

Strategic Plan of Chhattisgarh state under the scheme “extending green revolution in Eastern Region”

Introduction :

Chhattisgarh State is recognized as Rice bowl of India.

The state, since it's formation, excepting the drought years, has recorded continuous growth in Agriculture in Productivity of major crops, Seed Replacement Rate (SRR), Crop diversification, Irrigation, Mechanization, Organic farming, Farmer's awareness to improved technologies, as well as the Strength and Efficiency of the functionaries.

Three new cooperative sugar factories established resulting in area expansion and increased production of Sugarcane.

Agricultural Demography:

Farm families are 32.55 lakh. Majority of farm families (76 %) hold very less portion of land (34 % only). Average land holding is 1.60 hectare per family. It reveals that majority of farm families are resource-poor

Agro Climatic Situations :

Zones : The state can be divided into three major Agro Climatic Zones.

- Northern Hills
- Chhattisgarh Plains
- Bastar Plateau

The characteristics are detailed as below:

Agro Climatic Zone Characteristics

Agro Climatic Zone	Districts Included	Total Geo. Area	Soil Type	Irri. %
Northern Hills	Sarguja, Korja, Jashpur & Dharamjaigarh Tehsil of Raigarh Districts	28.47 lakh ha. (21%)	Entisol 13 %, Alfisol 29 %, Inceptisol 28 %, Vertisol 28 %, Alluvial 2 %	7
C.G. Plains	Raipur, Mahasamund, Dhamtari, Durg, Rajnandgaon, Kabirdham, Bilaspur, Korba, Janjgeer, Raigarh & a part of Kanker Districts (Narharpur & Kanker Block)	68.49 lakh ha. (50%)	Entisol 36 %, Alfisol 21 %, Inceptisol 22 %, Vertisol 18 %, Alluvial 3 %	40
Bastar Plateau	Jagdalpur, Dantewada and the remaining part of Kanker Districts	39.06 lakh ha. (29%)	Entisol 26 %, Alfisol 25 %, Inceptisol 34 %, Vertisol 10 %, Alluvial 5 %	5

Agro Ecological Situations :

The state has as many as 40 Agro Ecological Situations based on diversified combinations of the agro-ecological factors like rainfall, temperature, altitude, soil properties and profile, slope grade, vegetative cover and natural streams etc. Northern hills has 14, Chhattisgarh plains has 19 and Bastar Plateau has 7 different AES.

Cropping:

Main cropping season is Kharif with Paddy being the main crop occupying 75 % area.

Net cropped area is 48.15 lakh ha.

The arable land is covered mainly by light to medium type of soils to the extent of 57 %.

The major portion of cropped area (72 %) is rainfed.

Area under irrigation is only 28%, mainly covered under canal irrigation systems (20%) which also is not fully benefited to the designed capacity because of inadequate water storage due to erratic and insufficient rainfall.

Area under crops is 16.31 lakh ha. (35% of net sown area).

Cropping intensity is 135 %.

Agriculture Scenario:

State vis-à-vis National average.

Particulars	Unit	National 2006-07	State 2007-08
Cropping Intensity	%	135	134
Irrigation	%	42	27
Double Cropped Area	Lakh ha.	467.80 (33%)	16.20 (34%)
Fertilizer Consumption (Kharif)	kg/ha	113.26	75
Tractor per 1000 ha.	Nos.	18	9

State vis-a-vis National - Productivity

Crop	National Productivity 2006-07	Chhattisgarh		
		2008-09 (Est.)	Estimated 2009-10	At the end of XIth Plan (2011-12)
Rice	2619	1517	1400	2095
Maize	1938	1600	1700	1990
Arhar (Pigeon Pea)	675	570	600	780
Soybean	1073	1195	1200	1380
Wheat	2671	1210	1300	1350
Gram	808	998	1050	1200
Mustard	1117	500	550	650

State Initiatives:

- Crop loan @3% per annum through co-operative banks.
- Additional Bonus @Rs. 50/- per quintal for paddy.
- VAT exempted on Agriculture implements.
- 25 % additional subsidy for agricultural implements.
- Assistance for energization of per irrigation pump free electricity upto 6000 minute per annum.
- Additional 40% subsidy for SC / ST and 20% for others under MIP.
- Production subsidy @Rs. 300/- for quality seed.
- “Khalihan Agni Durghatna Rahat Yojna” - assistance upto Rs. 25,000

Potential and Achievements in crop yields :

Crop	Yield Potential (Qtls./ha.)	Yields Achieved (Qtls./ha.)	Possibility to increase by (%)
Rice	40-65	22.14	137
Maize	35-48	14.73	182
Kodo-Kutki	6-8	2.56	173
Ragi	20-25	2.80	704
Arhar	20-22	5.02	318
Moong	10-12	3.00	267
Urd	8-12	3.27	206
Soybean	20-25	11.40	97
Groundnut	15-25	12.46	60
Niger	5-8	1.96	232
Wheat	20-25	11.25	100
Gram	18-20	8.98	112
Lathyrus	12-20	5.41	196
Pea	15-18	3.59	360
Linseed	15-18	3.08	436
Mustard	18-25	4.37	392
Safflower	15-18	2.27	627
Sunflower	10-20	4.31	248

The yield potential of crops tested by SAU is mostly under irrigated condition, but it is noteworthy to quote that more than 70 % cropped area is rainfed and therefore comparison between potential and achievement of yields given above is not viable for working out the gap to bridge up. Hence the potentials of crop yields be tested under rainfed conditions, which is an important issue for research.

SWOT ANALYSIS :

Strength :

1. Higher average rainfall (1325 mm per annum)
2. Varied soil types suitable for various crops.
3. Adequate electricity.
4. Broader range of ACZs and AES available.
5. Rich in biodiversity.
6. Availability of natural resources-perennial river and nalas.

Weakness :

1. Dominance of SC/ST/Small and marginal farming families of economically weaker sections.
2. Fragmented land holdings.
3. Erratic rainfall.
4. Less irrigation facilities (28 % area).
5. Light soils having fertility and water holding capacity of low level.
6. Broadcast method of sowing.
7. Low adoption of farm mechanization.
8. Imbalanced nutrient use.
9. Insufficient extension staff.

Opportunities :

1. Positive and helping attitude of Central & State Govt. towards Agriculture Sector.
2. Vast scope for crop diversification.
3. Area expansion under assured irrigation.
4. Scope to improve SRR.

Threats:

1. Drought and erratic rainfall.
2. Diversion of agricultural land to non agricultural purposes.
3. Depleting ground water.
4. Crop menace by stray cattle and wild animals.

STRATEGIES :

1. Thrust on Crop diversification with Maize, other Minor Millets (especially Ragi & Kodo), pulses (especially Urid) and oilseeds (especially Niger) in place of upland rice .
2. Utilization of rice bunds for growing Arhar & Sesamum (Til).
3. Intercropping of Arhar, Moong, Urd with traditionally grown minor millets (Kodo-Kutki).
4. Thrust on utilization of fallow land.
5. Use of lime in acidic soils and gypsum in alkaline soils.
6. Farm mechanization in special regard to upland and light soil conditions.
7. Support to Research for evolving AES specific improved varieties and mechanization to upland agriculture.
8. Improvement in SRR.
9. Soil moisture augmentation by promotion of MIS.
10. Developing new irrigation resources (storage structures).

INTERVENTIONS :

❖ **Improve soil health:**

Lime application to acidic soils 2 months prior to sowing so that its reaction does not affect germination. Similarly gypsum application to alkaline soils.

❖ **Crop diversification:**

- Upland rainfed rice be replaced by Ragi, Kodo or Urad (BPU-28), providing subsidized seed minikits.
 - Upland irrigated rice be replaced by Maize (CRM 6004, JM-216) providing subsidized minikits.
 - In uplands where rice is inevitable, situation-specific recommended varieties like Bamleshwari be cultivated.
 - Suitable intercropping system like-Ragi + Arhar, Urad/Moong + Arhar, Urad/Moong + Maize, Urad/Moong + Upland Rice will be taken up.
- ❖ Area expansion and productivity enhancement with improved seeds and balanced fertilization of Rice in Kharif covering forest land leased permanently to local farmers.
 - ❖ Developing new rainwater harvesting structures.
 - ❖ Situation specific productivity enhancing technology demonstration and subsidized input assistance to improve productivity of various crops.
 - ❖ Motivation by awarding the farmers/villagers for collective approach to rule out the traditional practices harmful to agriculture development.

ACTIVITIES PROPOSED :

- (i) **Run off Management:** State Agriculture Department is operating many schemes of constructing structures for storage/harvesting/managing the excess runoff of rain water. The available opportunities can not be adequately utilized for the budget limitation which may be taken care of under this scheme.

Structures will be designed to provide protective irrigation to Kharif crops and will be constructed by soil & water conservation wing of Agriculture department. Utilization and maintenance will be carried on by the G.P./U.G. as per the provisions made in the state schemes.

The schemes for different structures will be as given below :

1. Pucca checkdams/stopdams will be constructed in the nallas flowing upto February-March. Cost for 200 structures at a maximum of Rs. 10.00 lakh per structure, thus a total provision of Rs. 2000.00 lakhs is proposed to be borne cent-percent under this scheme.
2. Small irrigation tanks of command area upto 40 ha. provided with sluice-gate and waste-weir and sometimes also with irrigation channels as per specific requirement. Construction cost for 80 structures at a maximum of Rs. 25.00 lakh per structure, thus a total provision of Rs. 2000.00 lakhs is proposed to be borne cent-percent under this scheme.

(ii) **Promotion of High Yielding Varieties / Hybrids :**

- ❖ Demonstrations will be of 0.4 ha size in Rice and Maize and 0.5 ha. size in Sugarcane each.
- ❖ Use of a recommended high yielding variety or hybrid suitable for the area.
- ❖ Cost of seed / tissue culture plant (of Sugarcane), Seed treating material and balanced fertilizer including micronutrients.
- ❖ Financial assistance will be as given in the abstract plan in the annexure.

Demonstrations:

1. **Rice** : Productivity enhancement through demonstrations of 0.4 ha. size using free of cost provision for HYV seeds, balanced fertilizer, other inputs / practices is proposed for the low productivity districts with special emphasis to Bastar Division. The financial assistance thus be provided to farmers at maximum Rs. 1500 per demonstration for 15000 demonstrations costing Rs. 225.00 Lakhs is proposed.

Keeping in view the insufficient strength of departmental field staff in such areas, the demonstrations will be conducted in PPP mode. Separate provision of fees to the engaged agencies at a maximum 10% of total cost i.e. Rs. 25.00 Lakhs, as to meet expenses towards service charges / other contingency / administrative expenses and hire charges of vehicle for input transportation and monitoring etc.

2. **Maize** :- The farmers will be provided free of cost assistance at maximum Rs. 1500/- per demonstration of productivity enhancement in Maize also. The total provision of Rs. 225.00 lakhs is proposed for the farmers.

Scope of area diversion from Rice to Maize, specially in summer is building up. Thus to achieve the objective of simultaneous vertical growth would require facilitation to farmers in PPP mode by private organizations already working on Maize productivity enhancement in other states. The selected organizations would be engaged with the provision of financial assistance at maximum 10% of total cost i.e. Rs. 25.00 Lakhs as described above for Rice demonstration.

3. **Sugarcane** :- Demonstrations on productivity enhancement in Sugarcane will be conducted in the vicinity area of the three Sugar factories in the state. The MMA norms is followed as such i.e. the financial assistance to the farmers at Rs. 7500.00 per demonstration of 0.5 ha. The total provision for the proposed 5000 demonstrations will be Rs. 375.00 Lakhs.

Promotion of Intercropping/Mixed cropping/ Bund farming with Pulses and Oilseeds through distribution of free Seed Minikits:-

Area expansion under pulses and oilseeds will be promoted by distribution of cost-free suitable high yielding variety seed minikits of Pulses and Oilseeds for 0.2 ha. area, to be used in intercropping/mixed cropping with major crops and also as sole crop for bund farming.

The farmers will be provided 90,000 seed minikits at 100 % subsidy maximum Rs. 300 per minikit per farmer and thus a provision of Rs. 270.00 lakh is proposed.

(iii) Expansion of area under high value cash crops and vegetables:

Organic vegetable production model of maximum 0.04 ha (10 decimile) courtyard area, costing Rs. 600 per unit will be developed by small/marginal/resourcepoor farmers in a cluster of minimum 25 units per village.

An expert agency having desirable expertise in developing the proposed model will be selected by district DDA, through a definite procedure with transparency, and then engaged in the job of training as well as facilitating farmers to backward-forward linkage as necessary to improve earning by selling out the surplus production. The selected agency will be paid fees Rs. 500/- per unit to meet the overhead expenses towards monitoring and supervision and will also be paid training expenses Rs. 400 per unit as per norms fixed by GoI under ATMA. Payment of fees and training expenses to the agencies will be made by the district level DDA.

A farmers will be provided 75% subsidy out of the total cost Rs. 6000 for developing a unit of the model. To avail the subsidy farmers have to collect a certificate from the Agriculture Deptt. Field staff and the Expert Agency engaged for the purpose, after getting the unit jointly verified by them. This certificate has finally to be produced to the concerning district level DDA who will check for due approval and pass on the subsidy.

In addition to the above will be the farmers provided assistance for irrigation pumps as per the provision under Shakambhari scheme of State Sector.

Total 5000 units with a provision of Rs. 270.00 lakh is proposed.

(iv) Other Activities :

Amelioration of acidic soil with lime application:-

The state has 26 % of cropped area with acidic soils having pH below 6.5, which requires treatment with hydrated lime to render it normal for desired crop production. Assistance being already provided to the farmers in sufficient numbers under NFSM in the state, so no financial provision being made under this scheme.

Line sowing of paddy :

There is about 57 % of cropped area in the state having light to medium type of soil with low water holding capacity, and situated mostly under rainfed condition. Hence it require assured soil moisture conservation as to escape the threat for the crop from competition due to consumption by weeds. Line sowing with power operated seed-cum-fertilizer drill has been found most useful measure in this regard, but practically not getting possible to desirably larger area. So, it is proposed to make it feasible, by way of promoting line sowing in various crops in cluster, making a compact patch with tractor operated seed-cum-fertilizer drills at hire charges subsidized by 75 % maximum Rs. 1000/- per hectare. The total provision of Rs. 15.00 lakh is proposed for 2000 ha. area in initial phase.

Balance fertilizer kits for Rice :

Although the nutrition consumption per unit area under crops is gradually increasing in the state, the fertilizer application to the recommended balance doses of different essential compounds is wanting. To achieve this in Rice, composite kit of the fertilizers Urea 50 kg + NPK (12:32:16) 50 kg + Zinc Sulphate 10 kg for 0.4 ha area will be provided to the farmers at 75 % subsidy maximum Rs. 1000. A total 35000 kits with a total provision of Rs. 262.50 lakh is proposed.

Agricultural Technology Support to the farmers recently allotted with permanent lease of forest arable land :

About 2.50 lakh landless farmers have recently been allotted permanent lease of one ha. each in the forest area. These farmers are resourcepoor and thus unable to adopt the recommended package of agricultural practices. It is felt that motivating them by providing each a cost-free kit of 30 kg HYV Paddy seed plus 50 kg NPK and 50 kg Urea which will be sufficient for 0.4 ha. area will certainly bring about desired boost in productivity level. The kit will cost about 1250 rupees each and thus the total provision proposed for 80,000 farmers will be Rs. 1000.00 lakh.

A provision of Rs. 22.19 Lakhs is proposed for meeting out the contingent expenses on monitoring and operational administration of the scheme.

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**Abstract Strategic Plan of Chhattisgarh state
under the scheme
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Financial- Lakh Rupees

S. No.	Component		Subsidy Pattern	Unit Cost	Proposal 2010-11	
					Phy.	Fin.
(i)	Management of Rainwater harvesting & storage for increasing crop productivity					
1	Construction of runoff management structures (Checkdam)		100 %	Max. 10.00 lakh	200 Nos.	2000.00
2	Construction of Minor Irrigation Tanks		100 %	Max. 25.00 lakh	80 Nos.	2000.00
(ii)	Promotion of High Yielding Verities/Hybrids (by way of Demonstration on improved package of practices)					
1	Demonstration of HYV Rice	(i) To farmers	100%	Max. Rs. 1500 for 0.4 ha.	15000 Nos.	225.00
		(ii) To facilitating agency	10% cost of total provision			25.00
		Total				
2	Demonstration of HYV (OP) / Hybrid Maize	(i) To farmers	100%	Max. Rs. 1500 for 0.4 ha.	15000 Nos.	225.00
		(ii) To facilitating agency	10% cost of total provision			25.00
		Total				
3	Demonstration of Technology with special emphasis on Tissue culture plant of Sugarcane		As per MMA norms	Rs. 7500 for 0.5 ha.	5000 Nos.	375.00
4	Distribution of seed minikits of pulse & oilseeds as the minor crop in intercropping / mixed cropping/ bund farming		100 %	Actual Cost or Max. Rs. 300/ Kit	90000 Nos.	270.00
(iii)	Expansion of Area under High value cash crops and vegetables					
1	Organic Vegetable Production Model in cluster	To Farmer	75 %	Max. Rs. 6000 for 0.04 ha.	5000 units	270.00
		To Facilitating Agency	100 %	Training Expenses		
		Administrative Expenses		Rs. 500/- per unit		
(iv)	Other Activities :					
1	Incentive to the farmer to promote the line sowing of Paddy crop (Hire charges of Tractors with Seed-cum-fertilizer drill)		75 %	Max. Rs. 1000 per ha.	2000 ha.	15.00
2	Integrated Nutrition Management Balance fertilizer kits for Rice		75 %	Max. Rs. 1000 for 0.4 ha.	35000 Nos.	262.50
3	Agricultural Technology Support to the farmers recently allotted with permanent lease of forest arable land		100 %	Max. Rs. 1250 for 0.4 ha./ per farmer	80000 Farmers	1000.00
4	Administrative / Contingent expenses on monitoring etc.					22.19
Total :						6714.69

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