefer the traditional way. In these circumstances, the scheme needs to orient in changing the mindset of the farming community, especially for those disinterested in the scientific application.

Despite distribution of nutrient is one of the thrust objectives of INM, only less than one-fourth of the farmers have received the benefits under the scheme. Among the four nutrients, bio-fertiliser was distributed to a large number of farmers (33.33 per cent) and the enriched compost to 15 per cent of the farmers. Agri-gold nutrient also provided to over 13 per cent of the farmers. One of the positive aspects is that under the scheme, the nutrients have been largely distributed to the lower rung farmers to the extent of over 90 per cent. Apart from giving assistance, manually operated and bullock drawn implements have also been distributed.

Manually operated implements include sprayers and tractors and bullock drawn implements include puddles and cultivators. Manually operated implements (sprayers and tractors) have been distributed to 13 per cent of the farmers. In order to give a boost to the production of vegetable crops and to introduce high-yielding hybrid seeds having local advantages, high-yielding varieties of seeds have been distributed to the farmers at a very nominal price, in the form of mini-kits consisting of seeds, planting materials, fertilisers and chemicals. It is clear that all the beneficiary farmers have availed of the benefit of high-yielding variety of seeds given by the Department of Horticulture. Major seeds like chilly, brinjal, ladies finger, cucumber etc. were distributed to the farmers at a very nominal price.

Demonstrations and Trainings : Demonstrations are one of the important interventions under the MMASs. The objectives of the demonstrations are to expose the farmers towards new techniques, methods, seed treatment and various other components of cultivation, besides exposing to plant treatment, plant protection, efficient use of water, use of resistant varieties, method of planting, weed control, use of fertilisers etc. In the case of sugarcane cultivation, demonstrations include Ring Pit, Single Eye Bud demonstrations and Ratoon Management⁵. Among the four different sugarcane demonstrations, Ratoon management demonstration was largely attended by the sugarcane growers, 80 per cent of the farmers have attended the demonstration. This is followed by Single Eye Bud demonstration, which is attended by over 73 per cent of the beneficiaries in the study area, and the farmer field school was attended by 55 per cent of the farmers. However, excepting about two per cent of the farmers, none of the farmers have shown interest in attending the demonstration on

Ring Pit method. By size of farmers, small farmers have largely attended the demonstrations (46.83 per cent), followed by the semi-medium farmers (21.43 per cent), marginal (19.84 per cent) and medium (8.73 per cent). All the large farmers have attended the demonstrations. Only 17 farmers or 28 per cent have attended the Integrated Nutrient Management demonstration especially, large farmers seemed to be more eager to attend the programme followed by 36 per cent of small farmers and 25 per cent of semi-medium farmers. However, it should be noted that none of the marginal farmers has attended the Integrated Nutrient Management demonstration. Participation of the sample households in the INM demonstration by farm size reveals that 40 per cent of the marginal, 66.70 per cent of the small, 66.70 per cent of the semi-medium, 50 per cent of medium and 100 per cent of the sample farmers have participated on KRH-2 variety of paddy. The other farmers were of the opinion that attending such demonstrations costs other agricultural works.

Cultivation of hybrid rice is promoted in a big way through Hybrid Paddy Demonstrations and by offering heavy subsidies in areas where paddy yields have reached the plateau. This was mainly intended to increase rice production and productivity to 1.5 tonnes per hectare from the present 1 tonne per hectare by using high-yielding rice varieties. In order to increase the productivity of the rice, various demonstrations on improved package of practices, on system of rice intensification, support for promotion of hybrid rice seed, and assistance for distribution of high-yield variety (HYV) seeds have been provided for different categories of the farmers under the ICDP scheme. Participation of the beneficiary farmers is moderate in the hybrid paddy demonstration. It is found that 45 per cent of

the total beneficiary farmers have attended the hybrid paddy demonstration conducted in the study area which consists of 27 per cent marginal, 36 per cent small, 58 per cent semi-medium 57 per cent medium and 80 per cent of large farmers.

System of Rice Intensification (SRI) Method is an improved method of rice cultivation with less water consumption. It reduces the cost of cultivation by cutting the use of pesticides and fertilisers and is potential to give higher yield on account of improved soil microbial activity. The key features of the SRI method of cultivation include a) Transplant young seedlings b) Reduce plant population c) Maintain aerated soil conditions d) Provide as much organic matter as possible to the soil e) Actively aerate the soil f) Re-emphasise biology and g) Rediscover the potentials of synergy and symbiosis (Prasad 2006). In the case of farmers' participation in the SRI method it is found that only 20 per cent of the farmers have attended the demonstration. The Farmers' Field Schools (FFS)⁶ is a unique way to educate farmers and is an effective platform for sharing of experiences and collectively solving agriculture related problems. The Farmer Field School is a culmination of the concepts and the methods from agro-ecology, experimental education and the community development. These FFS were initiated based on two premises. Firstly, although farming is done mainly on individual farms, the rural community plays an essential role in farmers' strategies for survival and development. Farmers would get together to share information and other forms of mutual support with others, whom they trust. Secondly, farmers have a tradition of developing and applying technologies and refining it through their own experiences.

Integrated Pest Management (IPM) demonstration involves use of cultural practices like crop husbandry resistant

varieties, and biological and chemical control strategies to minimise the use of pest in the cultivation (Birthal and Sharma 2004). IPM encourages proper choice and blend of compatible tactics, so that the components complement each other to keep the pest population at manageable levels (ICRISAT 2005). In the study area, demonstrations were conducted for horticultural crops in Karikoppa, Basapura, Kanakapura, and Bhu Kodihalli villages for tomato, chilly and brinjal. The response of the farmers' participation in the demonstration is encouraging. Participation in the demonstrations on chilly, tomato and brinjal reflects the initiative facilitated to adopt new technologies and cope with the growing awareness on the timely planting, resistant varieties, use of fertiliser, weed control etc. Apart from conducting various demonstrations on the horticultural crops, the Department of Horticulture also undertakes training and other extension programmes for educating the farmers about the modern methods of cultivation and technical know-how at the field levels. Such training programmes were successfully held at Haveri and Dharwad districts where over 58 per cent of the farmers participated in Ariu programme. Ariu is a major training programme intended to educate the farming community which was largely attended by the farmers by all sizes. More than two-thirds of the vegetable growers have attended the training programme followed by 22.86 per cent of participation of the farmers in satellite based training programmes organised by the horticulture department.

Impact of the Schemes

Consequent upon the implementation of the Macro Management of Agricultural Schemes in the State, five very important but positive changes are observed namely, area under cultivation, yield, expenditure, gross

income and net income across all categories of households (Table 4). Especially, in the days of increasing cost of cultivation and receded income from farm activities, any reversing change is a welcome- thanks to the innovations and implementation of the MMASs. These changes should only bring additional enthusiasm both in the thrust and effective implementation of the schemes.

Additional Land Cultivated : The foremost change is bringing additional land into cultivation, which is one of the objectives of the scheme. Total land under cultivation of sugarcane, paddy, ragi and coconut (SUBACS), cereals (ICDP) and vegetables (FCSPVC) under the selected MMASs has increased from 982 acres to 1441 acres in the pre and post-implementation periods, respectively. This change has brought 459 acres of net additional lands into cultivation, which is about 47 per cent increase. Under SUBACS, the total cultivated area has increased from 200 acres to 321 acres, with a net increase in 121 acres or roughly 61 per cent. Similarly, ICDP has been successful in increasing the area under cultivation from 361 acres to 479 acres, a net increase of 118 acres or 33 per cent, followed by FCSPVC from 226 acres to 325 acres, a net increase of 99 acres or 44 per cent. This apart, Integrated Nutrient Management (INM) has brought an additional area of 121 acres (62 per cent) under the use of micro-nutrients and green manures, by increasing the land from 195 acres to 316 acres. Further, across the different holding sizes, semi-medium farmers have been in the forefront in bringing additional land under cultivation to the tune of 129 acres, from 231 acres to 360 acres (55.84 per cent). This is followed by medium farmers (119 acres or 51.97 per cent), small farmers (110 acres or 41.67 per cent), large farmers (74 acres or 41.34 per cent) and last but not the least marginal farmers (27 acres or 33.75 per cent).

Table 4 : Impact of the MMAS Schemes in Karnataka

Farm Holdings and Parameters		Marginal	Small	Semi-medium	Medium	Large	All sizes
No. of Farmers		52 (21.67%)	103 (42.92%)	47 (19.58 %)	26 (10.83 %)	12 (5.00%)	240 (100%)
Area under cultivation (acres/farmer)	Before	80 (1.54)	264 (2.56)	231 (4.91)	229 (8.81)	179 (14.92)	982 (4.09)
	After	107 (2.06)	374 (3.63)	360 (7.66)	348 (13.38)	253 (21.08)	1441 (6.00)
	Net change	27 (0.52)	110 (1.07)	129 (2.74)	119 (4.58)	74 (6.17)	146 (0.61)
Total Yield (quintals/farmer)	Before	812 (15.62)	1,866 (18.12)	4,933 (104.96)	1,566 (60.23)	4,495 (374.58)	13,672 (56.97)
	After	918 (17.65)	2,219 (21.54)	6,297 (133.98)	1,567 (60.27)	4,610 (384.17)	15,613 (65.05)
	Net change	106 (2.04)	353 (3.43)	1,364 (29.02)	1 (0.04)	115 (9.58)	1,941 (8.09)
Cost of cultivation (rupees/farmer)	Before	2,76,819 (5323.44)	6,58,911 (6397.19)	3,65,185 (7769.89)	3,56,219 (13700.73)	3,30,500 (27541.67)	1987634 (8281.81)
	After	3,55,354 (6833.73)	6,35,140 (6166.41)	3,39,450 (7222.34)	3,27,614 (12600.54)	3,14,683 (26223.58)	1972241 (8217.67)
	Net change	78,535 (1510.29)	-23,771 (-230.79)	-25,735 (-547.55)	-28,605 (-1100.19)	-15,817 (-1318.08)	-15,393 (-64.14)
Total Income (rupees/farmer)	Before	3,80,829 (7323.63)	10,12,977 (9834.73)	6,32,214 (13451.36)	9,18,633 (35332.04)	5,17,917 (43159.75)	34,62,570 (14427.38)
	After	544162 (10464.65)	1218778 (11832.80)	814701 (17334.06)	1169868 (44994.92)	798784 (66565.33)	4546293 (18942.89)
	Net change	1,63,333 (3141.02)	2,05,801 (1998.07)	1,82,487 (3882.70)	2,51,235 (9662.88)	2,80,867 (23405.58)	10,83,723 (4515.51)
Net Returns (rupees/farmer)	Before	1,30,810 (2515.58)	4,26,066 (4136.56)	3,43,029 (7298.49)	6,64,414 (25554.38)	3,26,917 (27243.08)	18,91,236 (7880.15)
	After	1,91,308 (3679.00)	6,15,889 (5979.50)	4,75,252 (10111.74)	8,42,254 (32394.38)	4,84,101 (40341.75)	26,08,804 (10870.02)
	Net change	60,498 (1163.42)	1,89,823 (1842.94)	1,32,223 (2813.26)	1,77,840 (6840.00)	1,57,184 (13098.67)	7,17,568 (2989.87)

Source : Field data collected through structural questionnaire from selected farmers.

Increase in Production : The increase in land under cultivation under various crops has led to an increase in the total production from 13,672 quintals to 15,613 quintals and due to this there has been a net increase of 1,941 quintals under the MMASs (14 per cent). As is the case earlier, the semi-medium farmers have contributed significantly to an increase in the total yield to the extent of 1,364 quintals increase (or 70 per cent), followed by small farmers to the extent of 353 quintals (18.18 per cent). The notable feature is that even the marginal farmers have increased their share in the total yield by 106 quintals and have registered over 13 per cent increase after the adoption of the new inputs and techniques of cultivation in their fields. It must be noted that the balanced application of nutrients and various other techniques to the soil have significantly contributed in enhancing the average yield per acre by 4 quintals (40 to 44 quintals) under SUBACS, 2 quintals (6 to 8 quintals) under ICDP, 22 quintals (161 to 183 quintals) under INM and 4 quintals (21 to 25 quintals) under FCSPVC.

Reduction in Cost : One of the un-avowed objectives of the MMASs is to reduce the cost of cultivation by adopting cost-effective techniques and the same has been by and large achieved, excepting the marginal farmers. It is very clear from the Table that the overall cost of cultivation is reduced from ₹ 19.88 lakh to ₹ 19.72 lakh, after the implementation of the MMASs in the State. With the reduction in the cost of cultivation, a net savings to the order of ₹ 0.15 lakh has been achieved. Excepting the marginal farmers whose cost of cultivation increased, all the other segments of the farmers have achieved a significant reduction in the cultivation cost, which is far above ₹ 0.15 lakh. Medium size farmers have achieved reduction to the tune ₹ 28,605 (8.03 per cent), followed by semi-medium farmers (₹ 25,735 or 7.05 per cent), small farmers (₹

23,771 or 3.61 per cent) and the large farmers (₹ 15,817 or 4.79 per cent). However, against this trend, the cost of cultivation has jacked up by more than 28 per cent or ₹ 78,535 among the marginal farmers, which is unjustifiable as well as a cause for concern, on account of non-adoption of the new techniques of cultivation, owing to the risks associated coupled with the ineffective implementation by the farmers. Further, across the schemes, ICDP and INM have conspicuously brought down the cost of cultivation from ₹ 4.80 lakh to ₹ 3.35 lakh (43 per cent) and from ₹ 2.94 lakh to ₹ 2.55 lakh (16 per cent). However, in the case of the other two schemes (SUBACS and FCSPVC), the cost of cultivation has increased by 10 and 34 per cent, respectively, but the same has been compensated by increasing yield as well as the income of the farmers growing these crops.

Income Increase : Income is a prime consideration for the farmers who are in the process of adoption of new techniques of cultivation. The MMASs, which have been implemented, have offered a visible positive change. It is clear that the farmers have successfully earned a total income of ₹ 45.46 lakh after having adopted new techniques, against the earlier income of ₹ 34.62 lakh that leaves a net income of ₹ 10.84 lakh or 31 per cent. The striking fact is that by size of holdings, large farmers have benefited more from the schemes, which is evident from the increase in the income from ₹ 5.18 lakh to ₹ 7.99 lakh, with a net change of ₹ 2.81 (54.23 per cent). This is followed by medium farmers who have earned a total income of ₹ 11.70 lakh as against ₹ 9.19 lakh, with a net increase of ₹ 2.51 lakh (27.35 per cent) and small farmers' income to ₹ 12.19 lakh from ₹ 10.13 lakh, with a net income of ₹ 2.06 lakh (20.32 per cent). Still more noticeable is the increase in the income levels of the marginal farmers much above the board from ₹ 3.81 lakh to ₹ 5.44, with a

net increase of ₹ 1.60 lakh. By schemes, SUBACS enhanced the income by 19.53 per cent with an average net income increase of ₹ 7,883, followed by ICDP (155 per cent and ₹ 7,072), INM (10.78 per cent and ₹ 837, FCSPVC (46.13 per cent and ₹ 2,270). Further, the farmers undoubtedly could increase their net income to the tune of ₹ 7.18 lakh, which is 37 per cent than the pre-MMASs period. The increase is more conspicuous under the ICDP with a net return of ₹ 1.88 lakh (90.88 per cent), FCSPVC (₹ 0.69 lakh or 70.41 per cent), INM (₹ 0.90 lakh or 50.28 per cent) and SUBACS (₹ 3.71 lakh or 26.39 per cent). By size, it is even more interesting to state that the marginal, small and semi-medium farmers account for ₹ 3.82 lakh, which is more than half of the total net income.

Problems of the Farming Community

Positive aspects as presented above should not shadow down the problems. Farmers in the study region have encountered a number of problems and experienced difficulties in getting access to various benefits under the selected MMA schemes. In fact, it is these problems and difficulties, which have affected the effectiveness of the schematic interventions. These difficulties have been highlighted with a view to addressing them by the policy intervention and implementation agencies to make these schemes more effective in terms of wider reach of the farming community. The problems of the farmers of the scheme can be classified into two categories. (a) Benefits oriented problems and (b) Demonstration and Training oriented problems. Under the first category, many of the farmers faced problems with regard to inputs like late supply of seeds, inadequate subsidy and insufficient extension services. Many have pointed out that the certified seeds were not available at the right time or before the commencement of sowing season in full swing. This is especially true in

the case of SUBACS, wherein a majority of the farmers have experienced the late supply of certified seeds. This is on account of lack of outlets for supplying certified seeds in the village. As noted earlier, subsidised supply of agricultural implements, micro-nutrients, seeds, bio-agents have been inadequate in the sense that the unmet cost of these inputs was more, which is experienced by majority of the farmers of all the schemes. Especially, under the Foundation and Certified Seed Production of Vegetable Crops, a good proportion of the farmers have felt that the assistance given by the department was insufficient to avail of the mini-kits. Similarly, around 12 per cent of the beneficiaries have felt that the hybrid seeds are costlier. It should be pointed out that the marginal and small farmers were found to have more difficulties in getting the mini-kits than the rest of the categories. Lack of availability of proper extension services is one of the problems pointed out by the farmers. The functionaries in charge of the schemes are reported to have hardly visited the farm fields to extend technical inputs for farmers. More so, under the ICDP, a large numbers of farmers have been deprived of the extension services by the field functionaries.

Demonstration related problems, as experienced by the farming community are many. Undoubtedly, demonstrations and trainings have been organised in large numbers under these schemes and farmers have also attended these programmes, but at the same time, have faced many problems. Lack of arrangement of proper transportation facility to ferry farmers to the places of demonstrations and training programmes organised in Agricultural Universities and in other towns has been a main problem. This problem was largely experienced under all the schemes, especially by the marginal and small farmers. In the absence of proper transportation facility many have resorted to

travel by different modes and the transportation charges have not been properly reimbursed. Inconvenient timings of the demonstrations and trainings were the other problems, which resulted in poor participation of the farmers. On account of this, many farmers reportedly have foregone their agricultural works in order to attend demonstrations. Especially some of the demonstrations were conducted when the agricultural activities were in the peak and as a result, farmers could not forego either.

The cost involved in attending demonstrations is one of the major considerations of the farming community. Though in most cases, organisers of the demonstrations have borne the cost, still a good number of farmers have to meet these expenses from their own sources. This is especially true in the case of the marginal and small farmers. In fact, many of the farmers have desisted from attending the demonstrations on account of the cost, more so in the case of Sustainable Development of Sugarcane Based Cropping System and Integrated Nutrient Management programmes. Lack of awareness about the demonstrations and training is also attributed as one of the reasons for lower participation of the farmers. It is disappointing to note that almost half of the farmers under INM and FCSPVC were not aware of the demonstrations at all under the schemes.

Finally, lack of interest amongst a section of farmers towards demonstration and training is one of the reasons for the poor turnout, more so under Integrated Nutrient Management Scheme. The reason advanced by sample households is that the INM demonstrations shows that around 40 per cent of marginal, 22 per cent of small, 25 per cent of semi-medium farmers were not aware of such demonstrations. Further, 20 per cent of marginal, 0.04 per cent of small, 16.70

per cent of semi-medium farmers and 50 per cent of medium farmers have not shown interest in attending the demonstrations. These apart, poor transport facilities and paucity of time were also highlighted by the sample farmers during the field survey. A good proportion of the beneficiary farmers have felt that the assistance given by the department of Agriculture and Horticulture was insufficient to avail of the benefits. It should be pointed out that the marginal and small farmers were found to have faced more difficulties in getting the benefits than the rest of the categories of the farmers.

The Policy Implications

Undoubtedly, MMASs is a significant intervention in the agriculture sector with positive impact in the farming community. These schemes have been able to bring visible change among the farmers in all measures. To be precise, the overall goal of the schemes and their objectives like popularising new techniques of cultivation, reduction in cost of cultivation and increasing farm income have been by and large accomplished in the State. The additional land brought under the cultivation of various crops under the schemes studied has facilitated increasing the total yield of the crops and the net income to the farmers. What is impressive with the intervention of the scheme is that there has been a substantial reduction in the cost of cultivation. This has been possible with the help of the adoption of scientific method and of new techniques in the cultivation. The various demonstrations and training programmes for effective cultivation methods of various crops have been the good platform and opportunity to expose the farming community. Having done this to the farming community, it is all the more necessary to implement these schemes with increased vigour and efforts on the part of the implementing agencies, of course with

public financial commitment to make these programmes more conspicuous and the benefits are widespread across all farm sizes. Towards that direction, the following suggestions are offered for the policy interventions in the State.

1. The commitment of the government in terms of financial allocation for the MMASs needs up-gradation to ensure that these schemes should not suffer on account of public financial allocation. It should be noted that mere public financial allocation would not broadbase the coverage of the schemes. What is much more needed is the release of the total allocation of the funds besides incurring expenditure to the fullest extent by the line departments. In this regard, fixing up of expenditure accountability on the line departments would go a very long way not only in broadbasing the programmes but also covering more number of farmers. Further, it is also necessary to see that the financial allocation is fully spent under various schemes. Additional impetus needs to be given to such districts, which are lagging behind in the implementation of these schemes, by engaging the line departments in a result oriented way. Districts like Bidar, Kolar, Bijapur, Gulbarga, Belgaum and Davanagere need upgradation of the monitoring and supervisory mechanism in order to achieve higher performance under these schemes. The line departments in these districts need to be further facilitated to live up to the objectives of the schemes.
2. Distribution of various benefits under the schemes should be first targeted to the most disadvantaged farmers. The marginal, the small and the semi-medium farmers need to be given priority in distribution of various

benefits particularly, the inputs, implements and in the demonstrations. Given the disadvantaged situation, prioritising this section will facilitate them to make the needed difference in the cultivation and in the economic position of their families. To make these schemes more participatory, meeting the total expenses of the agriculture operations including stepping up of the subsidy amount are necessary under the schemes. Also, meeting the total cost of attending the demonstration and trainings and provision of transportation facility would make substantial difference in the adoption of new methods of cultivation under these schemes. Organising demonstrations at the panchayat level preferably at each village level would go a long way in order to attract higher participation of the farming community. Also, organising demonstrations and training during the right time before the commencement of agriculture seasons (both Kharif and Rabi) would further facilitate in achieving higher performance. Given the socio-economic background of the vulnerable groups, SC/ST and the women-headed farming families, priority within farmers is needed in the distribution of all the inputs and other financial assistance.

3. For all practical purposes, village panchayat needs to be taken as the unit of administration and within its purview, the need of the hour is to establish outlets to distribute various inputs like micro-nutrients, fertilisers, bio-agents, green manures etc. under these schemes. Establishment of such outlets at each panchayat level would not only ensure effective and timely distribution of these benefits but also facilitate the implementing agencies in identifying

the right target group of farmers. Having soil testing units at each panchayat level would go a very big way in influencing the farming community in getting their farm soils tested regularly. Certainly, this facility would change the mindset of the farming community towards soil testing and in undertaking corrective measures from time to time. Further, introduction of mobile soil testing unit is also an immediate need in order to take the soil testing facility into the hinterlands of the most backward areas. Ensuring extension services and technical persons at each panchayat level is also a need of the hour in order to canvass and campaign about the MMASs at the grassroots level. The presence of these services at the local level brings in cultivation of various crops, besides offering technical know-how for the farming community. It is indeed necessary to wipe out misconceptions about the adoption of new techniques and methods of cultivation of various crops in the minds of the farmers, especially among the lower rung farmers owing to their risk consciousness. These units can also judiciously decide the application of the pest management techniques and their suitability across all the crops.

4. Implementation of MMASs in the State has successfully achieved reduction in the cost of cultivation on the one hand and increasing agricultural income on the other hand. This is one of the testimonies of the benefit of the schemes. With this, the State has to make all the efforts to implement the schemes, in order to further infuse the new but cost-effective methods of cultivation. This is imminent in order to

increase production and productivity and net income return to the farming families. It goes without saying that maximisation of productivity and income would facilitate the small and marginal farmers to improve their living conditions, with the given existing local resources at their control. It should not be misconstrued that the other farming community namely medium and large farmer's interest are neglected. Rather, these farmers should be encouraged, in order to take lead in transforming the goals of these schemes into a reality. Particularly, they can take lead in the adoption of new techniques of cultivation of various crops with the improved techniques and could be a model for the rest of the farming community. Given their capabilities these farmers can showcase the benefits of new schemes to the wider community, particularly to the lower rung farmers.

5. Lastly, given the lowest awareness level about the MMASs in the State, the need of the hour is to propose extension service centres at each panchayat level, step up the canvass and educate the farming community about the MMASs, their contents and benefits that would accrue to them with their implementation. Publication of information about each of the schemes in the local language and distributing the same to all the farming families would substantially enhance the understanding of these schemes. In this regard, the present campaigning method of broadcasting through radios and televisions needs further consideration to reach wider farming community.

Notes

- 1 See <http://www.agricrop.nic.in/dacdivision/policy.1.html>
- 2 Macro Management of Agriculture is a coordinated study undertaken by all the AERCs (Agro Economic Research Centres) in India. These schemes were also evaluated by 11 States. Thus, four blocks from each State were selected on the basis of physical and financial achievements (4*11=44). Further, four villages from each block were chosen (4*44=176) representing 15 farmers from each village (15*176=2640/11) which will add up to a sample size of 240 farmers.
- 3 LAMPS are organised at the village level to meet the credit and other requirements of the tribal people. These societies are federated into District Central Cooperative Banks.
- 4 <http://www.raitamitra.kar.nic.in> Department of agriculture, GoK.
- 5 Ring Pit, Single Eye Bud and Ratoon Management are the most popular and frequently conducted demonstration for sugarcane crop. Ring pit method of planting was introduced during 1984. It is maintained that sugarcane planted with ring pit can provide ratoons without reduction in the cane yield and water and nutrient efficiencies can be achieved. Single Eye bud method will be shown to the farmers by planting cane at a distance of 150 cms. It has a conspicuous advantage that with equal spacing maintained on all the sides plants grow steadily. Ratooning is an integral part of the commercial cultivation. For the proper ratoon management three practices, namely trash management, nitrogen fertilisation and artificial ripening should be efficiently implemented. (See <http://www.iisr.org> Indian Institute of Sugarcane Research, Lucknow).
- 6 Farmers' Field School is a group based learning process that has been used by a number of Government, NGO and international agencies. These are designed and managed by the Central government. The concept was introduced in 1989 in Indonesia.

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