

A SUSTAINABLE AGRICULTURAL DEVELOPMENT IN RAIGAD DISTRICT

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Abstract:

Crop production, livestock, horticulture crops, and fisheries are all part of a comprehensive agricultural system. The current state of these combinations is determined by the predominant mode of these systems in a given location. As a result, important integrated farming systems with internal cost adjustment, return, revenue, and employment in the agricultural systems must be identified. The research was carried out in the Maharashtra district of Raigad in the year 2007 to 2012.

Keywords: *Agricultural Farming systems, Growth, Development, Marketing etc.*

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Introduction:

In Maharashtra's Konkan Division, the Raigad district is located on the western half of the state. The Arabian Sea lies to the west, while the Sahyadri Hills are to the east. The border districts are Thane, Pune, Satara, and Ratnagiri. Thane creek is located in the northwestern part of the city. The district stretches 160 kilometres north-west and 25 to 50 kilometres east-west. The district covers 7,162 square kilometres, or 2.32 percent of the state's total area. Raigad boasts a 240-kilometer stretch of lovely and pristine beach.

There are fifteen Talukas namely; Alibag, Pen, Panvel, Karjat, Uran, Khalapur, Roha, Sudhagad (Pali), Mangaon, Murud, Mhasala, Shrivardhan and Poladpur in Raigad District. Alibag is the administrative headquarters of Sarkhel Kahnoji Angre, as well as the ancient capital city.

Objective of the study:

The goal of research using Sustainable Agricultural Farming Systems view point is

To investigate the rate of development and the potential for enhancing farmer income through mixed farming.

Methodology:

The district plan has been prepared having considered the different aspects in light of the aforesaid aims and standards. Horticulture, agriculture, fisheries, animal husbandry, dairy development, and other significant sectors/programmes are among them.

The data base is quantitative and qualitative, and it is gathered at the grampanchayat and taluka levels. Secondary sources, as well as observations and discussions with progressive farmers, Panchayat raj institutions (PRIs) at various levels, and voluntary and non-governmental organisations, were used to compile the data. The CDAP is based on the Planning Commission's proposed framework, which is a decentralised and integrated approach. According to this directive, the plan's creation began with stakeholder consultations at several levels, beginning at the village (grampanchayat) level. Throughout the creation of the CDAP, the district chiefs of several departments were actively involved. During the planning process, the relevant employees were also consulted.

Agro Conditions:

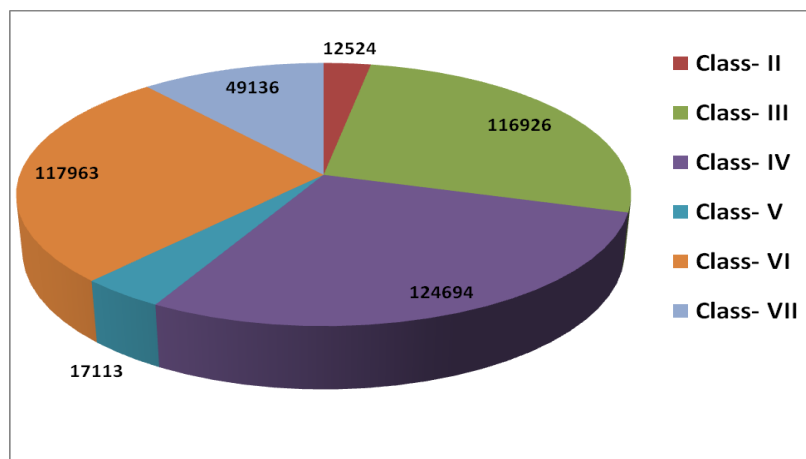
The district's soil is deep loamy along the coast and in the river basin, lateritic on hilltops, salty along the coast, medium in rice farmed areas, and shallow in the forest. Due to seawater flooding, about 30,000 acres of land has become salty and uncultivable. Kharland Research Station is located in Panvel.

Rice Bawl was intended to be Raigad. Paddy crops cover around 60-70 percent of cultivable land. Although paddy is planted across the district, Nachani and Vari are grown in the Talukas of Roha, Mahad, and Poladpur. Coconut and arecanut plantations are developed on salty and sandy soils near the sea. In various areas of the district, Ratambi alias Kokam is also planted. Also grown are mangoes, cashews, and jackfruit.

Shriwardhan's arecanut, Alibag's white onion and small gourd, Murud's brinjal, and Korlai's sweet potato are also famous locally. In several places of the district, local wal is taken on leftover soil moisture, which commands a significant price for the farmers. Farmers in the talukas of Roha, Mangaon, and Sudhagad have recently started growing watermelon on a huge scale.

Land Use Capability Classification:

As the soils in the district are deep loamy at sea shore and river basin, lateritic on hill tops major soils in the district are in the class II, IV and VI. There are no class-I soils in the district. The graphic representation of various land classification is shown in **fig.1.1 below**.



Farmers are keenly aware of technological improvements. Farmers' present use of technology, such as horticulture plantations, hybrid paddy, fisheries, organic farming, and value addition, demonstrates their willingness and openness to ever-changing agricultural trends. Floods, unusually wet weather, and pest and disease outbreaks are all prevalent in the region, diminishing farmer enthusiasm. The district has very little irrigation water accessible due to its geographical position. Farmers' fortunes have deteriorated as a result of ineffective and changeable government policies, as well as a lack of agro-based firms and market locations in the area. In agriculture, it is advocated that farmers promote indigenous technology in order to increase their production and revenue.

Development of Agriculture sector:

Raigad's economy continues to be dominated by the agriculture industry. 1) Seashore regions with deep loamy soils covering B. Uran, Alibag, Murud, Mhasala, and Shrivardhan talukas; 2) Hill top regions with late rite soils covering Karjat, Khalapur, Sudhagad, Eastern part of Mangaon & Mahad, and Poladpur talukas; and 3) Hill top regions with late rite soils covering Karjat, Khalapur, Sudhagad, Eastern part 3) The Kharland region, which includes the eastern half of Uran, Panvel, Pen, and a portion of Alibag. Mhasala, Tala, and Shrivardhan Karjat are the district's most backward talukas, and these areas form the district's core, with modest infrastructural development, including irrigation.

Cereals cover 136800 hectares, pulses 13124 hectares, and oilseeds cover 800 hectares, yielding 344800, 7000, and 400 tonnes of grain, respectively. Mango, which covers 12250 ha, and cashew, which covers 3168 ha and produces 2376.50 tonne and 110.80 tonne respectively, are the two most important commercial crops planted in the district. The 2010 State Agricultural Policy intends to double agricultural productivity in the following ten years.

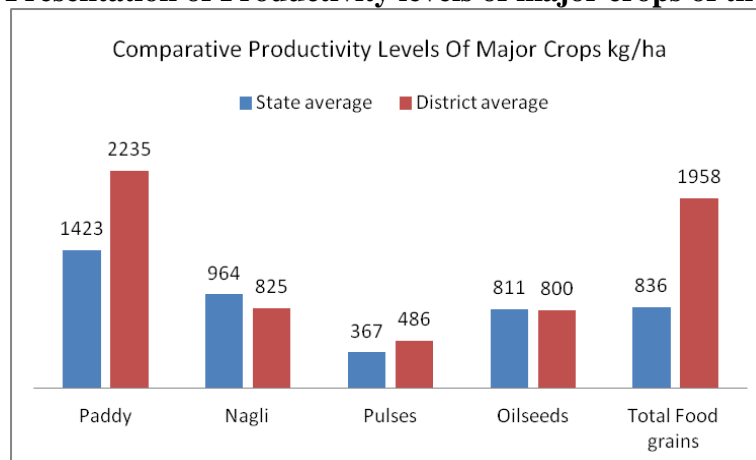
Infrastructure development:

During the cropping season farmers are busy in their agricultural related works hence, it becomes difficult for the farmers to come to the training centres and equip with the recent technologies, so it is proposed to provide a fully loaded audio visual vehicle to the district agricultural training centres or KVK. This will be taken to the village during the late evening/night hours so that farmers can be motivated with recent technologies with this media. Also, it is proposed to provide a well furnished hall for farmers in District Superintending offices. The budget required is around 428.40 lakhs.

Table 1.1 Comparative Productivity levels of major crops of the district(kg per ha)

Sl. No.	Crop	State average	District average
1.	Paddy	1423	2235
2.	Nagli	964	825
3.	Pulses	367	486
4.	Oilseeds	811	800
Total Food grains		836	1958

Figure 1.2 Graphical Presentation of Productivity levels of major crops of the district (kg per ha)



As seen the Table 1.1 and Figure 1.1 the paddy yield levels of the district are higher as compared to the state level average productivity levels. The major varieties that are maintained in cereals, pulses, oilseeds in the district are shown in Table 1.2.

Table 1.2 Crops/Varieties maintained in the district

Sl. No.	Crop	Breeds
1.	Paddy	Jaya, Ratna, Masuri, Suvarna, Indrayani, HMT Sona, Karjat-2, Karjat-3, Gujarat-4, Gujrat-11, Sahyadri Hybrids
2.	Nagli	Dapoli No-1, B-11, HR-374, IE28, Sharada
3.	Pulses	Cowpea- Kokan Sadabahar, Kokan Safed, PusaKomal, Mung- Pusa Vaishakhi, Vaibhav, Phule M-2, Wal- Kokan wal 1 & 2.
4.	Oilseeds	SB-11, TAG-24, Kokan Gaurav, TG 26

The district has very less irrigated area (1.90%) vis-à-vis the state (17%) as seen from the Table 1.3 The fertilizer consumption of the district is far less compared to the state average consumption. In comparison to the state average with respect to The farm size district has relatively lower farm size. The agriculture mechanisation is low in the district due to geographical situation

Table 1.3 State and District Average of Irrigated land, Fertilizer use, agriculture and Farm size.

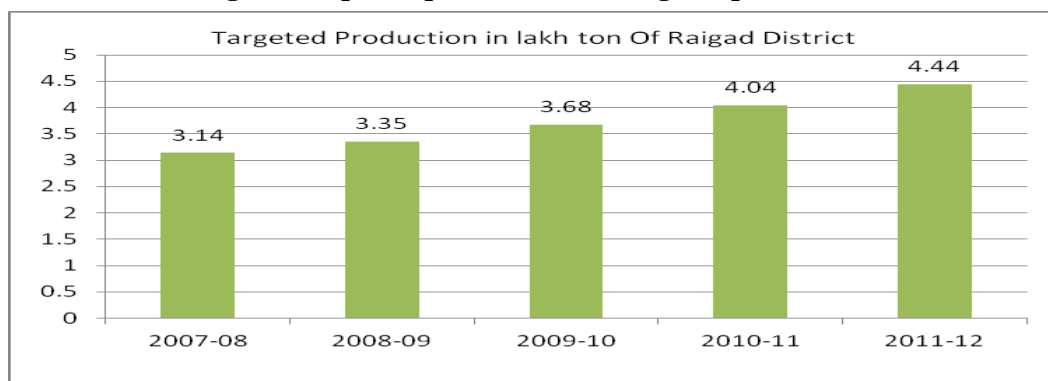
Sl. No.	Parameter	State Average	District Average
1.	Percentage Irrigated land to total District/state area	16.5%	2%
2.	Fertilizer use (in kg per ha): (2006)	94.2 kg/ha	81.9 kg/ha
3	Average farm size (in ha.)	1.87	1.20

The Table 1.4 clearly indicates the yield levels of the majority crops of the district are lower compared to their potential yield; efforts have been to find out the reasons for the yield gaps and technologies to be demonstrated to achieve the targeted productivity.

Table 1.4 Productivity gap analyses in major crops of the district

Crop	Yield gap (q/ha)			Reasons for yield gap	Technology to be demonstrated
	Dist. Avg.	Potential Yield	Farmers Yield		
Paddy	22.3	35.00	30.00	Small land holding, the main constraint in technology adoption	Seed treatment.
Nagali	8.25	15.00	10.00	Neglected cultivation, local varieties, tribal area	Improved varieties, Use of compost manure.
Pulses	4.89	12.00	8.00	No any pest control activities are followed	IPM and use of bio control in oilseeds crops.
Oilseeds	8.00	20.00	15.00	No any pest control activities are followed	Use of bio control in oilseeds crops.

Fig 1.3 Graphical presentation of targeted production



To achieve the agricultural growth rate of 4.5% in the district, targeted productions for the next five years is given in the fig 4.2. The targeted production for the year 2007-08 is 3.14 lakhs tonnes, for 2008-09 it is 3.35 lakh tonnes, for 2009-10 it is 3.68 lakh tonnes, for 2010-11, it is 4.04 lakh tonnes and for 2011-12 it is 4.44 lakh tonnes.

Crop wise Constraints and Strategies.

Crops	Constraints	Strategies
Paddy	Small land holding in Konkan region which makes pest control difficult & costly. Paddy cultivation is traditional practice, there is problem of controlled irrigation	Farmers field schools.
Nagali	Mostly Nagli crop is cultivated in tribal area, on fallow land with insufficient availability of organic manure.	Use of improved variety Dapoli 1, use of compost and fertilizer as basal dose, maintaining proper plant population.
Oilseeds	Use of local varieties, lack of plant protection majors, costly seed	Supply of mini kits.
Pulses	Moisture stress, Use of local varieties, lack of plant protection majors, costly seed.	Supply of mini kits.

Input Requirement in Agriculture Sector:

Seeds are important inputs which contribute to the production. The requirement of the certified as well as hybrid seeds as per the seed replacement rate is given in the Table 1.5.

Further, another important input which contributes to the production is the in-organic fertilizers, the requirement of the same nutrient wise is provided in the Table 1.5

Table 1.5 Annual input requirement projections in the district – Fertilizers (in metric tonnes)

Fertilizer	Requirement	Nutrients		
		Nitrogen	Phosphorous	Potash
1	2	3	4	5
Urea	21425	9941	-	-
DAP	1455	262	669	-
SSP	2830	-	453	-
MoP	985	-	-	591
Ammonium Sulphate	400	82	-	-
19:19:19	1360	258	258	258
15:15:15	14475	2171	2171	2171
12:32:16	756	91	242	121
10:26:26	870	87	226	226
23:23:00	220	51	51	-
18:18:18	140	25	25	25
Total	44916	12969	4096	3393

Growth Drivers Agriculture:

Crop production may be boosted by using micro irrigation technology to provide watering during important periods of crop growth. Farmers' rising interest in adopting micro irrigation technology must be addressed swiftly. This will boost agricultural productivity. Agricultural mechanisation is a significant driver in agriculture, since swiftly resolving farm operations under the current labour scarcity scenario is critical to effective farm output. Farm mechanisation is becoming increasingly important for improved crop development.

Agro processing must be promoted aggressively since agriculture is plagued by a slew of issues, including poor productivity, uncompetitive prices, and a lack of post-harvest infrastructure. As a result, farmer income is heavily dependent on crop yield and farm products.

Soil health must be maintained since it is a prerequisite for crop yield. Farmers must be educated on the proper application of fertilisers in accordance with the soil health card. This must be addressed by encouraging organic farming and aiding in the use of organic material on a broad scale, as well as replenishing the soil with micronutrients.

Input Requirement for Horticulture Development:

Since of favourable agro - climatic conditions and soil qualities, the district is well-known for horticultural production. This must be expanded in order to increase export-quality fruit crop output. Because raw materials are readily available, it is critical to promote the processing sector for fruits, particularly mangoes and cashews. The expansion of land under conventional cereal and fruit crop kinds need attention since there is a growing market demand for these crops. Planting horticulture crops at high density and intercropping.

Input Requirement for Sericulture Development:

Though the region is not traditionally associated with sericulture, the environment is conducive to making this a viable agro-based sector.

Input Requirement for Animal Husbandry Development:

The availability of dry feed throughout the year, as well as impending irrigation projects in the region, provide opportunities for animal husbandry activities. KMF and private agencies have well-established milk procurement networks.

Input Requirement for Fisheries Development:

For big fishing, the area comprises around 1,054.8 hectares. In Khopoli, there is one fish culture production centre. For sea fishing, there are 240 kilometres of seacoast spanning 104 communities. The area has registered cooperative societies, and there is a rising need for them. Fish may be used in both urban and rural regions to increase fish marketing.

Input Requirement for Innovative Interventions and schemes Agriculture:

- Seed production incentives for hybrid seed grower's 25 percent subsidy
- Supply of Urea DAP bracket with a 50% subsidy on a 10% area every year
- Supply of improved seed Wal, Gram, and Cowpea with a 50% subsidy on a 10% area per year
- 1 agro-polyclinic mobile van

Input Requirement for Horticulture Development:

- Provision of pheromone traps for the management of the coconut Red Palm Weevil at a 50% subsidy
- Supply of pheromone traps for the control of the coconut Rhinoceros beetle at a 50% subsidy
- Exposure visits/trainings for rural youth in preparation for the construction of Argo – Tourism centres

Input Requirement for Watershed Development:

- Construction of Farm ponds in rice field for protective irrigation.
- Lining of farm ponds

- In suit water and soil conservation through contour bundling, terracing, repair of oldpaddy bounds, continuous contour trenches etc.

Input Requirement for Fisheries Development:

Establishment of a fish seed farm, • Provision of a fishing subsidy Requirement - no mechanised boats, • Nylon Ties, • Development Agency for Fish Farmers (75 percent central Agency), • Tank construction, • Subsidy for input, • Training, • Beneficiaries, • Fishing Craft Mechanization (80 percent Central Assistance), • Mechanic Boats, • Vehicle Preservation, Transportation, and Marketing, • Ice Plant and Cold Storage, • Fishermen's Development Rebate on HsD Oil –Diesel, • Help with the installation of electronic safety devices on mechanised boats., • Development of infrastructure for fish landings, • Construction of Fishing Harbours, • BPL Fishermen in the Western Ghats Development Programme, • Development of BPL Fishermen's Villages.

Input Requirement for Animal Husbandry:

Establishment of Rashtriya Gokul Mission Gokul Grams • Establishment of Mobile Extension • Supply of mini setter and Hatchers with a capacity of 5000 eggs, • Mobile Advertising, • Market Facilitation, • Implementation of a power-driven chaff cutter, • Provision of Veterinary Mobile Units and Diagnostic Laboratories, • Gr. 1 modernization of veterinary dispensaries for online data entry, • RKVY's A.I. Delivery System, • Production of clean milk

- Farmers will receive a 25% subsidy to promote integrated live stalk cultivation., • Fodder seed distribution, • Establishment of a silage production unit, • Production of fodder from barren lands, • Construction of a hydroponics fodder producing unit, • Establishment of an Azolla manufacturing plant, • Establishment of 1000-bird capacity broiler units, • Punyashlok Ahiyadevi Maharashtra's stall fed 40+2 goat unit Mendi va Sheli vikas mahamandal vikas mahamandal vikas mahamandal vikas ma.

Input Requirement for Agricultural Marketing:

- Electronic weighing systems for Market Yards in the District.
- Cold storage, grading, standardisation and packaging facilities.

Result and Discussion:

For overall development of the farming sector, the district plan of Raigad emphasises on varied kind of activities to be taken up by different development departments. The main objective is to achieve the targeted growth rate and increasing the farmer's income.

In agriculture, the goal rate is attained by increasing cereal productivity by 4.0 percent, oilseed and pulse productivity by 10%, and vegetable production area and productivity by 10%. While the horticulture division must focus on expanding the region and implementing high-tech gardening. Sericulture is emerging as a successful agro-based sector in the district. Animal husbandry and agriculture work hand in hand, hence efforts are being made to develop the farming sector in order to incorporate this as an associated industry alongside agriculture. It is also important to practise fisheries whenever feasible. Credit facilities granted to the farming industry to carry out the aforementioned tasks also have a role.

As a result, the most important tasks before Raigad district agriculture are appropriate planning of region specific cropping patterns, proper crop management techniques, solid marketing facilities, good export technology, and its awareness.

Suggestions:

- To change the Mono cropping in paddy agriculture pattern or practises.
- To improve the Irrigation facilities.
- To adequate soil and water management.
- To adequate post-harvest facilities and agro-processing plants.
- To sufficient green fodder, local breeds, and veterinarian assistance.

- To hold labour migration to cities as a result of industrialization and urbanisation.

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