



THE WORLD BANK

Nanaji Deshmukh Krushi Sanjeevani Prakalp

Strategic Research & Extension Plan (SREP)

Climate Resilient Agriculture Supplement

of

District Hingoli



अक्षांश: 19.322081
देशान्तर: 77.111876
उन्नयन: 419.52±10 m
सटीकता: 5.0 m

समय: 27-11-2023 16:22
नोट: थोरावा

Prepared by

Powered by NoteCam

Agricultural Technology Management Agency

(ATMA), Hingoli

and

Project Management Unit

Nanaji Deshmukh Krushi Sanjeevani Prakalp, Mumbai

INTRODUCTION

The Project on Climate Resilient Agriculture in Maharashtra (PoCRA) is a project of Government of Maharashtra with Partnership of World Bank and the project is implemented in 5220 vulnerable villages in 16 districts of Marathwada, Vidarbha and North Maharashtra. The project development objectives (PDO) is 'to enhance climate resilience and profitability of smallholder farming system in selected districts of Maharashtra'. On the backdrop of frequent droughts affecting the agriculture in the state, the project is focused on enhancing climate resilience at farm level. Climate Resilient Agriculture involves sustainable agricultural practices that enhance productivity, mitigate risks, and reduce greenhouse gas emissions. The farmers can ensure food security in the face of extreme weather events and climate change by adopting climate-resilient agriculture practices. The extension functionary of the Department of Agriculture is mandated to disseminate knowledge and skills about resilient technologies to the farming community. The district-level authority of the Department of Agriculture prepares the strategy for need-based extension with the help of the Agriculture Universities and Krushi Vidnyan Kendras. In order to facilitate this process, the Government of India has directed the states to prepare a Strategic Research and Extension Plan (SREP) at the district level as an integral part of extension reforms under the Agriculture Technology Management Agency (ATMA) initiative.

SREPs are multi-year strategy documents for the dissemination of innovations and the coordinated interaction in the field between State Agricultural Universities (SAU), Regional Research Stations (KVK), district-level agricultural extension services (ATMA) and the farming community. SREPs are developed under the leadership of the Project Director (ATMA), whose responsibility is to bring together researchers, extensionists, farmers and other stakeholders to make, based on joint diagnostic studies, district extension plan and recommendations for expanded adaptive research to introduce innovations in technology dissemination to cater to local needs and situations. The project had taken a conscious decision to review and update the current SREPs to mainstream climate vulnerability and its impact on farming in project districts as well as to explore the potential for strengthening existing value chains with up-to-date market intelligence. This task is accomplished with preparation of climate resilient agriculture supplement as a supportive document to the current SREP of each project district. As per the project agreement between the Government of Maharashtra and the World Bank, the updation of SREPs is considered as one of the project assessment indicators. The document is prepared by the Project Director (ATMA) in consultation with the field functionary of the Department of Agriculture, State Agriculture Universities (SAUs), Krushi Vigyan Kendras (KVKs), Farmers, Farmer Producer Organizations from the district. The SREP supplement contains an account of weather analysis, information about cropping pattern, impact of climate change on crop yields, coping mechanisms adopted by the farmers, adoption level of climate resilient technologies, constraints in marketing of agriculture produce and scope for value chain development. The SREP supplement ends with comprehensive template for Village Adaptation Plan which will act as guide for the Agriculture Assistants who are the cutting edge extension workers. It will be helpful to extension workers while carrying out extension of 'climate resilience technologies.

INDEX

Sr. No.	Chapters	Page No.
1	General profile of the district.	1
2	Agriculture profile of the district.	7
3	Weather trend of the district.	13
4	Impact of climate variability on agriculture production of the district.	21
5	Measures to cope with climate variability.	29
6	Climate Resilient Technologies (CRT) Interventions and its impact on yield of crops.	36
7	Plan to cope with weather related contingencies.	42
8	Role of Agro-Meteorological advisories.	57
9	Commodity wise status of climate resilient agriculture value chains of the district.	62
10	Extension strategies for adaptation to climate change in the district.	75
	Annexure I	81
	Annexure II	83
	Annexure III	86
	Annexure IV	87

Chapter 1: General Profile of the District

1.1 Geographical area and location

Hingoli district came into existence by division of Parbhani district on 1st of May, 1999. Hingoli was known as Vinguli, Vingmulha, and Linholi in ancient times. It is one of the eight districts of Marathwada Region. It is located on the eastern side of Maharashtra State. Hingoli is situated at the northern part of Marathwada in Maharashtra. It is surrounded by Buldana and Washim districts to the north. Yavatmal and Nanded districts lie to the west. The Latitude of Hingoli district is 19.05' to 20.05' N and Longitude is 76.30' to 77.30'E. Hingoli district comprises five talukas viz. Hingoli, Basmath, Aundha Nagnath, Kalamnuri and Sengaon. The district has a geographical area of 4,66,100 Hectares. Which forms 1.47% of the total geographical area of Maharashtra State. The Sengaon, Hingoli and Aundha-Nagnath tehsils of the district are surrounded by hilly area. The district is 500 meters high from sea level. Malhivara range separates the Painganga and Kayadhu valleys. Hingoli comes in Central Maharashtra plateau Zone and Central Vidarbha agro-climatic zones.

1.2 Tehsil details the number of villages.

In Hingoli District there are 5 tehsils are as below

Sr. No.	Name of Taluka	No. of Villages
1.	Sengaon	133
2.	Hingoli	153
3.	Aundha	122
4.	Kalamnuri	151
5.	Basmath	152
	Total	711

1.3 Demographic information

The district comprises 711 villages in Hingoli District. The total population is 11,77,345 accommodating in households 2,28,271 with an average household's size of approx. 5 members per family.

Gender distribution:

The males in Hingoli District constitute 6,06,294 (51.50%) and females constitute 5,71,051 (48.50%). The sex ratio is 942 per thousand males.

Literacy profile:

The average literacy rate of Hingoli District is 67.16% as per Census of India, 2011. The male literacy is 74.31% with respect to male population and the female literacy is 59.57% with respect to the female population. The literacy gap between male & female is approx. 14.74%.

(Source- SREP,2019 ATMA, Hingoli)

1.4 Annual average rainfall of the district with segregation of tehsils receiving highest and lowest rainfall.

Hingoli District Average Annual Rainfall is 895 mm. In 2023 Highest rainfall was observed in Kalamnuri Taluka about 829.30 mm and lowest rainfall was in Sengaon taluka 565.50 mm

Sr. No	Name of Taluka	Normal Rainfall	2019	2020	2021	2022	2023
1	Hingoli	966	788.5	1043.8	1171.2	943.9	789.3
2	Kalamnuri	888.9	853.3	913.2	1130.4	948.4	829.3
3	Basmat	916	703.6	884.2	1011.1	889.9	788.2
4	Aundha	816.7	677.2	1250.6	1191.8	824.8	749.8
5	Sengaon	838.3	700.8	854.9	922.3	783.1	565.5
	Total	895	750.9	971.6	1080.7	885.6	746.5

(Source: District Superintending Agriculture Officer, Hingoli)

1.5 Max. and Min. temperature of the district with segregation of tehsils having highest and lowest temperature.

The maximum temperature of the district is 42.6 degree Celsius in Kalamnuri taluka and minimum temperatures is 10.6 Degree Celsius in Aundha-Nagnath taluka

(Source- SREP, ATMA Hingoli)

1.6 River network of the district

The district is well drained by river systems. There are three main rivers: Penganga River, Purna, and Kayadhu river. The river Penganga originates from Buldhana District, Maharashtra. It enters in the district from Sengaon Taluka towards the northeastern corner and by making a journey of about 108 Kilometers in the district moves towards Yavatmal district. Isapur Dam is constructed on the river. It is one of the most important rivers of the Deccan plateau. Kayadhu River is a tributary of Penganga River. This River originates from the hill ranges near Agarwadi Village, Risod taluka of Washim district. The length of the river in the district is 80.50 kms. It is a seasonal river, which dries up in summer. The Purna River rises from Ajanta hill ranges from Aurangabad District. It enters the district from Jalna district. After making a journey of nearly 100 kms, it moves towards Parbhani District. Yeldari and Siddheshwar dams are constructed on the river.

(Source- SREP 2019 ATMA, Hingoli)

1.7 Irrigation potential of the district

A) Painganga River:

Painganga river is the main river in the district. It flows in the northern region of the district. The river passes through Sengaoon and Kalamnuri talukas. Isapur dam was built on this river which supplies water for crops irrigation. The proposed area is 17,502 Ha. and the actual irrigated area is 13,732 Ha. of Kalamnuri and Basmat taluka.

B) Purna River:

Purna river flows from the Southern part of Sengaoon. It flows further south from Aundha and Basmath talukas. Yeldari and Siddheshwar dams were built on Purna. Proposed irrigation area is 22,668 Ha. and the actual irrigated area is 22160 Ha.

C) Kayadhu River:

This river is called the life line of the district and flows through Sengaoon, Hingoli, Aundha-Nagnath and Kalamnuri. It meets further to Painganga river in Nanded.

(Source-District Statistical Book 2022 AND ATMA SREP Hingoli 2019)

Irrigation Area (Ha.)

Sr. No	Source of Irrigation	Area covered by source (Ha)
1	Canals	45400
2	Tanks	3900
3	Wells	23800
4	Bore Wells	13600
5	Lift irrigation	200
6	Farm ponds	1800
	Total	88700

(Source- District Survey Report 2021-22)

1.8 Different types of soils in the district

The Soils of the district are derived from the basaltic lava flows. Soils in central, southern and eastern regions of the district near the banks of Penganga and Purna rivers are deep. Soil depthness ranging in depth from 1.00 to 2.00 m is blackish in color and rich in plant nutrients.

Sr. No.	Name of the Block	Deep Black		Red Soil		Sandy Soil		Sandy loams		Medium Black		Shallow Black	
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1	Hingoli	23572	26.45	---	---	---	---	---	---	19377	21.74	46175	51.81
2	Aundha Nagnath	16150	28.45	---	---	---	---	---	---	8839	15.57	31779	55.98
3	Kalamnuri	31527	41.93	---	---	---	---	---	---	12076	16.06	31588	42.01
4	Basmath	28391	43.28	---	---	---	---	---	---	14867	22.66	22344	34.06
5	Sengaon	28303	29.54	---	---	---	---	---	---	17401	18.16	50119	52.30
	Total	127943	33.45	---	---	---	---	---	---	72560	18.97	182005	47.58

(Source- District Soil Survey and Soil Testing Office, Hingoli)

There are three major categories of soils in the district. These categories include very shallow soils with soil depth ranging between 7.5 cm to 100 cm, shallow soils with depth of 7.5cm to 25cm; light to medium soils 25cm to 50cms; deep medium soils with 50 to 100 cm depth and deep block soils of more than 100 cm depth.

1.9 Different zones according to prevailing agro-ecological situations.

According to the agro- climatic conditions, soils, ground water potential and rainfall pattern, the district is divided into four Agro Ecological Situations (AES) for the preparation of situation specific and farmer need based SREP. However, on the basis of the Remote Sensing Maps provided by MRSAC and visual observations following AES were identified.

AES I: Represents the most intensive and productive zone of agriculture in the district. The soil in this AES is Very deep black. Almost all of the area comes under the command area of Purna and Upper Painganga Projects. Soybean, cotton, gram and wheat are important crops. But this area is famous for its traditional crops like turmeric, banana and Sugarcane. Now, non-traditional Rabbi onion as vegetable crop and onion seed production is gaining popularity in these areas. The major farming system here is Agriculture + Horticulture, which are covers area of Basmath, Kalamnuri and Aundha tehsils

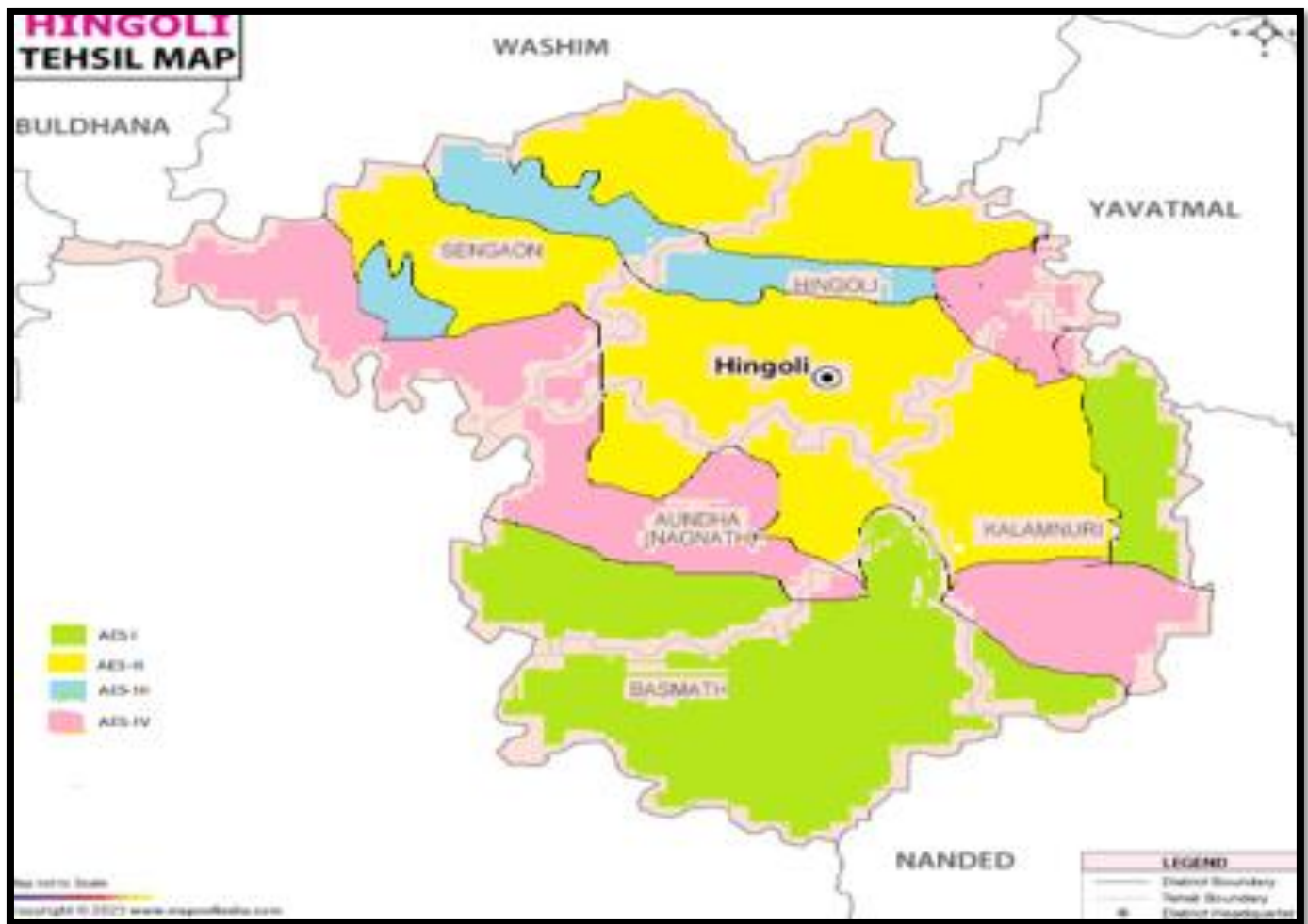
AES II: the soils are Deep Black to Medium Black coupled with moderate ground water potential. Agriculture, Agriculture + Horticulture and dairy are major farming systems. Which are covered area of Sengaoon, Hingoli, Kalamnuri and Aundha tehsils.

AES III: Has medium to shallow soils with moderate irrigation potential. Agriculture, Agriculture + Horticulture and dairy are major farming systems. Which are covered area of Sengaoon and Hingoli tehsils.

AES IV: Has comparatively thin soil cover. In this area water is the most limiting factor for agriculture due to lack of irrigation canals as well as poor to nil ground water potential. Agriculture, animal husbandry, wage earnings and horticulture are the prominent farming systems. Which covers area of Sengaoon, Hingoli, Aundha, Kalamnuri and Basmath tehsils.

(Source-SREP ATMA, Hingoli, 2019)

Spread of AES in the District



(Source: SREP ATMA Hingoli, 2019)

Agro-ecological situations and their characteristics.

Sr. No.	Name of the Agro-climatic zone (ACZ)	Name of the Agro ecological situation (AES)	Block covered	Characteristics
1	ACZ 7 & ACZ 8	AES- I	Basmath, Kalamnuri, Aundha Nagnath	Very heavy to heavy soils with good irrigation facilities
2		AES-II	Sengaon, Hingoli, Aundha, Nagnath, Kalamnuri	Heavy to medium soils with moderate irrigation facilities
3		AES-III	Sengaon, Hingoli	Shallow soils with moderate irrigation facilities
4		AES-IV	Sengaon, Hingoli, Aundha Nagnath, Kalamnuri, Basmath	Shallow soils without irrigation facilities

(Source-SREP ATMA, Hingoli)

Chapter2: Agriculture Profile of District

2.1 Land use classification of the district (area is in ha)

Forest land, barren and uncultivable land, area under non-agricultural uses, cultivable waste land, permanent pastures, current fallows, other fallows and Net area sown, area sown more than once, gross cropped area and cultivable area.

Sr. No.	Name of Land use	Area (ha.)
1	Forest land	22900
2	Barren and uncultivable land	5600
3	Area under non-agricultural uses	10100
4	Cultivable waste land	9800
5	Permanent pastures	15500
6	Current fallow	42400
7	Other fallow	13100
8	Net area sown	346600
9	Area sown more than once	266100
10	Gross cropped area	612700
11	Cultivable area	412000

(Source District Survey Report 2021.22, Page No. 5)

2.2 Different types of Irrigation facilities/water resources available in the district

Sr. No	Source of Irrigation	Area covered by source (Ha.)
1	Canals	45400
2	Tanks	3900
3	Wells	23800
4	Bore Wells	13600
5	Lift irrigation	200
6	Farm ponds	1800
	Total	88700

(Source: District survey report 2021-22)

2.3 Types of crops grown, cropping pattern, cropping intensity and farming systems.

The main crops in the district are soybean, cotton, tur, turmeric, kharif jowar, wheat, and gram. Cash crops like Sugarcane, Cotton, and Fruit crops such as Banana, orange and mandarin orange are grown in the district. The major cropping seasons in the district are Kharif and followed by Rabbi. In recent years, the area under crops such as soybean, Bt. cotton, banana, vegetables, onion, turmeric and marigold has increased. This change is attributed to comparatively better prices to these crops and increase in area under irrigation. The activities allied to agriculture are playing an important role in providing gainful employment and income to rural masses. Cropping intensity of Hingoli District is 177% (Source- SREP, ATMA Hingoli, 2019)

Details on Crops and Cropping Systems in the District

Sr. No.	Blocks	Major Crops						Cropping system
		Name	Area in 00 Ha	Name	Area in 00 Ha	Name	Area in 00 Ha	
Kharif								
1	Hingoli	Soybean	525.42	Cotton	113.77	Tur	67.32	Soybean-Gram-Fallow, Soybean-Wheat-Fallow Cotton -Fallow
2	Kalamnuri	Soybean	247.41	Cotton	442.22	Tur	30.82	Soybean-Gram-Fallow, Soybean-Wheat-Fallow Cotton -Fallow
3	Aundha Nagnath	Soybean	285.6	Cotton	213.35	Kharif Jowar	71.96	Soybean-Gram-Fallow, Soybean-Wheat-Fallow Cotton -Fallow
4	Basmath	Soybean	317.54	Cotton	218	Tur	39.17	Soybean-Gram-Fallow, Soybean-Wheat-Fallow Cotton -Fallow
5	Sengaon	Soybean	636.3	Cotton	104.17	Tur	80.42	Soybean-Gram-Fallow, Soybean-Wheat-Fallow Cotton -Fallow

Sr. No.	Blocks	Major Crops						Cropping system
		Name	Area in 00 Ha	Name	Area in 00 Ha	Name	Area in 00 Ha	
Rabbi								
1	Hingoli	Gram	184.79	Wheat	56.90	Safflower	16.42	Soybean-Gram-Fallow, Soybean-Wheat-Fallow Cotton –Fallow
2	Kalamnuri	Gram	119.22	Wheat	100.20	Safflower	48	Soybean-Gram-Fallow, Soybean-Wheat-Fallow Cotton –Fallow
3	Aundha-Nagnath	Gram	84.20	Wheat	62.80	Safflower	46.90	Soybean-Gram-Fallow, Soybean-Wheat-Fallow Cotton –Fallow
4	Basmath	Gram	131.90	Wheat	110.30	Rabbi Jowar	188	Soybean-Gram-Fallow, Soybean-Wheat-Fallow Soybean – R. Jowar-Fallow Cotton –Fallow
5	Sengaon	Gram	84.20	Wheat	26.50	Safflower	46	Soybean-Gram-Fallow, Soybean-Safflower-Fallow Cotton –Fallow

(Source: District Superintending Agriculture Officer, Hingoli)

2.4 Year Wise area, Production and productivity of Major Crop District- Hingoli

(A-Area 00 Ha, P-Production 00 MT, Y-Productivity Kg/ha) (Cotton 00 Gathi, 170 Kg)

Name of Commodity	2018			2019			2020			2021			2022		
	A	P	Y	A	P	Y	A	P	Y	A	P	Y	A	P	Y
K. Jawar	61.39	17.28	281.41	51.07	31.13	609.48	48.91	10.43	213.33	45.72	15.10	330	41.67	23.24	558
Tur	410.60	166.78	406.2	504.94	458.07	907.17	446.39	143.29	321	407.85	159.49	391	384.18	180.90	471
Mug	84.60	56.48	667.59	71.05	50.77	714.5	82.88	31.02	374.32	79.52	40.78	513	67.49	40.57	601
Udid	65.03	46.46	714.43	53.77	40.75	757.85	66.20	27.49	415.32	56.40	28.67	508	58.42	37.08	635
Soybean	2368.29	3265.97	1379.04	2503.07	4857.77	1940.73	2636.77	3036.83	1151.7	2552.29	2510.48	984	2574.29	4088.04	1588
Cotton	459.76	942.99	348.68	470.11	1211.28	438.02	388.43	799.71	350	306.54	99.20	324	321.59	134.96	420

(Source: District superintending agriculture officer, Hingoli)

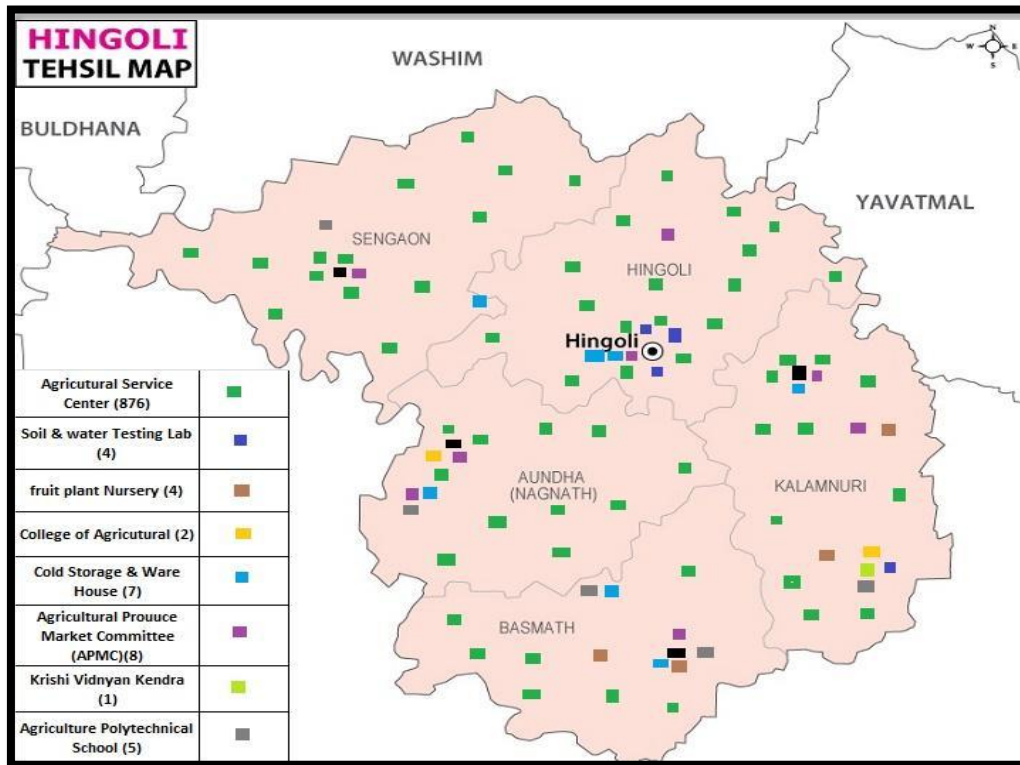
2.5 Other Facilities:

Agriculture service center's (ASCs), KVK, Agri-clinic agri-business training center's (ACABC), Cold storages and Warehouses, Soil/fertilizer/leaves / water testing labs, Automatic weather Stations, Seed processing centers, nurseries (private and government) of fruit crops, forestry crops, vegetables, sugarcane etc. and Farmer producer companies / SHGs and their businesses, Regulated markets, agriculture credit flow and related institutes, Agriculture education institutes.

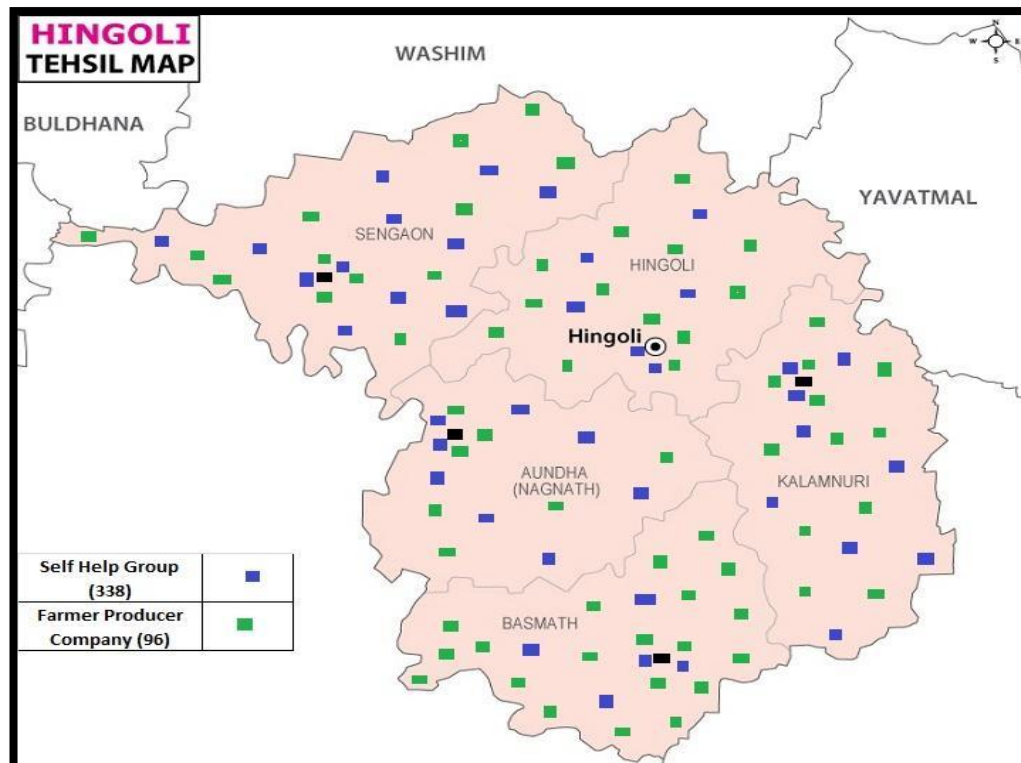
Sr. No.	Type Of Infrastructure	Utility	No / Area
1	Taluka Fruit Plant Nursery, Basmath	Propagation Of Seedlings	1
2	Soil Testing Lab, Tondapur	Soil And Water Testing	1
3	Vasundhara Soil & Water Testing Lab, Hingoli	Soil And Water Testing	1
4	Prerna Soil & Water Testing Lab, Hingoli	Soil And Water Testing	1
5	Paturkar Laboratories, Hingoli	Soil And Water Testing	1
6	Krishi Vidnyan Kendra, Tondapur	Agricultural Extension And Short Term Research	1
7	T.S.F.Akhada Balapur	Seed Production	1
8	Valu Mata Kendra (Bull Mother Farm)	Breeding Of Cattles	1
9	College Of Agriculture, Tondapur Ta. Kalamnuri	Education And Extension	1
10	College Of Agriculture, Golegaon, Ta.Aundha -Nagnath	Education And Extension	1
11	College Of Food Technology, Aundha-Nagnath	Education And Extension	1
12	Agricultural Polytechnic School, Hatta, Ta Basmath	Education And Extension	1
13	Agricultural Technical School, Basmath Ta Basmath	Education And Extension	1
14	Agricultural Polytechnic School, Jawala-Bazar, Ta-Aundha-Nagnath	Education And Extension	1
15	Agricultural Polytechnic School, Goregaon Tal Sengaon	Education And Extension	2
16	Agricultural Polytechnic School Tondapur Ta.Kalamnuri	Education And Extension	1
17	Onkar Nursery Dandegaon Ta. Kalamnuri	Provide Fruit Plant And Propagation Of Seedlings	1
18	Shree Krishna Fruit Plant Nursery Ridhora Ta. Basmat	Provide Fruit Plant And Propagation Of Seedlings	1

(Source- SREP ATMA Hingoli, 2019)

A) Map of ASCs, Soil and water testing labs, Fruit nurseries, agriculture education institutes, cold storages, ware houses, APMCs, Krishi Vigyan Kendra's, Agri poly technical schools etc. of Hingoli district.



B) Farmer producer companies and Self-help group map



Chapter 3: Weather trend of district

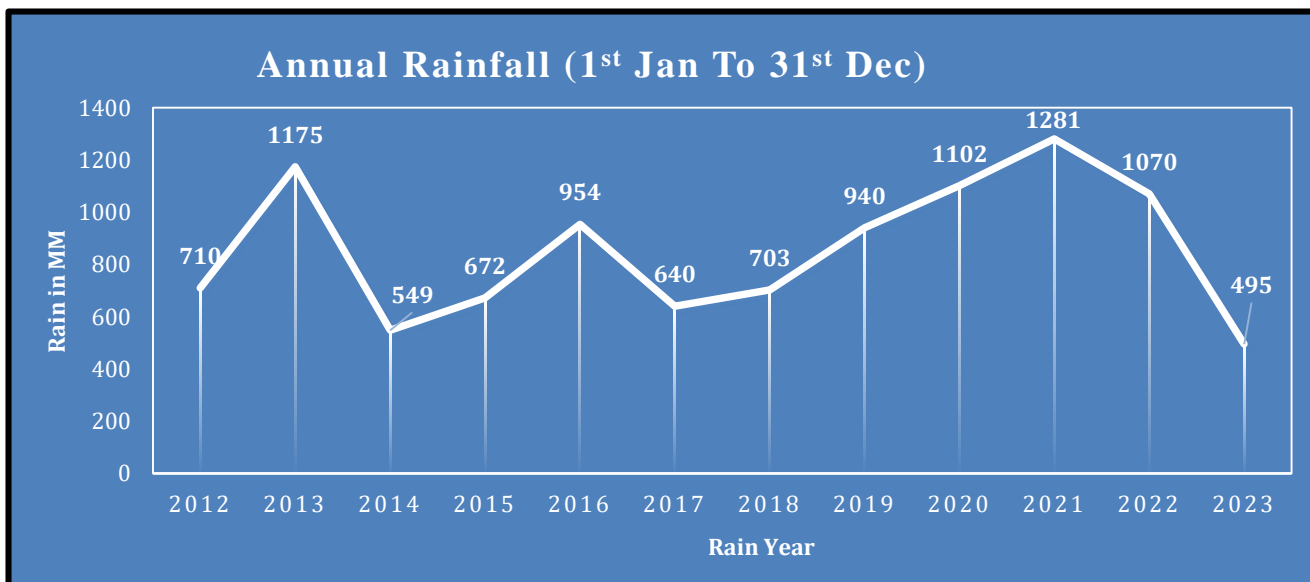
Introduction

Mahavedh project is operationalised by the Government of Maharashtra (GoM) through Public Private Partnership with M/S Skymet Weather Services pvt.ltd. At present 2127 Automatic Weather Stations (AWS) have been installed at circle level in Maharashtra. Weather data fetched from these Automatic Weather Stations (AWS) is useful for implementation of Public Welfare and Development schemes, Research and Development, Disaster management and Allied services.

PoCRA seamlessly combines forecast data from IMD and historical weather data from Mahavedh through APIs, integrating and storing the information in a database. This consolidated data is utilized to generate tailored weather-based advisories for farmers. Leveraging AICRPAM's crop calendars, PoCRA's automated systems craft pest and disease advisories to enhance agricultural decision-making.

3.1 Annual average rainfall of last twelve years.

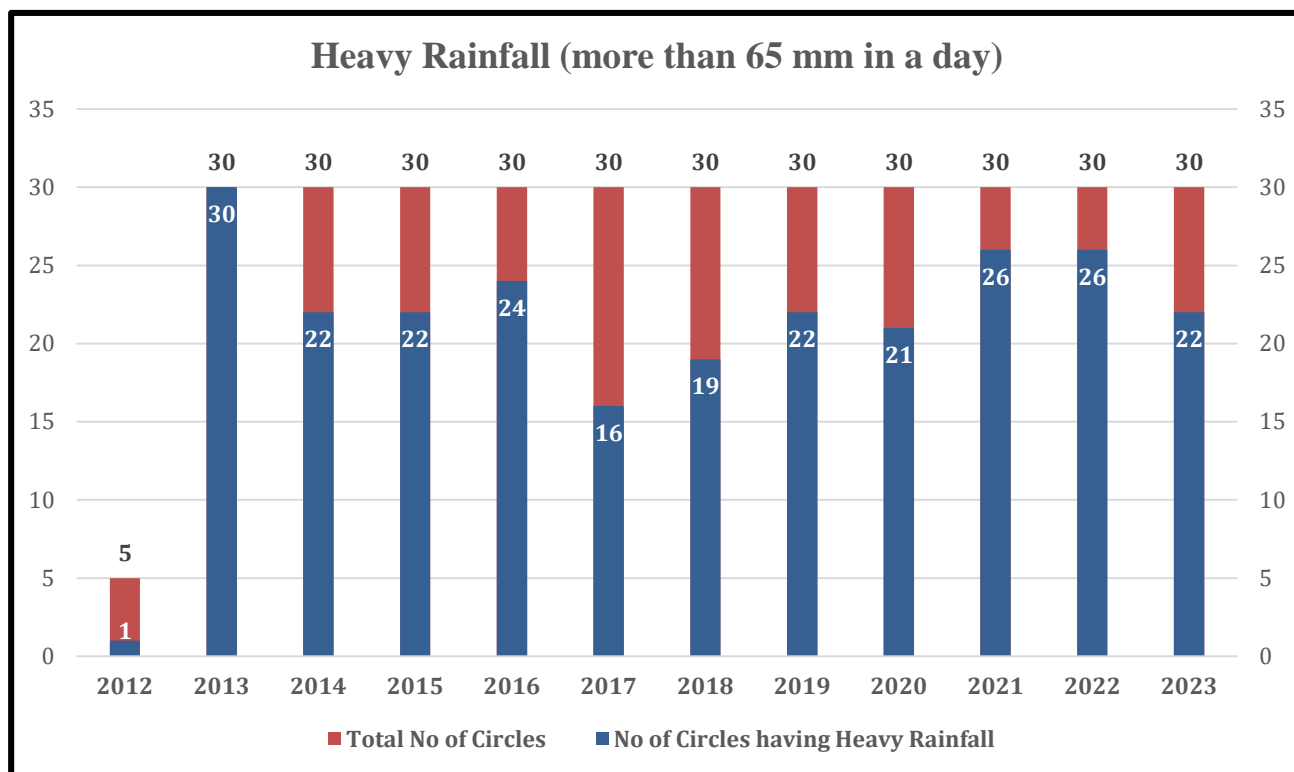
Normal or average rainfall is the amount of precipitation that we expect per year (in a given area). It is obtained and set by calculating the average (mean) of precipitation recorded in an area. Annual rainfall or precipitation is the sum of daily rainfall in a year.



The graph 3.1 presents annual rainfall data of Hingoli district from 2012 to 2023, highlighting fluctuations in precipitation. Notably, the lowest recorded rainfall was in year 2023 at 495 mm, while the highest occurred in year 2021 with a total of 1281 mm annual average rainfall.

3.2 Heavy rainfall.

Heavy rainfall is defined as rainfall that exceeds 65 mm in 24 hours.



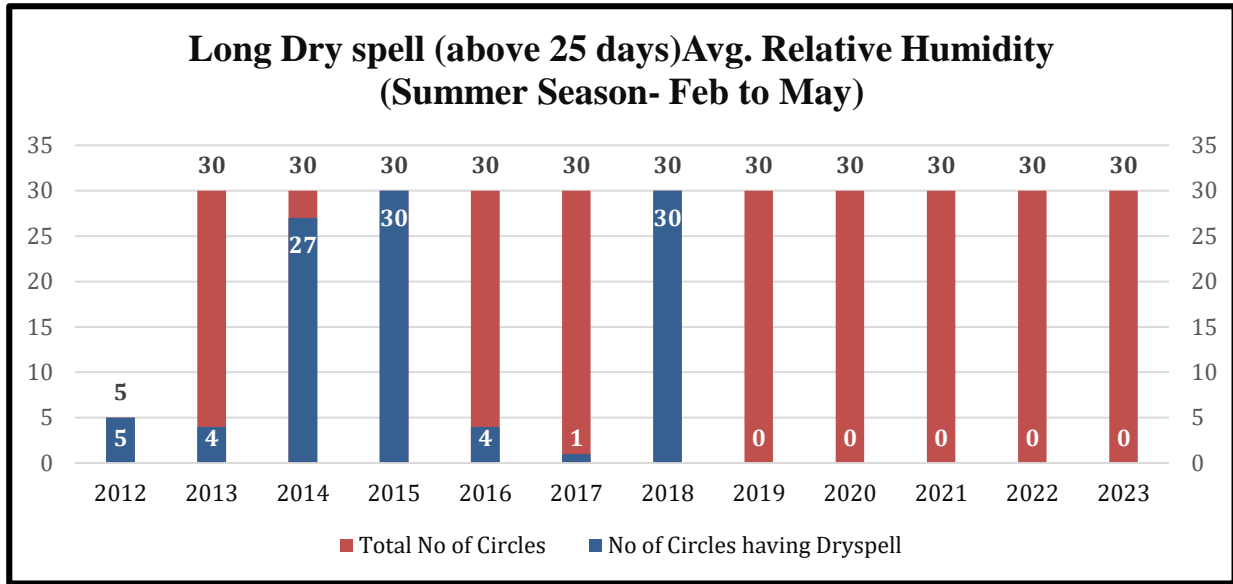
The provided graph 3.2 illustrates occurrences of heavy rainfall in 63 circles within the Hingoli district from year 2012 to 2023. Notably, in year 2013, heavy rainfall affected the maximum number of circles, out of the 30 circles all 30 were experienced such conditions. Conversely, the year 2017 recorded a lower incidence of heavy rainfall, with only 16 circles being affected in Hingoli district.

3.3 Dry spells.

A dry day is when rainfall is below 2.5 mm, and consecutive dry days form a dry spell in monsoon period. Longer dry spells impact crop growth. Categories include very short (up to 7 days), short (7-14 days), medium (14-25 days), and long (more than 25 days) dry spells, each influencing crop development differently.

3.3.1 Long Dry spell

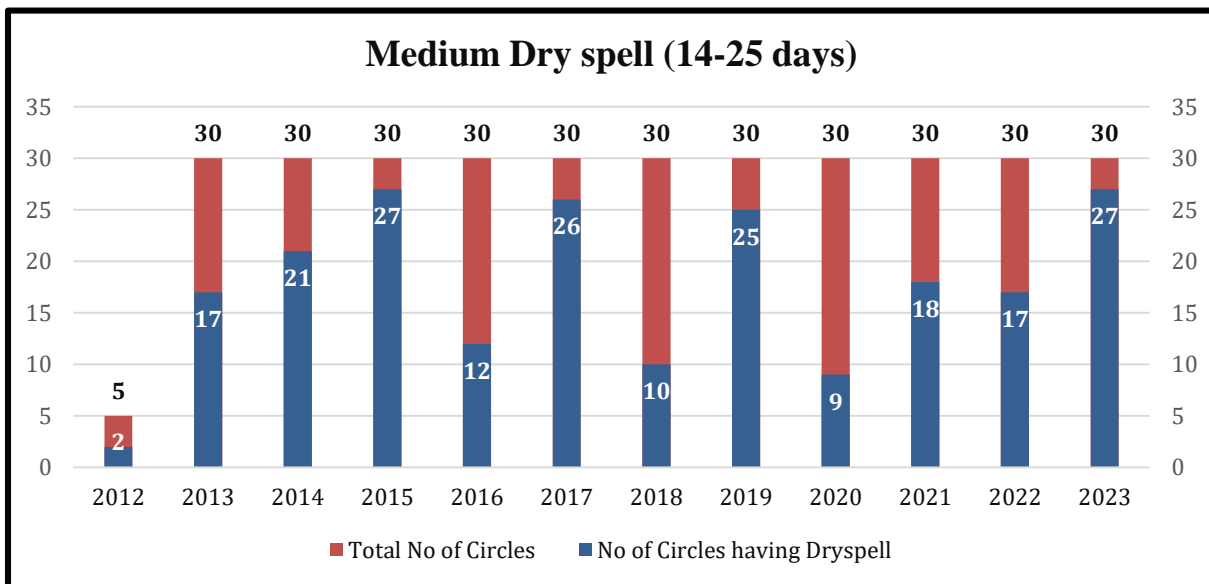
Long Dry spell is a prolonged period above 25 days of dry days in monsoon period



A graph (Graph 3.3.1) that shows the trend of long dry spells observed in a Hingoli district. The data covers the total number of circles and the circles that affected dry spell (more than 25 days) from the year 2012 to 2023. The graph shows that in year 2015 and 2018, all circles in the district experienced severe long dry spells. Conversely, in year 2019 to 2023, there was no long dry spell, across all 30 circles in the district.

3.3.2 Medium Dry spell

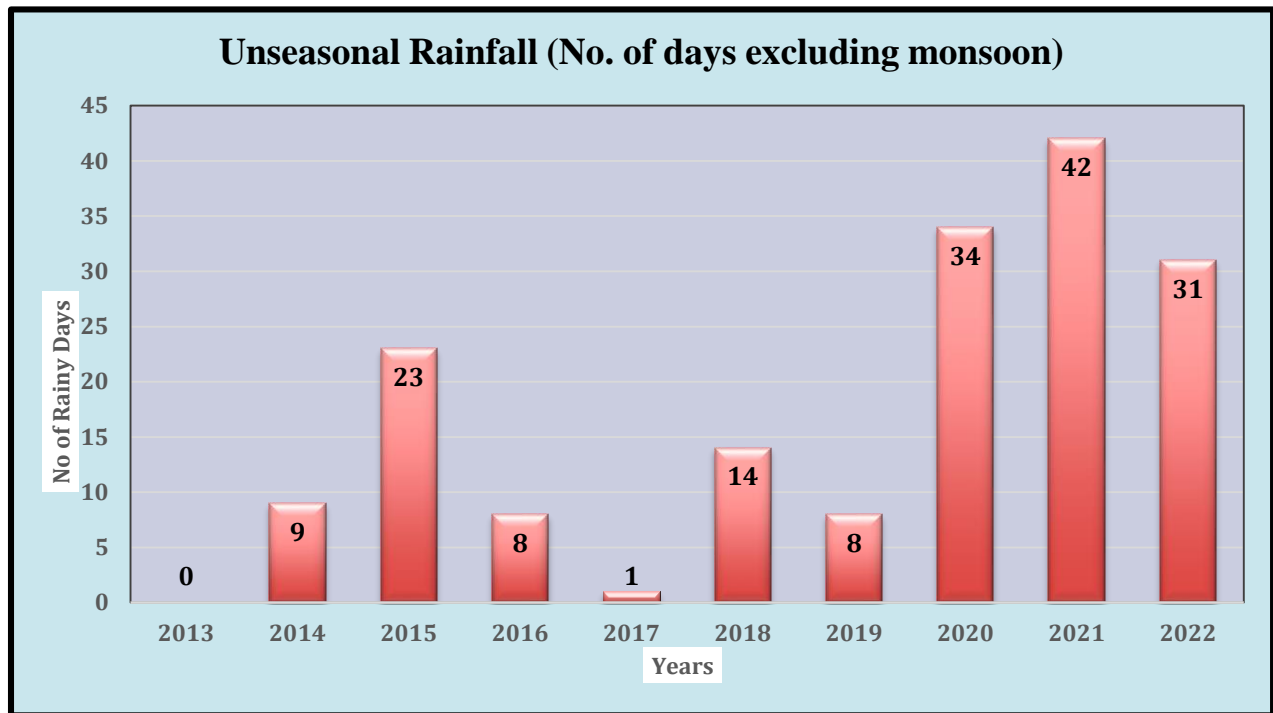
Medium Dry spell is a period of 14-25 dry days in monsoon period



A graph (Graph 3.3.2) that shows the trend of medium dry spells observed in a Hingoli district. The data covers the total number of circles and the circles that affected medium dry spell (14 to 25 days) in Hingoli district from the year 2012 to 2023. The graph shows that in year 2015 and 2023, 27 circles out of 30 circles in the district experienced medium dry spells. Conversely, in year 2020, there was only 9 circles out of 30 circles experienced medium dry spell in the district.

Unseasonal rainfall.

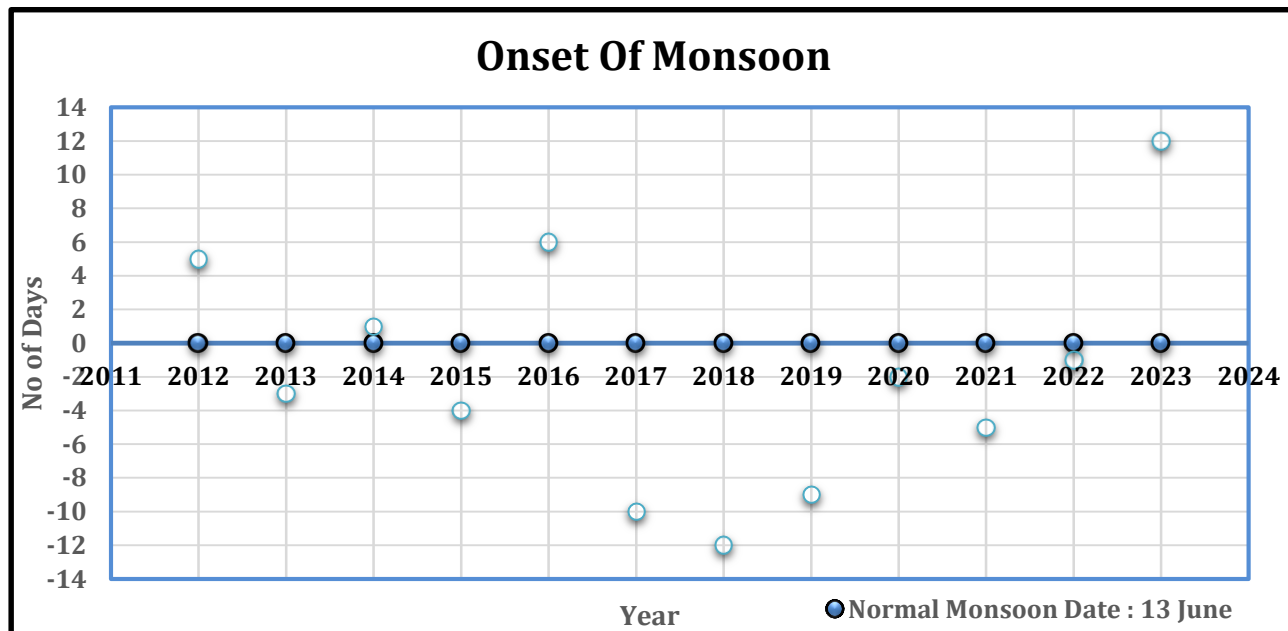
Rainfall received during non monsoon days is treated as unseasonal rainfall. Unseasonal rains-when there is a sudden change in atmospheric pressure, it can result in precipitation, even during non-monsoon seasons.



The graph 3.4 illustrates the annual occurrences of unseasonal rainfall in the Hingoli district from year 2013 to 2022. The data reveals a variation ranging from 0 days to 42 days of unseasonal rainfall.

3.4 Monsoon onset delay

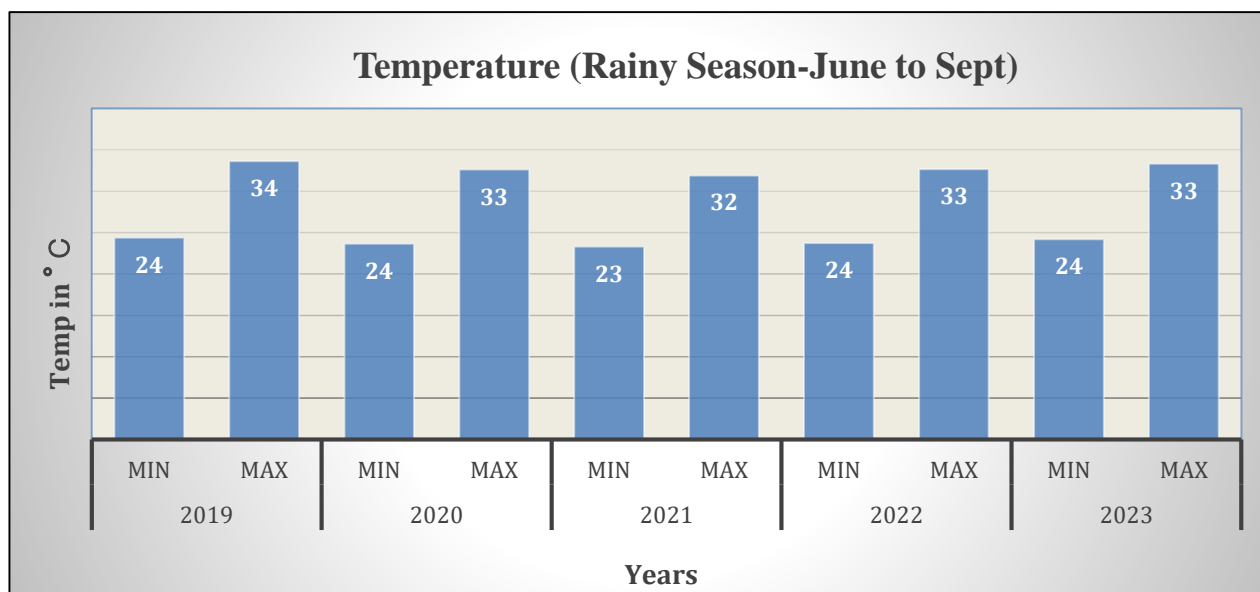
The onset of the southwest monsoon refers to the time when the southwest monsoon winds begin to establish over a region, bringing widespread rainfall. The onset of the monsoon in Maharashtra typically occurs around early June. However, the exact timing can vary slightly from year to year. According to the document published by IMD dated 15th May, 2020 (CRS research report), Normal monsoon onset date is 13th June in Hingoli district.



The graph 3.5 depicts the annual onset of the monsoon. The blue line represents the normal day of onset of monsoon. The onset days show variations ranging from -12 to 12 days. Notably, in year 2012, 2014, 2016 and 2023 the monsoon arrived delayed than the normal onset date. However, in remaining years the monsoon was notably arrived earlier.

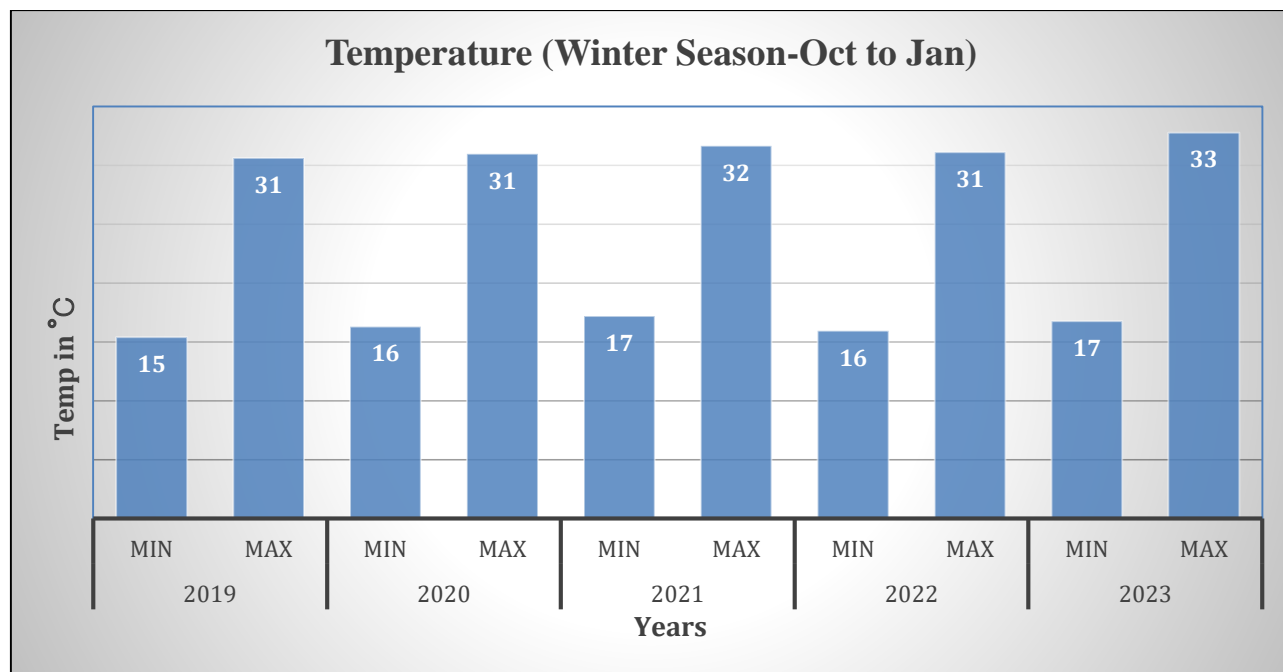
3.5 Temperature

3.5.1 Temperature ((Rainy Season-June to Sept)



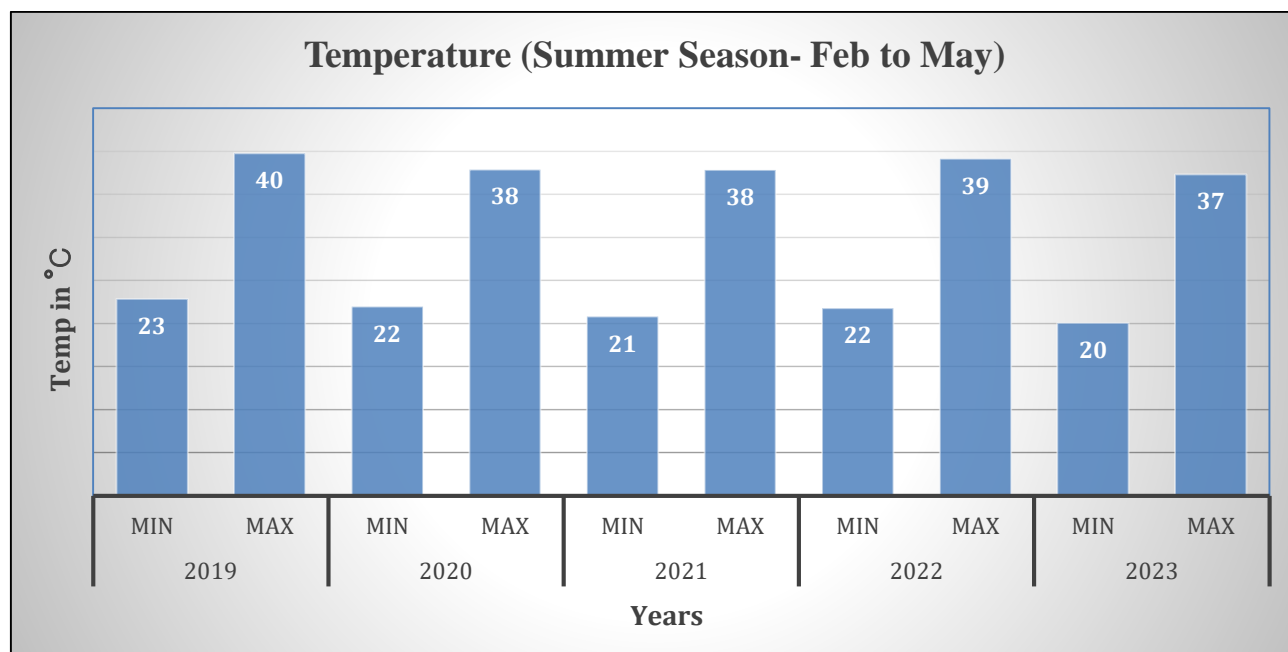
The graph 3.6.1 presents the temperature in the Hingoli district during the rainy season from year 2019 to 2023 exhibited a consistent range, with minimum temperatures fluctuating between 23-24 °C and maximum temperatures ranging from 32-33°C.

3.5.2 Temperature (Winter Season-Oct to Jan)



The graph 3.6.2 presents the temperature in the Hingoli district during the winter season from year 2019 to 2023 exhibited a consistent range, with minimum temperatures fluctuating between 15-17 °C and maximum temperatures ranging from 31-33 °C.

3.6.3 Temperature (Summer Season- Feb to May)

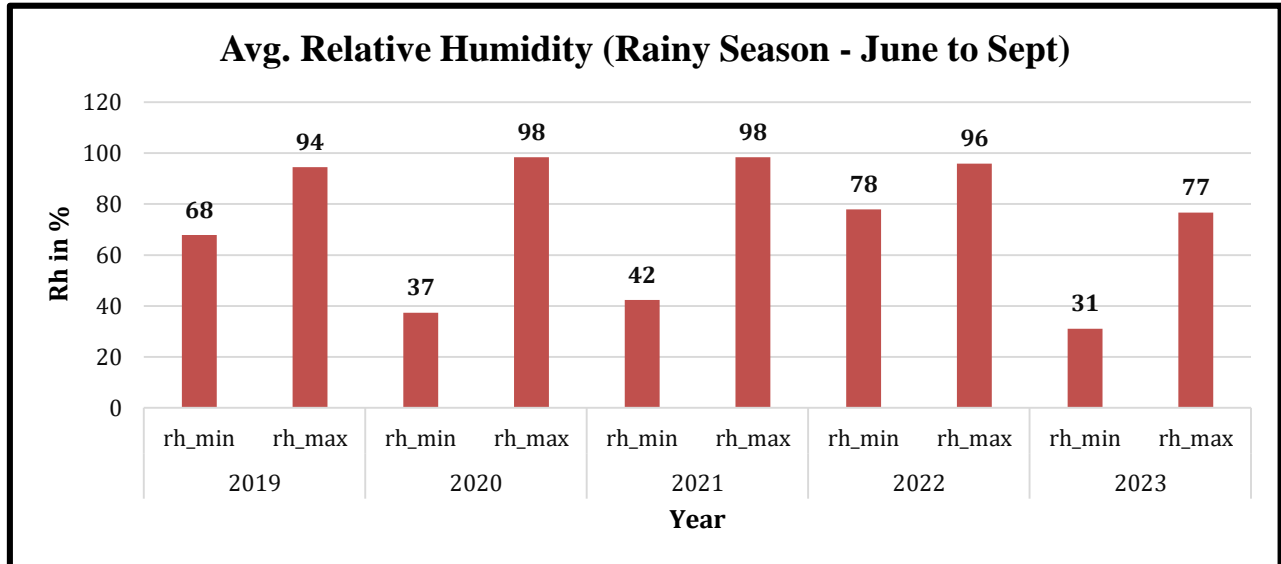


The graph 3.6.3 presents the temperature in the Hingoli district during the summer season from 2019 to 2023 exhibited a consistent range, with minimum temperatures fluctuating between 20-23 °C and maximum temperatures ranging from 37-40 °C.

3.6 Relative Humidity

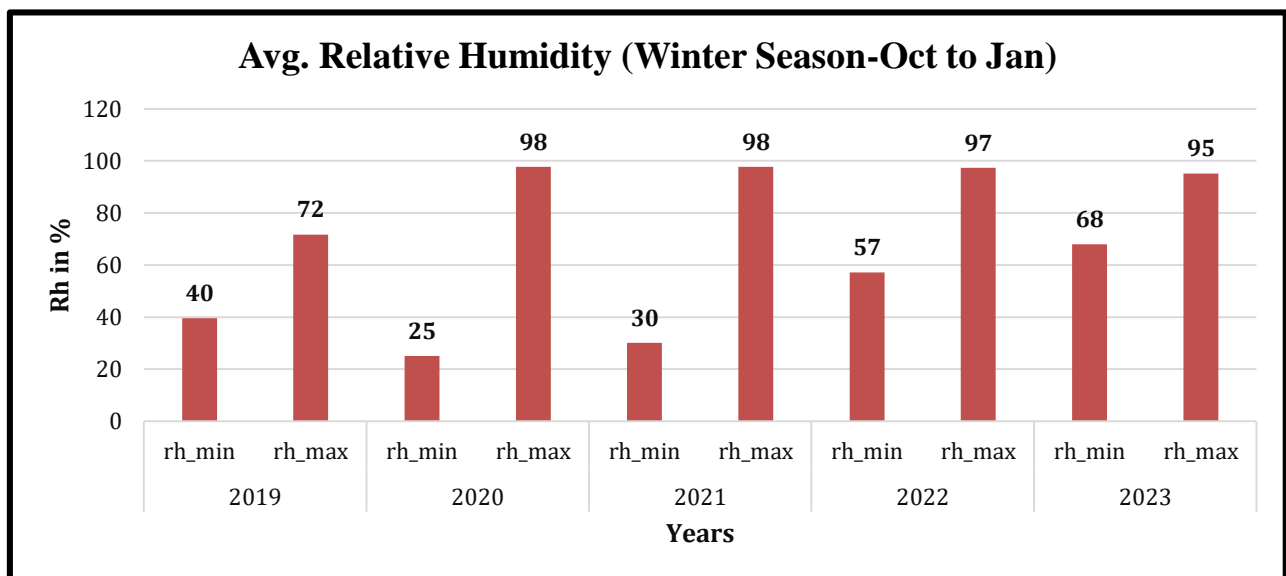
Relative Humidity is the ratio of the actual quantity of moisture at a certain temperature and pressure to the maximum it can hold at the same temperature and pressure. It is usually multiplied by 100 and expressed in percent.

3.5.1 Avg. Relative Humidity (Rainy Season - June to Sept)



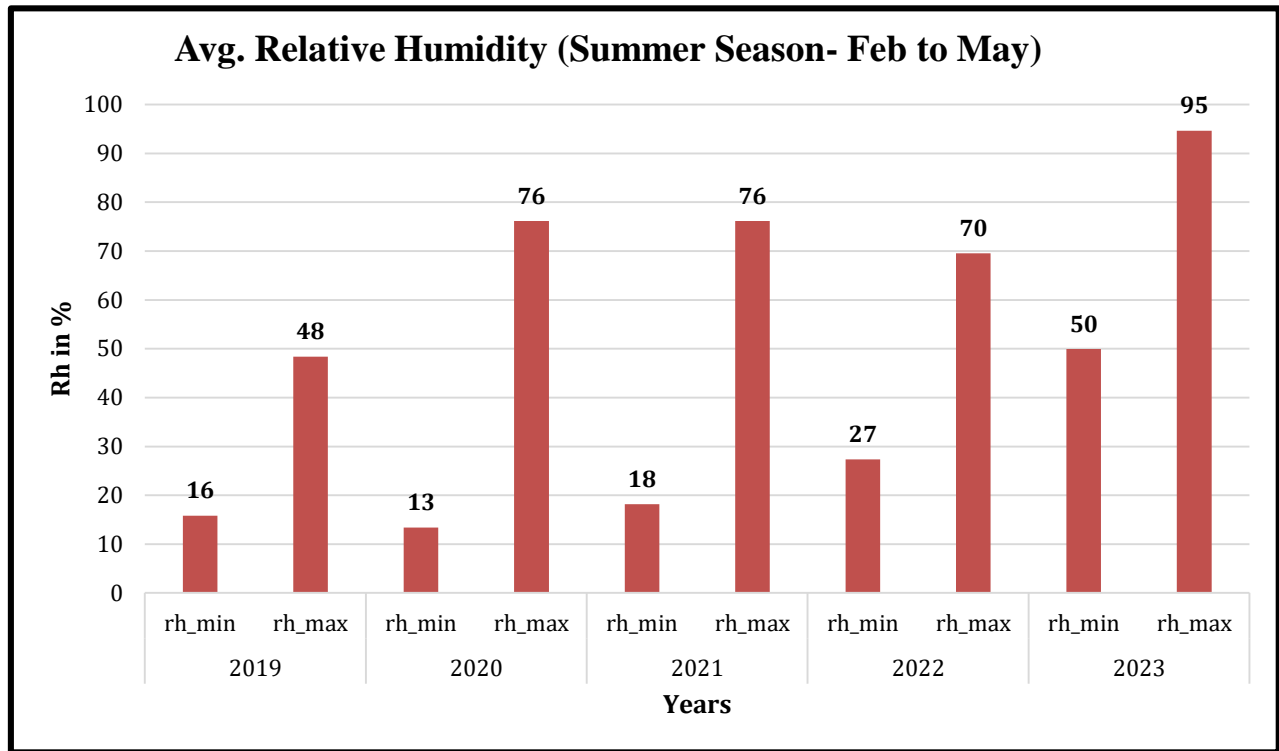
The graph 3.7.1 illustrates humidity levels during the rainy season in the Hingoli district, revealing a variation in minimum humidity from 31% to 78% and maximum humidity ranging between 77% and 98%.

3.5.2 Avg. Relative Humidity (Winter Season-Oct to Jan)



The graph 3.7.2 illustrates humidity levels during the winter season in the Hingoli district, revealing a variation in minimum humidity from 25% to 68% and maximum humidity ranging between 72% and 98%.

3.5.3 Avg. Relative Humidity (Summer Season- Feb to May)



The graph 3.7.3 illustrates humidity levels during the summer season in the Hingoli district, revealing a variation in minimum humidity from 13% to 50% and maximum humidity ranging between 48% and 95%.

Chapter 4: Impact of climate variability on agriculture production

4.1 Impact of temperature :

Sr. No.	Crop	Crop Growth	Water Availability	Pests and Diseases Infestation
1	Soybean	Soybean germinate between 15-32°C. It will not grow below 10°C and above 40°C. If the maximum and minimum temperature go up by 10°C and 1.5°C respectively and gain in yield comes down to 20 percent. High night temperatures (28°C) resulted in smaller seed size, lower seed weight, and a reduced number of effective pods and seeds per plant, and thus, a significant reduction in yield per plant.	Soil moisture availability directly affected by temperature variation. At the time of pod formation when temperature goes high above 35°C soil moisture depletion and due to insufficient moisture pod development and grain size affect soybean yield decreases by 30%.	In the month of August & September last year in Hingoli District Dry spell occurred due to dry spell infestation of whitefly on soybean leads to spread of yellow vein mosaic virus.
2	Cotton	Cotton crop required soil temperatures between 20-30°C and average temperature range 24 to 30 °C. When Temperature goes below 20°C during the flowering period, maturity is delayed. When temperature goes above to 35°C bad effect on pollination and boll formation. Also leads to decrease in number of bolls and affect fiber quality and decrease yield	Availability of water play important role in various growth stage of water but in Hingoli kharif 2023 total 68% specification and it is uneven with dry spell affects growth and yield of cotton	In the month of September - October generally dry spell occurred in Hingoli district. Due to dry spell Increase Dahiya disease and Increase Incidence of Thrips and White fly which lead to decrease yield
3	Pigeon pea	Pigeon pea needs moist and warm weather during germination (30-35°C), slightly lower temperature during active vegetative growth (20-25°C) but about 15-18°C during flowering and pod setting, however, at maturity it needs higher temperature of around 35-40°C.	Water availability during flowering and pod formation increases yield. Post Monsoon rain is beneficial to yield of tur	Cloudy weather in October caused an infestation of leaf mining insects and Heliothis.

4	Wheat	Wheat crop requires 20°C to 25°C for germination, 16°C to 20°C for tillering, 20°C to 23°C for accelerated growth and 23 to 25°C for proper grain filling. Wheat plants are sensitive to very cold or frost injury at any stage of growth particularly at reproductive growth if temperature is below 15°C.	In order for wheat to reach physiological maturity and its potential yield it needs on average 350-600 ml of water. In Hingoli district 95% of wheat sown as an irrigated crop, Water availability for the command area is less and due to high temperature evaporation and soil moisture losses occurs which affects the frequency of scheduling irrigation. That's impact on wheat production.	Temperature of 25 °C and high relative humidity leads to the disease leaf blight. temperature of 20-21°C is ideal for the disease development powdery mildew. But no major insects and pest found on wheat crop since last 3 years, In Hingoli district.
5	Chick pea	At high temperature, chickpea seeds do not germinate beyond 45°C. When temperatures exceed 35°C during the reproductive stage, photosynthesis was reduced, which resulted in smaller grain. At temperatures of 30°C at 50% flowering and less than 30°C for 3–4 days at 100% blooming, yield loss has been reported. Growing at 35/25°C significantly increased biomass in both tolerant and sensitive genotypes, but growing at 40/30°C significantly decreased biomass at maturity in all genotypes. Exposure of chickpea to heat stress (35/20°C) decreased anther growth, pollen output, and fertility	Chickpea crop normally requires 25 cm of water. It is important to give adequate water i.e 7 to 8 cm every time. High Temperature during both period require more wat Agri Mole, Purchase and marketing of vegetables to the another city, seed processing and selling of Pulses - 2 VFPC Agro center and fertilizer center, soil and water testing laboratory, Provides new technologies and inputs - 3 GVFPCL Supply and Marketing of Fruits & vegetables - 4 SFPC Agro input service and providing technical support Technical support and conducting seminars to farmers 5 VAFPCL Procurement of onion by non-trade NAFED Technical guidance for onion production 6 VFPC Supply, marketing and procurement of agricultural produce from the members, Facilitating in per and frequency of irrigation	Hot (> than 300 and dry atmospheric condition lead to profligate loss of flower, birds and open flowers in gram high temperature ($\geq 35^\circ\text{C}$) During reproductive development reduces grain yield temperature ($\geq 35^\circ\text{C}$ produced yield losses up to 39%. In Hingoli district due to 68 % precipitation soil moisture is very low, hence area and yield of gram will get lowered.

(Source: Krishi Vigyan Kendra, Hingoli)

4.2 Impact of Rainfall:

Sr. No.	Crop	Crop Growth	Irrigation Supply	Pests and Diseases	Soil Erosion and Nutrient loss	Harvest and Storage
1	Soybean	<p>Soybeans are sensitive to water stress during flowering and pod formation. Inadequate moisture in soil or drought during this period can lead to poor pod development. Adequate rainfall is important during seed filling to ensure good development and size of soybean seeds. Excessive rainfall, in poorly drained soils can lead to water-logging and increase the risk of plant diseases. Insufficient rainfall during critical growth stage can result in smaller seeds, leading to reduced yields.</p>	<p>1. Drought is also an extreme situation, which happens due to insufficiency of precipitation over a longer period causing damages to crops. 2. Heavy rainfall mainly causes flooding in an area when the natural watercourse fails to channelize the excess water. Places without a proper drainage system also get flooded during heavy rainfall.</p>	<p>1. Unpredictable rains might disrupt the parasitoids' ability to track their caterpillar hosts. 2. Too much water will be devastating for some pests, especially soil dwelling insects. 3. Rain drops can physically dislodge insects from their host plants and behavior patterns can be disrupted in small insects such as thrips. 4. Some pest species are suppressed by periods of rainfall by outbreak of fungal diseases.</p>	<p>1. Rainfall intensity and slope gradient affect runoff and sediment, ultimately leading to soil nutrient loss. It shows a positive correlation between rainfall intensity and nutrient loss. 2. There are two main ways in which soil nutrients are lost. At low rainfall intensities, soluble nutrients migrate with runoff, while at high rainfall intensities, soil nutrients migrate with runoff in sediment form. 3. Soil nutrient loss rises with the increase in the slope gradient, but when the slope gradient reaches the threshold value, nutrient loss declines with the rise of the slope gradient, indicating that there is a critical slope gradient for nutrient loss.</p>	<p>1. Farm output is affected when crops that are ready to be harvested or about to ripen, get soaked in excessive rainfall. 2. Untimely rain can make it difficult or impossible to harvest the crops, and can also cause damage to the crops that have already been harvested. The moisture from the rain can cause the crops to become wet and heavy, making them more difficult to handle and transport.</p>



Soybean crop damage due to heavy rainfall at the time of crop maturity stage and losses occurred up to 40% At Suregaon, Taluka Aundha-Nagnath dated. 04-10-2023

2	Cotton	<p>1. High rainfall results in over saturation and water logging which has an adverse effect on cotton growth and development. Large intra seasonal variability of rainfall and day to day variation of rainfall like this year. Effects kharif crop production</p>	<p>1. Heavy rainfall causes water logging resulting into wilting of cotton</p>	<p>1 Unpredictable rain might disrupt the parasitoids' ability to track their caterpillar hosts. 2. Too much water will be devastating for some pests, especially soil dwelling insects. 3. Rain drops can physically dislodge insects from their host plants and behavior patterns can be disrupted in small insects such as thrips. 4. Some pest species are suppressed by periods of rainfall by outbreak of fungal diseases.</p>	<p>1. Rainfall intensity and slope gradient affect runoff and sediment, ultimately leading to soil nutrient loss. It shows a positive correlation between rainfall intensity and nutrient loss. 2. There are two main ways in which soil nutrients are lost. At low rainfall intensities, soluble nutrients migrate with runoff, while at high rainfall intensities, soil nutrients migrate with runoff in sediment form. 3. Soil nutrient loss rises with the increase in the slope gradient, but when the slope gradient reaches the threshold value, nutrient loss declines with the rise of the slope gradient, indicating that there is a critical slope gradient for nutrient loss.</p>	<p>1. Farm output is affected when crops that are ready to be harvested or about to ripen, get soaked in excessive rainfall. 2. Untimely rain can make it difficult or impossible to harvest the crops, and can also cause damage to the crops that have already been harvested. The moisture from the rain can cause the crops to become wet and heavy, making them more difficult to handle and transport.</p>
---	--------	---	--	---	---	---



Cotton crop damages due to heavy rainfall at the time of picking and losses up to 25% at Devala, taluka Aundha-Nagnath Date- 29-11-2023

3	Tur	Rainfall in October damaged standing tur crop which is likely to reduced yield by 20%	Irrigation supply during intention of flower bird, flowering and pod formation will result in higher yield and vice versa	<ol style="list-style-type: none"> 1. Unpredictable rains might disrupt the parasitoids' ability to track their caterpillar hosts. 2. Too much water will be devastating for some pests, especially soil dwelling insects. 3. Rain drops can physically dislodge insects from their host plants and behavior patterns can be disrupted in small insects such as thrips. 4. Some pest species are suppressed by periods of rainfall by outbreak of fungal diseases. 	<ol style="list-style-type: none"> 1. Rainfall intensity and slope gradient affect runoff and sediment, ultimately leading to soil nutrient loss. It shows a positive correlation between rainfall intensity and nutrient loss. 2. There are two main ways in which soil nutrients are lost. At low rainfall intensities, soluble nutrients migrate with runoff, while at high rainfall intensities, soil nutrients migrate with runoff in sediment form. 3. Soil nutrient loss rises with the increase in the slope gradient, but when the slope gradient reaches the threshold value, nutrient loss declines with the rise of the slope gradient, 	<ol style="list-style-type: none"> 1. Farm output is affected when crops that are ready to be harvested or about to ripen, get soaked in excessive rainfall. 2. Untimely rain can make it difficult or impossible to harvest the crops, and can also cause damage to the crops that have already been harvested. The moisture from the rain can cause the crops to become wet and heavy, making them more difficult to handle and transport.
---	-----	---	---	--	--	--

indicating that there is a critical slope gradient for nutrient loss.



Tur crop damage due to heavy rainfall at the time of pod maturity stage and losses up to 20 to 30%, at Sakhara Taluka -Sengaon Dt. - 27-11-2023 Farmer-Shri. Amol Kisan Landage

Latitude: 19.827701
 Longitude: 76.758755
 Elevation: 540.11±6 m
 Accuracy: 10.4 m
 Time: 12-05-2023 15:19
 Note: अमोल किसान लंडगे तांडो (ददंबर 1955) तांडो 27 नो 30 प्रवात अवकाशी प्रवातमुके आलेल्या शिवाजी नगरपालीचा, मरुनाम(Sakhara) Powered by NoteCam

4	Wheat	If rainfall in Harvesting stage of wheat deteriorate quality of wheat.	Irrigation during period of high-water demand has significant effect on wheat growth, grain yield. The soil water status and different growth stages have different effects on photosynthetic physiological characteristics and grain yield.	<ol style="list-style-type: none"> 1. Unpredictable rains might disrupt the parasitoids' ability to track their caterpillar hosts. 2. Too much water will be devastating for some pests, especially soil dwelling insects. 3. Rain drops can physically dislodge insects from their host plants and behavior patterns can be disrupted in small insects such as thrips. 	<ol style="list-style-type: none"> 1. Rainfall intensity and slope gradient affect runoff and sediment, ultimately leading to soil nutrient loss. It shows a positive correlation between rainfall intensity and nutrient loss. 2. There are two main ways in which soil nutrients are lost. At low rainfall intensities, soluble nutrients migrate with runoff, while at high rainfall intensities, soil nutrients migrate with runoff in sediment form. 3. Soil nutrient loss rises with the increase in the slope gradient, but when the 	<ol style="list-style-type: none"> 1. Farm output is affected when crops that are ready to be harvested or about to ripen, get soaked in excessive rainfall. 2. Untimely rain can make it difficult or impossible to harvest the crops, and can also cause damage to the crops that have already been harvested. The moisture from the rain can cause the crops to become wet and heavy, making
---	-------	--	--	--	--	---

				4. Some pest species are suppressed by periods of rainfall by outbreak of fungal diseases.	slope gradient reaches the threshold value, nutrient loss declines with the rise of the slope gradient, indicating that there is a critical slope gradient for nutrient loss.	them more difficult to handle and transport.
--	--	--	--	--	---	--

Wheat crop damage due to heavy rainfall at the time of grain formation and losses up to 20 to 30 % Shri. Vishwas Bhaurao Lekukle at Jamgaon, Taluka Aundha-Nagnath Dt-19-03-2023



Gram	Being of crop in determinate growth habit, drought condition will hasten maturity in gram by stopping growth, while late season rains will cause plants to green back up.	Irrigation effect on Parameter like number of primary and secondary branches for plant height, no of nodules biomass per plant, days to maturity and yield component increases in gram	<ol style="list-style-type: none"> 1. Unpredictable rains might disrupt the parasitoids' ability to track their caterpillar hosts. 2. Too much water will be devastating for some pests, especially soil dwelling insects. 3. Rain drops can physically dislodge insects from their host plants and 	<ol style="list-style-type: none"> 1. Rainfall intensity and slope gradient affect runoff and sediment, ultimately leading to soil nutrient loss. It shows a positive correlation between rainfall intensity and nutrient loss. 2. There are two main ways in which soil nutrients are lost. At low rainfall intensities, soluble nutrients migrate with runoff, while at high rainfall intensities, 	<ol style="list-style-type: none"> 1. Farm output is affected when crops that are ready to be harvested or about to ripen, get soaked in excessive rainfall. 2. Untimely rain can make it difficult or impossible to harvest the crops, and can also cause damage to the crops that have already
------	---	--	--	--	--

				<p>behavior patterns can be disrupted in small insects such as thrips.</p> <p>4. Some pest species are suppressed by periods of rainfall outbreak of fungal diseases.</p>	<p>soil nutrients migrate with runoff in sediment form.</p> <p>3. Soil nutrient loss rises with the increase in the slope gradient, but when the slope gradient reaches the threshold value, nutrient loss declines with the rise of the slope gradient, indicating that there is a critical slope gradient for nutrient loss.</p>	<p>been harvested. The moisture from the rain can cause the crops to become wet and heavy, making them more difficult to handle and transport.</p>
--	--	--	--	---	--	--



Gram crop damage due to heavy rainfall at the time of harvesting and losses up to 25% to 40% Dt. 19-03-2023 At Lohegaon, Taluka Hingoli (source -Krishi Vigyan Kendra, Hingoli)

Chapter 5: Measures to cope with climate variability

5.1 Recommendations of universities

Rainfall condition	1. Heavy rainfall	<ol style="list-style-type: none"> 1. Removal of excess water during plant growth by better draining the water retained in the soil. In cotton by Creating or digging drains 2. Organic matter applications improve soil structure and avoid soil compaction in Cotton & Soybean 3. Subsoiling can break possible hard pans and improve soil aeration and drainage with water retention. 4. Raised or Broad Bed furrow method of cultivation, In Soybean it is proved to be beneficial and effective in Hingoli District. 5. Green manure increases organic matter content, nitrogen content and soil water retention, is applicable for all Kharif Crops 6. Soil conservation and water conservation structures may reduce water runoff and helps to control soil erosion by graded bunding & drain
	2. Low rainfall	<ol style="list-style-type: none"> 1 Weeding and defoliation reduce soil water losses from plant by transpiration in side branches by defoliating branches having without boll 2 Cover crops reduce soil erosion by increasing soil organic matter, water, air, and nutrient availability. 3 Harrowing (breaking the soil into small fragments) can prevent the loss of land moisture by evaporation. 4 Covering the soil with crop residues (mulching) in combination with no-tillage reduces the exposure of crops to heat-stress conditions. It also increases soil moisture by reducing direct soil evaporation in Horticulture crops like Citrus, Lemon etc. 5 Use Of micro –irrigation and construction of a farm pond. Use of Short Duration variety.
	3. Dry Spells/Water Stress	<ol style="list-style-type: none"> 1 Drought tolerant crops with low water requirements reduce evapotranspiration losses during photosynthesis by rapidly closing their stomata and maintaining leaf water potential and photosynthetic rate. 2 Promote micro irrigation and water budgeting for each crop. 3 Increase water availability to counteract the impacts of drought shocks through small water reservoirs (Farm ponds) 4 Foliar spray of nitrogen fertilizers and micronutrients during the dry spell protects and improves the endurance of crops in drought conditions.
	4. Terminal Drought	<ol style="list-style-type: none"> 1 Diversification of crops help from terminal drought 2 Promote short cycle varieties helps from terminal drought 3 Through carbon sequestration, agroforestry has the potential to offset greenhouse gas (GHG) emissions from the agricultural sector. 4 Undertaking of rainwater harvesting and Water harvesting practices like farm ponds, community tanks, watersheds and pools can prove a life saver.

	5.Late onset of monsoon	<ol style="list-style-type: none"> 1 Sowing is done only after 70 to 100 mm rainfall. 2.Promote intercropping 3.Prepare a contingency plan in case of late onset of monsoon / dry spells during the season with appropriate cropping patterns. 4.Crops with short duration and requiring relatively little water need to be encouraged in drought-prone areas; 5.Arrange availability of seeds with short duration varieties.
Temperature conditions	1.High Temperature	<ol style="list-style-type: none"> 1 Soil covering with plastic and organic mulching and or other materials increases the soil surface temperature. 2 Wind breaks redistribute sensible heat that is already present in the air. 3 Row covers increase downward long-wave radiation at night and reduce heat losses by convection and advection. 4 Promote Protected cultivation.
	2.Cold waves/Low Temperature	<ol style="list-style-type: none"> 1. Hail protection nets reduce crop damage and loss by buffering the impact of hail on crops. 2. Slight irrigation may reduce the effect of low temperature. 3. Generating heat through burning the crop residues that prevent the cooling of the air at the crop level. It is not the most recommended method due to environmental pollution and other ecological aspects.
Hailstorms		<ol style="list-style-type: none"> 1. Promote Protected cultivation 2. Hail protection nets reduce crop damage and loss by buffering the impact of hail on crops.
Soil degradation		<ol style="list-style-type: none"> 1. Soil Erosion Control by-changing agricultural practices and engineering practices. (Agricultural practices- Crop rotation, Strip cropping, Contour farming, Terrace farming, Mulching) (Engineering practices- Excavation of ditches, Terraces construction, Check dams, Windbreaks) 2. Water Harvesting (Watershed Approach), Terracing and Other Engineering Structure like, Contour plowing, Terracing, wind barrier etc. 3. Landslide and Mine-spoil Rehabilitation. 4. River Bank Erosion Control Intercropping and crop diversification. 5.Integrated Nutrient Management and Organic Manuring Reclamation of Acid and Salt Affected Soils and Drainage (Desalinization) 6. Water Management and Pollution Control 7.Vegetative Barriers and Using Natural Geotextiles, Mulching and Diversified Cropping 8. Agro forestry and Conservation diversified agriculture practices

(Source-Krishi Vigyan Kendra, Tondapur, District-Hingoli)

5.2 Best Practices Developed by Farmers in Hingoli District of Maharashtra

Title: Enhancement of Soybean Productivity by Raised Bed Planting method in Rainfed Agriculture in Hingoli District. (BBF)

1. Situation analysis/Problem statement:

Hingoli district comes under assured rainfall area with average rainfall of 890 mm. Though it falls under assured rainfall area, there is a dry spell of 67 days during rainy season. This dry spell in rainfed situations is proved most critical and limiting factor for better productivity. Problem of water logging and moisture conservation prevailed simultaneously and both the situations are responsible for lower productivity of crop like Soybean which is purely rainfed crop in Hingoli District.

Out of 3.25 lakh ha area under kharif cultivation, Soybean is cultivated on 2.45 lakh ha. But productivity is very low i.e. 15 qt/ha. Causes of low productivity are due to shortage of moisture at pod filling stage of Soybean, water logging due to poor drainage, sowing of shattering variety JS-335, rainfed cultivation, and line sowing with dense population. Also soils of Hingoli district are having PH more than 8.5 and tend towards saline alkaline conditions. Sometimes water logging conditions during flowering and seed filling stage also hampers the yield.

2. Plan, Implement and Support:

To overcome above problems, intervention was put forth by Krishi Vigyan Kendra Hingoli in the village Wanjola, Ta. Hingoli about change in sowing technology with Raised Bed planting method. Program was conducted by Subject Matter Specialist (Agronomy) Shri. Rajesh Bhalerao under the guidance of Dr. P.P. Shelke, Senior Scientist and Head and with the team of PoCRA.

The literature, scientific visit, advisory services through ICT tools, personal contact and Radio talks for mass publicity was undertaken by Krishi Vigyan Kendra, Hingoli. Problem of low productivity was assessed by the KVK, Hingoli in the village and water logging was identified as the village is on the side of river Painganga. Farmer's practice of line sowing at 30 x 10 cm spacing with no Integrated Crop Management practices was identified. As intervention, farmers were asked to form Raised beds with Ridger having spacing of 120 cm, top width of 60 cm and height of bed with 45 cm (120x60x45) and dibble Soybean at the spacing of 45x 5 cm on Raised bed with variety KDS-01. Plant Population of 3,04,920 was maintained with 32.5 kg seed per hectare was used. Another recommended package of practice was followed.

3. Output/ impact

Results obtained were promising. From the productivity of 15 quintal per ha of Soybean there was exponential jump of 45 qtl./ha with better C:B ratio of 4:2

Details of Interventions-

Table 1: Comparative study of Raised bed planting method with line sowing.

Particulars	Farmer's practice	Raised Bed Planting method
Spacing cm ²	30 x 10	45 x 5
Plant Population (/Ha)	330000	3,04,920
Sowing Method	Line sowing	Hand Dibbling
Variety	JS-335	KDS-01
Seed rate (kg/ha)	75	32.5 (Saving of 42.5 kg seed)
Nutrition N:P:K Kg/ha	30:60:30	17.5:45:17.5 (Saving of 12.5:15:12.5)
Weed Management	Immazythyper (Rs.800/ha)	Quirin with Targa Super (Rs.1337/ha)
Pest Management	Chlorantraniliprole-(18.5 sc)-3 ml/10 lit -30 DAYS	Quinol-25%-2 ml/lit 20 DAS Immamectin benzoate 5 SG 0.3 gm/lit - 45 DAS
Cost of Cultivation (Rs/ha)	34500.00	37500.00
Production qt/ha	15	45
Gross Income (Rs/ha)@Rs.3500/qt	52500.00	157500.00
Net Income (Rs/ha)	18000.00	120000.00
C:B ratio	1.52	4.2
Dry seed wt/plant gm	4.5	15
Additional cost (Rs/ha)	--	3000.00
Additional cost	Bed preparation Rs.900 per acre and Dibbling labour, Rs.800 /acre but compensate through seed	

(Source- Krishi Vigyan Kendra, Tondapur, Hingoli)

Firstly, optimum plant population was maintained. There was savings of 42.5 kg of seed per hectare. Fertilizers were saved to an extent of 12.5:15:12.5; N:P: K Kg/ha. About 45 qtl. per ha yield was obtained with net income of Rs.120,000 with C:B ratio of 4:2.

3.Outcome:

Through Result Demonstration in farmer's fields and getting more production through raised bed planting by KVK Hingoli, the nearby villages visited the plots and got information about it. Reduction in seed rate, rational nutrient dose and improvement in quality of the produce realized through Raised Bed Planting. (Source- KVK Tondapur)

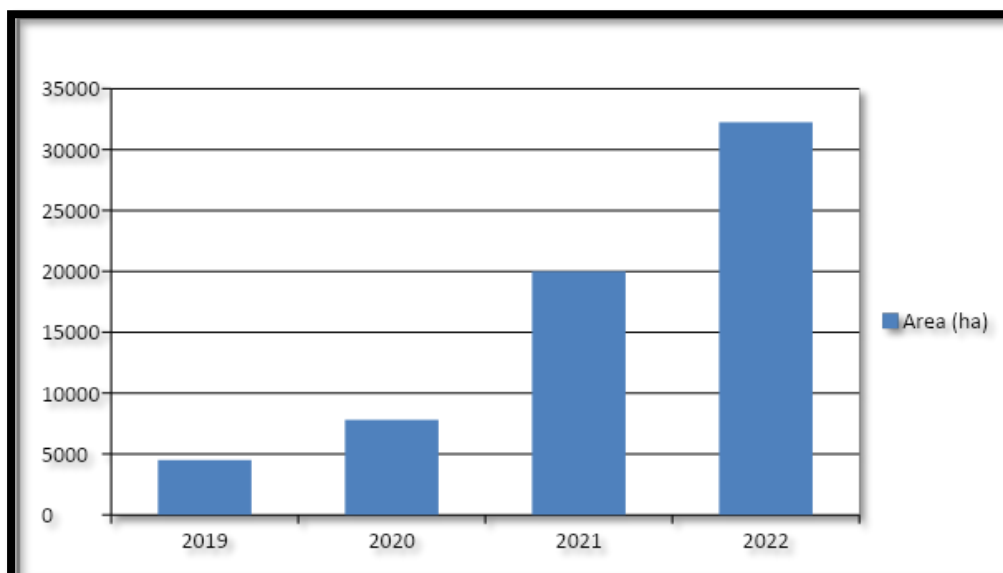


Fig.1: Horizontal spread of Raised Bed planting method in Rainfed Agriculture for Soybean in Hingoli District. (Source- Krishi Vigyan Kendra, Tondapur, Hingoli)

Impact:

Water logging problem was solved and during the dry spell moisture was conserved which has a positive impact on productivity of Soybean crop. Impact of this method was that in the village Wanjola crops like Chickpea (60%) and Summer Groundnut (45%) were taken on raised bed in 2018-19.



Waterlogged Soybean (Left) More Pods per Soybean plant (Right)

During 2019-20, 09 adjoining villages of Wanjola village adopted this Raised Bed planting method. Dr. Lakhan Singh sir, Director, ATARI, Pune visited the plot on 30.08.2018 and guided our farmers regarding planting of Soybean on Raised bed. State coordinator of PoCRA project Dr. Shri. Vijay Kolekar also visited the plot and incorporate this technology in their project. With the help of PoCRA project and Department of Agriculture, Hingoli, during last two years this Raised Bed technology is being adopted on about 4500 ha area in the district



Dr. Lakhan Singh sir and State coordinator of PoCRA project Shri. Vijay Kolekar sir guided our Farmers Regarding Sowing of crops on Raised bed. Impact was that 60 percent farmers of village Wanjola take Gram on raised bed in Rabbi

During 2020-21, 14 Villages of Sengaoon and Hingoli tehsil adopted this Raised Bed planting method with the help of POCRA project and Department of Agriculture, Hingoli, during last two years this Raised Bed technology is being adopted on about 7800 ha area in the district. Soybean productivity was increased up to 35 percent with additional income of Rs.25000 per hectare.

During 2021-22, Soybean was taken on Raised bed in about 255 villages on about 20000 ha Soybean as studied by Department of Agriculture, Hingoli with good social impact and economy with more income of up to 35000 per hectare.



Raised Bed planting of Soybean Plot

During 2022-23, Soybean was taken on nearly 32250 ha in nearly 305 villages as informed by the Department of Agriculture, Hingoli. Along with Soybean Turmeric crop was also planted on bed on 35000 ha area which was only 20000 ha area in 2020. It has good social and economic impact on farming community and this technology proved itself in changing climate scenario with additional production of 7-10 quintal per ha of Soybean with Rs.40000-45000 additional income per hectare.



Farmer from Sirsum Village (Hingoli) with farmers from Jamthi Bk (Sengaon) with Raised bed Soybean (Year 2022) (Source- Krishi Vigyan Kendra, Tondapur, Hingoli)



Chapter 6: Climate Resilient Technology (CRT) Interventions and its impact on yield of crops

6.1 CRTs Interventions

Climate Resilient Technologies promoted under PoCRA			
Technology	Resilience Feature	Benefits	Suitable Crops
1. Cultivation by broad bed furrow (BBF) method	Resilience to moisture stress, poor soil drainage, nutrient (fertilizer) loss	Ensures optimum moisture and aeration at root level, helps drain out water in excess rainy condition, saves seed, ensures proper fertilizer placement in root zone, helps develop optimum microclimate under crop canopy, helps in proper intercultural operations, reduces cost of cultivation.	All field crops both in Kharif and Rabi season
2. Intercropping	Resilience to risk due to crop failure, moisture stress, pest incidence	Ensures optimum use of soil moisture & nutrients, overcomes risk due to aberrant climatic variabilities, helps in effective pest management, and reduces financial risk in farming.	Cotton, soybean, pulses, sorghum & pearl millet
3. Use of climate resilient seed varieties	Resilience to moisture stress due to dry spell & drought, pest epidemic, infestation by wilt & soil borne pathogens	Higher yields than existing varieties, helps escape drought condition due to shorter durations, tolerance to moisture stress, resistance to pest & disease infestation fetches good price due to better consumer preference.	All crops
4. Seed treatment	Resilience to biotic stress	Protection from soil born pathogen and pests, enhances good root development.	All field crops
5. Integrated Nutrient Management	Resilience to abiotic stresses including soil salinity, nutrient deficiencies, susceptibility to pest & disease	Enhances crop health, higher yields, enhances quality of produce, resistance to biotic & abiotic stresses, enhances quality of produce, enhances consumer preference, helps to fetch better market price.	All crops
6. Integrated Pest Management	Resilience to pest & disease epidemic, environmental hazards	Protection from pest & disease attack, reduction in use of chemical pesticide, helps in production of residue free agriculture commodities, reduces environmental hazards, enhances quality of produce, enhances consumer preference in domestic and export market, helps to fetch better market price.	All crops
7. Furrow opening	Resilience to moisture stress,	Helps in conservation of moisture around root zone of crops during dry spell.	Cotton, soybean, pulses, sorghum & pearl millet
8. Foliar spray of 2% Urea at flowering and 2%	resilience to poor nutrition & moisture stress		Cotton

DAP at boll development			
9. Protective irrigation through farm pond	resilience to moisture stress during dry spell & drought condition	Overcomes moisture stress during critical stages, improves nutrient uptake, and enhances increase in yield.	All crops
10. Conservation tillage	Resilience to moisture stress, soil & nutrient loss	Enhances level of soil carbon, soil fertility & water holding capacity, better crop health and higher yields, enhances quality of produce, resistance to biotic & abiotic stresses, and enhances quality of produce.	All crops
11. Incorporation of biomass	Resilience to soil organic carbon (SOC) loss	Enhances level of soil carbon and soil fertility, enhances water holding capacity of soil, leading to better crop health and higher yields, tolerance to moisture stresses.	All crops
12. Canopy management in fruit crops	Resilience to stress management	Enhances fruit bearing capacity, enhances quality of fruits, and reduces cost of harvesting.	Mango, Pomegranate & Guava
13. Cultivation of citrus crops on broad ridges	Resilience to poor soil drainage & soil borne diseases	Enhances proper microclimate around root zone, helps in retaining optimum soil moisture, avoids contact of water with stem collar, and prevents infection by phytophthora & other soil borne pathogens.	Mandarin orange, Sweet orange and Kagzi Lime

6.2 Impact of CRT on crop yield based on FFS data

FFS (Farmers' Field School) sessions have been implemented in the project village since 2018, focusing on soybean, cotton, pigeon pea and gram crops in the Hingoli district. FFS aims to promote sustainable and efficient farming. It does this by introducing effective practices for selected crops, improving farmers knowledge with concepts like IPM and INM, empowering them to make uniformed decisions and working towards reducing cultivation costs, restoring soil fertility and increasing productivity. In essence, the FFS focuses on sustainable farming and empowering farmers as decision-makers. The adoption of climate resilient technology (CRT) was promoted on the FFS plot during these sessions. A comparison of the crop yields between the FFS plot and the control plot is detailed below, as per the data captured in the FFS app.

Year wise crop yield (Kg/ha)

Year	Soybean		Cotton		Pigeon Pea		Gram	
	FFS Plot	Control Plot	FFS Plot	Control Plot	FFS Plot	Control Plot	FFS Plot	Control Plot
2019	1395	1430	527	474	990	830	1673	1252
2020	1399	1239	1336	1188	812	712	1724	1560
2021	1732	1525	1529	1294	779	635	1583	1405
2022	-	-	-	-	-	-	1720	1470
Average	1508.67	1398	1130.67	985.33	860.33	725.67	1675	1421.75

The FFS plot for soybean crops benefited from various CRT interventions, including seed treatment with fungicide and biofertilizer, sowing using the BBF method, intercropping, protective irrigation during dry spells and foliar spray of Neem seed kernel extract (NSKE). As a result, the yield of the FFS plot increased by 7.92% compared to the control plot.

The FFS plot for cotton crops benefited from various CRT interventions, including seed treatment with biofertilizer, intercropping, protective irrigation during dry spells, foliar spray of Neem seed kernel extract (NSKE), nipping of bud and use of traps (Pheromone traps, sticky traps). As a result, the yield of the FFS plot increased by 14.75% compared to the control plot.

FFS plot for Pigeon pea crops benefited from various CRT interventions, including as Seed treatment with fungicide and biofertilizer, protective irrigation in dry spell, foliar spray of Neem seed kernel extract (NSKE), topping. As a result, the yield of the FFS plot increased by 18.56% compared to the control plot.

The FFS plot for Gram crops benefited from various CRT interventions, including as Seed treatment with fungicide and biofertilizer, sowing by BBF method, protective irrigation, NSKE, and use of pheromone traps. As a result, the yield of the FFS plot increased by 17.81% compared to the control plot.

6.3 CRTs Interventions followed in the district

In NDKSP project 240 villages selected in Hingoli district. Yield of all crops in Hingoli affected by erratic nature of rainfall. In kharif and Rabbi season under project we schedule the FFS class and providing guidance about seed treatment, BBF technology, SRT, sowing on bed method and Zero tillage, use of new high yield varieties, use of IPM technology and harvesting technology method.

In the last four years area has increased up to 5814 hectares under BBF technology, 217 SRT farmers in the last two years and area under SRT 170 Acres, area all bed method 46000 Hectare, and Zero tillage area 15000 Acres. With the help of these technologies Crop yield increases.

Turmeric is the second largest crop area sown in Hingoli district. 90 % Area shown on raised bed method using drip irrigation system. Yield of Turmeric is 30-40 Quintal per Acres. Under project in FFS class guidance given to farmers about use of bio fertilizer, Nimboli ark, Bio Mix. Its effect on yield is increased and expenditure on crop cultivation is decreased up to 20%.

Sr. No	Crops	Yield Before use CRT	Yield After CRT
1	Soyabean	5 to 8 Quantal/acre	8 to14 Quantal/acre
2	Turmeric	20 to 25 Quantal/acre	25 to 40 Quantal/acre
3	Gram	5 to 7 Quantal/acre	7 to10 Quantal/acre
4	Safflower	4 to 5 Quantal/acre	5 to 8 Quantal/acre

Sr. No.	Taluka	BBF sown area (Acre)	Sowing on raised bed method (Ha.)	SRT sown area (Acers)
1	Kalamnuri	964	10000	25
2	Hingoli	800	8000	30
3	Sengaon	1500	9000	25
4	Aundha	1000	7000	40
5	Basmath	1550	12000	50
	Total	5814	46000	170





Village: Tandulwadi, Taluka Sengaoon Sowing of Soybean by Tokan yantra at Bed

6.3.1 Impact of BBF on yield crops



Hingoli districts average yield of Soybean crops before the use of BBF is 5-8 quintal per Acres. In soybean crop under project, we promote BBF Technology in FFS class last three Years and area under BBF increase up to 5814 Acers and the yield goes to 8-14 Quintal /acre

6.3.2 Impact of Zero Tillage: *Shri Madhukar Jadhav village Borisikari Ta. and Dist. Hingoli* has adopted zero tillage activity (SRT) for the last two years. He applied this technology to 1 acre, and he saved the cost of cultivation by about Rs. 6000 /- and this increased the extra yield of the crop up to 4 Qtl. $4 \times 4500 = \text{Rs. } 18000$ per acre, so total extra net profit has increased $\text{Rs. } 6000 + 18000 = \text{Rs. } 24000/$ acre.



SRT Plot, Farmer - Madhukar Jadhav, Village - Borisikari Taluka – Hingoli, Crop – Soybean, yield before adoption- 8 Quintal/acre, yield obtained after adoption of technology- 12 quintal/acre

6.3.3 Impact of Neem Seed extract on yield of crops:



Neem extracts, particularly neem oil and neem-based pesticides, have natural insecticidal and fungicidal properties. They can help to control a wide range of agricultural pests and diseases. By reducing pest and disease intensity, crops can grow more vigorously and produce higher yields. The preparation and use of Neem oil is promoted in Villages through FFS. Neem-based

products are often used as part of integrated pest management (IPM) strategies. It also protects beneficial insects and microbes, which helps to maintain a balanced ecosystem in the field. Hingoli Districts total 240 villages and the quantity of use Neem Seed extract is more than 4000 Liters. Which is made by farmers at their own farm. Total area covers near about 1000 Acres.

6.3.4 Impact observed of CRTs in reductions of cost of production:

Sr. No.	Crops	Reductions of cost of productions
1	Turmeric	10-25% reduction in cost of production by the use of Climate Resilient Technology.
2	Soyabean	20-30% reduction in cost of production by the use of Climate Resilient Technology.
3	Gram	20-25% reduction in cost of production by the use of Climate Resilient Technology.
4	Safflower	20-25% reduction in cost of production by the use of Climate Resilient Technology.

Chapter 7: Plan to cope with weather related contingencies (District: Hingoli)

(Source- <http://www.icar-crida.res.in/>)

7.1 Drought

7.1.1 Rainfed situation

7.1.1.1. Early season drought (delayed onset)

Condition	Major Farming situation	Normal Crop / Cropping system	Suggested Contingency measures		
			Change in Crop / Croppingsystem	Agronomic measures	Remarks on Implementation
Delay by 2 weeks June 4th week	Medium deep to deep black soils with assured and high rainfall	Soybean	No change	No change	Linkage with MAU, MSSC and NSC for seed.
		Cotton	No change	No change	
		Sorghum	No change	No change	
		Pigeon pea	No change	No change	
	Green Gram/ Black Gram-Sorghum/Safflower / Gram	No change	No change		
	Shallow black soils with assured and high rainfall	Cotton	No change	No change	Linkage with MAU, KVK for agro techniques
		Sorghum	No change	No change	
		Soybean	No change	No change	
Pigeon pea		No change	No change		

Condition	Major Farmingsituation	Normal Crop /Cropping system	Suggested Contingency measures			
			Change in Crop/Cropping system	Agronomic measures	Remarks on Implementation	
Early season drought (delayed onset) Delay by 4 week July 2nd week	Medium deep to deep black soils with assured and high rainfall	Soybean	No change / Soybean+ pigeon pea 4:2 row proportion (MAUS 71,81)	Normal package of practices recommended by MAU, Parbhani	Linkage with MAU, MSSC, NSC, NFSM and Village seed production programme for seed.	
		Cotton	No change / Cotton + Pigeon Pea 6:2(BSMR 736, 853, BDN 708, 711)	Normal package of practices recommended by MAU, Parbhani oradopt 10-15% more seed rate than recommended and reduce fertilizer dose by 25 per cent.		
		Sorghum	Sorghum + Pigeon Pea 4 : 2 (CSH-9, 11, 14, 16 PVK-401, 809) + (BSMR 736, 853, BDN 708, 711)	-----do-----		Linkage with MAIDC, ZILLA PARISHAD for implements.
		Pigeon pea	No change / Soybean + Pigeon Pea 4 : 2 (JS-335,MAUS-71,81)	-----do-----		
		Green Gram/ Black Gram/ Sorghum / Safflower / Gram	Soybean + Pigeon Pea 4 : 2 (JS-335,MAUS-71,81)	Normal package of practices recommended by MAU, Parbhani oradopt 10-15% more seed rate than recommended and reduce fertilizer dose by 25 per cent.	Linkage with MAU, KVK for agro techniques	
	Shallow black soils with assured and high rainfall	Cotton	Cotton + Pigeon Pea 6:2 (BSMR 736, 853, BDN 708, 711)			
		Sorghum	Sorghum + Pigeon Pea 4 : 2 (BSMR 736, 853, BDN 708, 711)			
		Soybean	No change / Soybean+ pigeon pea 4:2 row proportion (MAUS 71,81)			
		Pigeon pea	No change / Soybean + Pigeon Pea 4:2 (JS-335,MAUS-71,81)			

Condition	Suggested Contingency measures				
Early season drought (delayed onset)	Major Farming situation	Normal Crop / Cropping system	Change in Crop/ Cropping system	Agronomic measures	Remarks on Implementation
Delay by 6 weeks July 4th week	Medium deep to deep black soils with assured and high rainfall	Soybean	No change / Soybean + Pigeon Pea 4:2row proportion (MAUS 71,81 + BSMR 736,853, BDN 708, 711)	Normal package of practices recommended by MAU, Parbhani	Linkage with MAU, MSSC NSC, NFSM and Village seed production programme forseed. Linkage with MAIDC, ZILLA PARISHAD for implements. Linkage with MAU, KVK foragro techniques
		Cotton	Cotton + Pigeon Pea 6:2 (BSMR 736, 853, BDN 708, 711)	Normal package of practices recommended by MAU, Parbhani oradopt 10-15% more seed rate than recommended and reduce fertilizer dose by 25 %.	
		Sorghum	Pearl Millet + Pigeon Pea 4: 2, 3:3 (Sharadha, Saburi, Shanti, AIMP 92901 BSMR 736, BDN 708, 711)	Normal package of practices recommended by MAU, Parbhani.	
		Pigeon pea	No change /Soybean + Pigeon Pea 4: 2 (JS-335,MAUS-71,81 + BSMR 736, 853,)		
		Green Gram / Black Gram Sorghum / Safflower / Gram	Soybean + Pigeon Pea 4:2 (JS-335,MAUS-71,81 + BSMR 736, 853, BDN)		
	Shallow black soils with assured and high rainfall	Cotton	Cotton + Pigeon Pea 6:2 (BDN 708, 711)	Normal package of practices recommended by MAU, Parbhani oradopt 10-15% more seed rate than recommended and reduce fertilizerdose by 25 per cent.	
		Sorghum	Pearl Millet + Pigeon Pea 4: 2, 3:3 (Sharadha, Saburi, Shanti, AIMP 92901 BSMR 736, BDN 708, 711)		
		Soybean	No change / Soybean+ Pigeon Pea 4:2 row proportion (MAUS 71,81)		
		Pigeon pea	NO change / Soybean + Pigeon Pea 4 :2 (JS-335,MAUS-71,81)		

Condition	Suggested Contingency measures				
	Major Farmingsituation	Normal Crop /Cropping system	Change in Crop/Cropping system	Agronomic measures	Remarks on Implementation
Early season drought (delayed onset) Delay by 8 week Aug 2nd week	Medium deep to deep black soils with assured and high rainfall	Soybean	Pigeon Pea (BDN 708, 711) or Alternatively plan for rabbi season crops like sorghum, chickpea, safflower and sunflower	1. Dry sowing 8 - 10 days before rains with 10 - 15 % higher seed rate and reduce fertilizer dose by 25 % 2. Seed hardening i.e. 18 hrs. soaking in water followed by 24 hrs. shade drying. 3. Prepare land for Rabbi season 4. Open conservation furrow 5. Prefer early maturing varieties recommended by MAU, Parbhani	Linkage with MAU, MSSC NSC, NFSM and Village seed production programme for seed. Linkage with MAIDC, ZILLA PARISHAD for implements. Linkage with MAU, KVK for agro techniques
		Cotton	Sunflower (Modern, EC 68414, LS-11, LSH-35, BSH-1)		
		Sorghum	Fodder Maize (African Tall)		
		Pigeon pea	Pigeon Pea (BDN 708, 711) or alternatively plan for rabbi season crops like sorghum, chickpea, safflower and sunflower		
		Green Gra,	Pigeon Pea (BDN 708, 711) or		
		Black Gram Sorghum / Safflower / Gram	Alternatively plan for rabbi season crops like sorghum, chickpea, safflower and sunflower		
	Shallow black soils with assured and high rainfall	Cotton	Pigeon Pea (BDN 708, 711) Alternatively plan for rabbi season crops like chickpea, safflower and sunflower		
		Sorghum	Pigeon Pea (BDN 708, 711) or Sesamum (JLT-7,26)		
		Soybean	Castor (VI-9, DCH-117, 32, GCH- 4,5,6) or Niger (NS-6)		
		Pigeon pea	Pigeon Pea (BDN 708, 711)		

7.1.1.2. Early season drought (Normal onset)

Condition	Suggested Contingency measures				
Early season drought (Normal onset)	Major Farmingsituation	Normal Crop / Cropping system	Crop management	Soil nutrient & moisture Conservation measures	Remarks on Implementation
Normal onset followed by 15-20 days dry spell after sowing germination / crop stand etc.	Medium deep to deepblack soils with assuredand high rainfall	Soybean	Gap filling within the rows with same or short duration cultivar to maintain at least 75% plant population or if the plant population is less than 50% re sow the crop	Avoid applying fertilizers till sufficient soil moisture is available	Linkage with MAU, MSSC and NSC for seed. Linkage with MAIDC for implements. Linkage with MAU, KVK for agro techniques
		Cotton	Gap filling 7-10 days after sowing by potwatering within the rows with same cultivar or Pigeon Pea to maintain at least 75% plant population. Raise cotton seedlings in polythene bagsand transplant when sufficient soil moisture is available. Give protective irrigation whereverpossible.	Making of conservation furrows formoisture conservation. When the crop is 2 weeks old take upInterculture with harrow. Spray 2 % urea solution or 1% watersoluble fertilizers like 19-19-19, 20-20-20, 21-21-21 to supplement nutrition.	
		Sorghum	Gap filling with Pigeon Pea	When the crop is 2 weeks old take upInterculture with hoe	
		Pigeon pea	Gap filling within the rows with same orshort duration cultivar to maintain at least 75% plant population		
		Green Gram Black Gram	If the plant population is less than 75% of optimum, go for resowing of the alternate		
		Sorghum / Safflower / Gram	Crops like sunflower / pigeon pea. If possible give protective irrigation withsprinkler.		

	Shallow black soils with assured and high rainfall	Cotton	Gap filling within the rows with same cultivar or Pigeon Pea to maintain at least 75% plant population. Raise cotton seedlings in polythene bags and transplant when sufficient soil moisture is available. Give protective irrigation wherever possible	Avoid applying fertilizers till sufficient soil moisture is available Sowing on broad bed furrow (BBF). Making of conservation furrows for moisture conservation Interculture with harrows	
		Sorghum	Gap filling with Pigeon Pea	Interculture with hoe	
		Soybean	Gap filling within the rows with same or short duration cultivar to maintain at least 75% plant population	Interculture with hoe	
		Pigeon pea		Interculture with hoe	

7.1.1.3. Mid-season drought (long dry spell)

Condition	Suggested Contingency measures				
Mid-season drought (long dry spell, consecutive 2 weeks rainless (>2.5mm) period)	Major Farming situation	Normal Crop/Cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At vegetative stage	Medium deep to deep black soils with assured and high rainfall	Soybean	Interculture for weeding and to create soil mulch. Give protective irrigation wherever possible	Opening of alternate furrows with Balaram plough. Mulching with crop residue Spraying of 2% urea or DAP	Linkage with MAU, MSSC and NSC for seed. Linkage with MAIDC for implements. Linkage with
		Cotton	Give protective irrigation wherever Possible.	Avoid applying fertilizers till sufficient soil moisture is available.	

			Maintain weed free conditions. Avoid top dressing of fertilizers till sufficient soil moisture is available.	<p>Making of conservation furrows for moisture conservation. Interculture with harrows.</p> <p>Two sprays of 2% MgSO₄, Zn, Boron at weekly interval when the crop is encountered reddening symptoms.</p> <p>Spray 2 % urea solution or 1% water. soluble fertilizers like 19-19-19, 20- 20-20, 21-21-21 to supplement nutrition.</p>	MAU, KVK for agro techniques
		Sorghum	Avoid top dressing of fertilizers till sufficient soil moisture is available. Intra row thinning. Interculture for weeding Protective irrigation if possible.	<p>Opening of alternate furrows with Balaram plough.</p> <p>Mulching with crop residue. interculture with harrow.</p>	
		Pigeon pea	Inter culture for weeding. Protective irrigation if possible	-----do-----	
		Green Gram / Black Gram Sorghum / Safflower / Gram	Inter culture for weeding. Protective irrigation if possible	Spraying of 2% urea or DAP. Other measures as above	

	Shallow black soils with assured and high rainfall	Cotton	Give protective irrigation wherever possible. Maintain weed free conditions.	Avoid applying fertilizers till sufficient soil moisture is available. Making of conservation furrows for moisture conservation. Interculture with harrows. Two sprays of 2% MgSO ₄ , Zn, Boron at weekly interval when the crop is encountered reddening symptoms. Spray 2 % urea solution or 1% water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 to supplement nutrition.	
		Sorghum	Avoid top dressing of fertilizers till sufficient soil moisture is available. Protective irrigation if possible Intra row thinning	Interculture for weeding and to create soil mulch to conserve moisture. Opening of alternate furrows	
		Soybean	Give protective irrigation wherever possible	-----do-----	
		Pigeon pea	Protective irrigation if possible. Inter culture for weeding.	Spraying of 2% urea or DAP. Opening of alternate furrows.	

Condition	Suggested Contingency measures				
	Major Farming situation	Normal Crop/Cropping system	Crop management	Soil nutrient & moisture conservation measures	Remarks on Implementation
At flowering / fruiting stage	Medium deep to deep black soils with assured and high rainfall	Soybean	Give protective irrigation wherever possible	Opening of alternate furrows with Balaram plough. Spraying of 2% urea or DAP	Linkage with MAU, MSSC and NSC for seed.
		Cotton	Give protective irrigation with drip. Maintain weed free conditions	Foliar spray of 2% KNO ₃ , urea and DAP. Opening of alternate furrows with Balaram plough. Mulching with crop residue. Interculture with harrows. Spray 2 % urea solution or 1% water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 to supplement nutrition.	Linkage with MAIDC for implements. Linkage with MAU, KVK for agro techniques
		Sorghum	Give protective irrigation If feasible spray anti-transparent 6% kaolin	Opening of alternate furrows with Balaram plough.	
		Pigeon pea	Protective irrigation if possible	Foliar spray of 2% KNO ₃ , urea and DAP	
		Green Gram /Black Gram /Sorghum / Safflower / Gram	Protective irrigation if possible		
	Shallow black soils with assured and high rainfall	Cotton	Give protective irrigation with drip	Foliar spray of 2% KNO ₃ , urea and DAP. Opening of alternate furrows with Balaram plough. Mulching with crop residue. Interculture with harrows. Spray 2 % urea solution or 1% water soluble fertilizers like 19-19-19, 20-20-20, 21-21-21 to supplement nutrition.	
		Sorghum	Give protective irrigation If feasible spray anti-transparent 6% kaolin In case of severe stress harvest as green fodder		
		Soybean	Give protective irrigation wherever possible	Opening of alternate furrows with Balaram plough	
		Pigeon pea		Foliar spray of 2% KNO ₃ , urea and DAP	

Condition		Suggested Contingency measures			
Terminal drought (Early withdrawal of monsoon)	Major Farmingsituation	Normal Crop/Cropping system	Crop management	Rabbi Crop planning	Remarks on Implementation
	Medium deep to deepblack soils with assuredand high rainfall	Soybean	Give life saving irrigation or harvest at physiological maturity	Sowing of rabbi crops like sorghum, chickpea, safflower immediately after harvest of soybean with minimum tillage	Linkage with MAIDC /DSAO for harvesting implements (thresher, harvester). Linkage with DSAO for farm ponds and micro irrigation system through RKVY
		Cotton	Give protective irrigation withdrip, Picking	If possible, adopt relay cropping of chickpea, safflower, rabbi sorghum	
		Sorghum	Lifesaving irrigation or harvest at physiological maturity	Plan for rabbi crops like chickpea and safflower	
		Pigeon pea	Lifesaving irrigation Foliar spray of 2% KNO ₃ ,urea and DAP	---	
		Green Gram / Black Gram / Sorghum / Safflower / Gram	Harvest at physiological maturity or in case of severedrought use as fodder/ green manuring	Plan for rabbi crops chickpea / safflower / rabbi sorghum / sunflower	
	Shallow black soils with assuredand high rainfall	Cotton	Give protective irrigation. Picking	If possible, adopt relay cropping of chickpea, safflower, rabbi sorghum	
		Sorghum	Give protection irrigation. In case of severe stressharvest as green fodder	Plan for rabbi crops chickpea / safflower	
		Soybean	Give protection irrigation	Plan for rabbi crops chickpea / safflower / sorghum	
		Pigeon pea	Give protection irrigation	Foliar spray of 2% KNO ₃ , urea and DAP	

7.1.2. Irrigated situation

Condition	Suggested Contingency measures				
	Major Farming situation	Crop/Cropps system	Change in crop / cropping system	Agronomic measures	Remarks on Implementation
Delayed / limited release of water in canals due to low rainfall	Medium deep to deep black soil with assured and high rainfall	Sugarcane	No change or prefer irrigated cotton	<ul style="list-style-type: none"> Raising of nurseries with single budded setts to save the time and water for pre-seasonal planting Drip system for enhancing the water productivity Mulching with sugarcane trash between rows and frequent interculture to conserve moisture 	Supply of seed through MSSC, NFSM, MAU, Village seed production programme
		Wheat	No change. Depending upon time of release of water go for timely (HD-2496, HD-2189, Triambak) / late sown (HD-2189, Kailash) wheat varieties	Give irrigation at critical stages of crop growth	
	Shallow soil with assured and high rainfall	Turmeric	Maize Cotton	Alternate furrow irrigation Drip irrigation	
Non release of water in canals under delayed onset of monsoon in catchment	Medium deep to deep black soil with assured and high rainfall	Sugarcane	Cotton	Limited irrigation	Supply of seed through MSSC, NFSM, MAU, Village seed production programme
	Shallow soil with assured and high rainfall	Turmeric	Cotton, Maize, Soybean	Alternate furrow irrigation Drip irrigation	
Insufficient groundwater recharged due to low rainfall	Medium deep to deep black soil with assured and high rainfall	Sugarcane	Cotton	Limited irrigation	Supply of seed through MSSC, NFSM, MAU, Village seed production programme Recharging of wells Implement Watershed development programmes
		Wheat	No change	Irrigation at critical crop growth stage	
	Shallow soil with assured and high rainfall	Turmeric	Cotton, Maize, Soybean	Alternate furrow irrigation Drip irrigation	

7.2 Unusual rains (untimely, unseasonal etc.)

(For both rainfed and irrigated situations)

Condition	Suggested contingency measure			
Continuous high rainfall in a short span leading to waterlogging	Vegetative stage	Flowering stage	Crop maturity Stage	Post-harvest
Cotton, Pearl millet	Drain excess water Interculture at optimum soilmoisture Apply 25KgN/Ha to cotton	Drain excess water	Drain out excess water Timely harvest	Protect picked cotton from drenching and soiling Dry wet cotton and market
Maize	Drain out excess water as early as possible Inter cultivation and Earthing up	Drain out excess water as early as possible Inter cultivation and Earthing up	Drain out excess water Harvest green cobs from dislodged plants for immediate marketing	Harvest cobs after proper drying Dry the grain to optimum moisture content before storage
Soybean, Pigeon Pea and short duration pulses	Drain out excess water			Shift to safer place Dry the produce
Horticulture				
Mango	Opening of field channels to drain out excess water and avoid surface ponding,	Opening of field channels to drain out excess water and avoid surface ponding,	Collect fallen fruits, grade and market if feasible	Grading, cleaning and marketing of fruits
Sweet orange	Interculture at optimum soil moisture	Interculture at optimum soil moisture		
Pomegranate	Drain out excess water by opening the trenches	Providing drainage trench (1.5 cu. ft.) across the slope	Providing drainage trench (1.5 cu. ft.) across the slope	Treatment of 0.1 % carbendizime to the bunches to protect from diseases
Heavy rainfall with high-speed winds in a short span				
Cotton, Pearl millet	Drain excess water. Interculture at optimum soilmoisture. Apply 25KgN/Ha to cotton	Drain excess water	Drain out excess water Timely harvest	Protect picked cotton from drenching and soiling Dry wet cotton and marketing

Maize	Drain out excess water as early as possible	Drain out excess water as early as possible	Drain out excess water Harvest green cobs from dislodged plants for immediate marketing	Harvest cobs after proper drying Dry the grain to optimum moisture content before storage
Soybean, Pigeon Pea and short duration pulses	Drain out excess water			Shift to safer place Dry the produce
Horticulture				
Mango	Drain out excess water	Provide support to prevent lodging and uprooting in young orchards	Apply Mult nutrient and hormonal spray to promote flowering	Shift produce to safer place
Sweet orange				
Pomegranate				
Outbreak of pests and diseases due to unseasonal rains				
Cotton	Apply soil drench of carbendazim 0.1% or COC @ 3g/litre at base of plants to prevent wilt in low lying patches	Apply foliar spray of streptocyclinesulphate @ 6g/60 litre + COC @ 25g/10 litre to prevent bacterial leaf blight Apply Sulphur 25g/10 litre (300mesh) to prevent grey mildew Apply MgSO ₄ 25 kg/ha soil application or 1% MgSO ₄ foliar spray to prevent leaf reddening	Foliar spray of carbendazim 0.1% or Dithane M45 0.2% to prevent boll rot	-
Pearl millet			Apply Dithane M 45 0.2% on ear heads immediately after cessation of rains	
Maize		Foliar application of Mancozeb at 0.25-0.5% at 8-10 days interval to control Turcicum leaf blight		
Soybean	Manually remove infested plants or plant parts from below the girdles	-		

	Protect against semilooper when density reaches >4 larvae per meter row with foliar spray of NSKE 5% or dimethoate 30 EC 1 ml/litre			
Horticulture				
Mango	Spray Imidacloprid 0.3 ml or dimethoate 1 ml/liter to control hopper. Drench the seedlings with COC 0.25% against root rot.	Protect against hopper	Spray Dithane M 45 3g/litre or carbendazim 1g/liter against anthracnose. Spray sulphur 0.5% to control powdery mildew.	Maintain aeration in storage to prevent fungal infection and blackening of fruits
Sweet orange	Protect against Citrus Psylla with foliar spray of malathion 50 EC 10 ml or quinalphos 25 EC 10 ml or cypermethrin 25 EC 4 ml per 10 liters	Protect against Citrus Psylla with foliar spray of malathion 50 EC 10 ml or quinalphos 25 EC 10 ml or cypermethrin 25 EC 4 ml per 10 liters	-	-
Pomegranate	<p>a) Insect pest</p> <p>i) Shot hole borer</p> <ul style="list-style-type: none"> • Use Geru paste with insecticides • Soil application of 10 g phorate @ 10g/plant in basin <p>b) Disease</p> <ul style="list-style-type: none"> • Bacterial blight – Spraying of bactinashak 250ppm (2.5g/10 lit.) and captaf 0.25% alternatively • Fungal fruit and leaf spot- Spraying of mancozeb 75 WP 0.25 % or carbendazim 50 WP 0.1 % 	<p>i) Shot hole borer</p> <ul style="list-style-type: none"> • Use Geru paste with insecticides • Soil application of 10 g phorate @ 10g/plant in basin <p>ii) Anar caterpillar</p> <p>- Spraying of Emamectin benzoate 5 SG @ 5g/10 lit. Water.</p> <p>Bacterial spot – Spraying of bactinashak 250 ppm (2.5 g / 10 lit.) and captaf 0.25 % alternatively</p> <p>Fungal fruit and leaf spot- Spraying of mancozeb 75 WP 0.25 % or carbendazium 50 WP 0.1 %</p>	<p>i) Fruit sucking moth</p> <ul style="list-style-type: none"> • Protect the fruits either by bagging or by using repellents <p>i) Bacterial spot – Spraying of bactinashak 250 ppm (2.5 g / 10 lit.) and captaf 0.25 % alternatively</p>	

7.3 Extreme events: Heat wave / Cold wave

Extreme event type	Suggested contingency measure			
	Seedling / nursery stage	Vegetative stage	Reproductive stage	At harvest
Heat Wave				
Horticulture				
Sweet orange	Frequent irrigation Shade temporary shade net Mulching	Irrigation and pruning of affected branches / twigs	Irrigation and pruning of affected branches / twigs. Apply 1% Bordeaux paste to cut ends	Immediate harvesting, grading and marketing
Cold wave				
Sweet orange	Protect with polythene sheet	Smoking, frequent and Light irrigation during evening hours, basin mulching, apply supplementary dose of fertilizers	Smoking, frequent and light irrigation during evening hours, basic mulching, apply supplementary dose of fertilizers	

Chapter 8: Agro-meteorological advisory

8.1 Importance / Need of Agro-met advisory

Agrometeorological Advisory Services (AAS) are being rendered by India Meteorological Department (IMD), Ministry of Earth Sciences (MoES) under Gramin Krishi Mausam Sewa (GKMS). Under this scheme weather information-based, crop/livestock management strategies and operations are dedicated to enhancing crop production and food security.

Weather is one of the most important factors determining the success or failure of agricultural production. It affects every phase of the growth and development of a plant. Extreme weather events like heavy rains, cyclones, heat waves, cold waves, drought, etc. cause considerable loss in crop production every year.

Agro Advisory service provides timely and accurate weather forecasts and miscellaneous agricultural operations to be carried out for better crop growth. It helps the farmers to take weather sensitive decisions like sowing/transplanting of crops, pesticide and fertilizer application, scheduling irrigation, timely harvesting of the crops. It provides advice on how to safeguard agriculture products from damage while in storage and transit. Weather-based advisory services can provide real time information about weather patterns, crop health and appropriate measures to the farmers enabling them to make informed decisions about various crop management practices leading to higher yields and increased income.

8.2 Forecasts or advisories generated at district level.

- Advisory by Krushi Vigyan Kendra (KVK) Tondapur.
- Crop Pest Surveillance System and Advisory Project (CROP-SAP)
- Akashwani Parbhani (Radio station).
- Advisory by Vasant Rao Naik Marathwada Krishi Vidyapeeth (VNMKV), Parbhani.
- Regional News Paper.



ग्रामीण कृषि मौसम सेवा
अखिल भारतीय समन्वयित कृषि हवामानशास्त्र संशोधन प्रकल्प
वसंतराव नाईक मराठवाडा कृषि विद्यापीठ, परभणी - ४३१ ४०२
ईमेल - amfuparbhani@gmail.com



हिंगोली जिल्हा कृषि हवामान सल्ला पत्रक क्रमांक - २६/२०२३ - २०२४ शुक्रवार, दिनांक - ०७.०७.२०२३

मागील आठवड्यातील हवामानाचे स्थिती (दिनांक ०१ ते ०७ जूली, २०२३)						हवामान घटक		हवामान अंदाज (दिनांक ०८ ते १२ जूली, २०२३ साठी हवामान अंदाज)				
०१/०७	०२/०७	०३/०७	०४/०७	०५/०७	०६/०७	दिनांक		०८/०७	०९/०७	१०/०७	११/०७	१२/०७
						पाऊस (मिमी)		१२	८	२	३	४
						कमाल तापमान (अं.से)		३३	३३	३४	३४	३५
						किमान तापमान (अं.से)		२३	२३	२४	२४	२५
						स. दु.	उग स्थिती (आकाश)	दगळ	दगळ	दगळ	अंशतः दगळ	अंशतः दगळ
								सकाळची सापेक्ष आर्द्रता (%)	८३	७९	७६	७४
							दुपारची सापेक्ष आर्द्रता (%)	७२	७०	६९	६८	६०
							वाऱ्याचा वेग (किमी/तास)	२२	२३	२२	२१	२३
						स. दु.	वाऱ्याची दिशा	पश्चिम-नैऋत्य	पश्चिम-नैऋत्य	पश्चिम-नैऋत्य	पश्चिम-नैऋत्य	पश्चिम-नैऋत्य

प्रारंभिक हवामान बंध, मुदत घेतून प्रायतः झालेला अंदाजानुसार हिंगोली जिल्ह्यात पुढील तीन ते चार दिवसात कमाल तापमानात फारशी तपकिरी उमटणार नाही. पुढील चार दिवसात हिंगोली जिल्ह्यात मुरळक टिकाणी हलक्या स्वरूपाच्या पावसाची शक्यता आहे.

मराठवाड्यात दिनांक ०७ जूली रोजी काही ठिकाणी हलक्या ते मध्यम स्वरूपाच्या , दिनांक ०८ जूली रोजी काही ठिकाणी हलक्या स्वरूपाच्या , दिनांक ०९ जूली रोजी मुरळक टिकाणी हलक्या स्वरूपाच्या , दिनांक १० व ११ जूली रोजी मुरळक टिकाणी हलक्या ते मध्यम स्वरूपाच्या पावसाची शक्यता आहे.

विस्तारित अंदाजानुसार (इंजार्पफ्लर) मराठवाड्यात दिनांक ०७ ते १३ जूली २०२३ दरम्यान पाऊस सरासरीपेक्षा जास्त व दिनांक १४ ते २० जूली दरम्यान पाऊस सरासरीपेक्षा राहण्याची शक्यता आहे. येथे, हुसरो अंदाजानुसार वाऱ्याचा वेगही हलक्या किंवा मध्यम ते तापमानातून वाऱ्याचा वेगही हलक्या किंवा मध्यम ते दूर कितीही काही झालेले आहे तर जमिनीतील ओलेपणाचे प्रायतः चाकलेले आहे.

विस्तारित अंदाजानुसार (इंजार्पफ्लर) मराठवाड्यात दिनांक १२ ते १८ जूली २०२३ दरम्यान कमाल तापमान सरासरीपेक्षा कमी, किमान तापमान सरासरीपेक्षा व पाऊस सरासरीपेक्षा कमी राहण्याची शक्यता आहे.

पेरणीयोग्य (७५ ते १०० मिमी) पाऊस झालेला घेतात जमिनीत पुरेसा ओलेपणा असण्याची काही कालावधीत कितीही कालावधीत पेरणी करावी. पेरणीयोग्य पाऊस व झालेला घेतात ओलेपणाची पेरणीची पाई करून घ्या. मानून घ्या पेरणीयोग्य पाऊस (७५ ते १०० मिमी) झाल्यानंतरच खरीप पिकांची कितीही कालावधीत करून घ्यावी. सर्वसाधारणपणे १५ जूली पर्यंत सर्व खरीप पिकांची (मूग, उडीद, धुईमूग सोडून) पेरणी करता येई.

पिकाचे नाव	अवस्था	कृषि हवामान सल्ला
सोयबीन	उत्तमपेक्षा व पेरणीचा काळवाढी	सोयबीन पिकास हेक्टरी ३० किलो नत्र + ६० किलो सुपूर + ३० किलो फास्फोर + २० किलो प्रीम ग्रेव्ह खाताची मात्रा पेरणीयोग्यतेसाठी घ्यावी. सोयबीन पिकाची पेरणी १५ जूलीपर्यंत करता येई. सोयबीन पिकाची पेरणी झाल्याची वेळी एक (वेग वेगळा तरी) पावतीने करावी ज्यामुळे मातीतील ओलेपणा व जमिनीची सुगंधिता टिकून राहण्यास मदत होऊन अधिक उत्पादन मिळते.
खरीप ज्वारी	उत्तमपेक्षा व पेरणीचा काळवाढी	खरीप ज्वारीस ६० किलो नत्र, ४० किलो सुपूर व ४० किलो फास्फोर प्रती हेक्टरी कालावधीत मिळारून घ्यावी आहे. ज्यावेळी जपे नत्र, सुपूर सुपूर व संपूर्ण फास्फोर पेरणी करताना घ्यावे. खरीप ज्वारी पिकाची पेरणी जूलीच्या पहिल्या आठवड्यापर्यंत करता येई.
बाजरी	उत्तमपेक्षा व पेरणीचा काळवाढी	बाजरी पिकास हलक्या जमिनीत ४०-६०-३० व मध्यम ते घाटी जमिनीत ६०-३०-३० पोटी जपे नत्र, सुपूर सुपूर व संपूर्ण फास्फोर पेरणी करताना घ्यावे. बाजरी पिकाची पेरणी २० जूलीपर्यंत करता येई.
ऊस	घाटीची	मूग ऊसाची घराची बागाची वेळी नसल्यास ती करून घ्यावी व नत्र कालावधीत घ्यावे हजेर घ्यावे.
हजेर	आंतरपिक	हजेरमध्ये आंतरपिक घेतात पहिल्या तीन ते साडेतीन मधीकालावधीत काढणी झालेला उसा प्रकाराची आंतरपिके कितीही घ्यावे. घालण्या घालण्यासारखा आंतरपिकाचा समावेश नसावा.
सम्राज्जेसबी	सम्राज्जेसबी घाटीची	पाऊस झालेल्या ठिकाणी नवीन सम्राज्जेसबी बागेची लागवड करावी. नवीन सम्राज्जेसबी लागवडीसाठी प्रारंभिक नोंदणीकृत रोपवाटीकडूनच रोपवाटी खरेदी करावी. तिकडूनच पिकास कोडी किडीची प्रदुषीत विस्तृत आवासा वाऱ्याच्या व्यत्ययानेपासूनही निवडणी अर्क ५ % किंवा ओईडीकडून (१० हेक्टर पोपीएच) ३ ते ५ मिमी प्रति हेक्टर घालण्याची घ्यावी. सारांशिक नियंत्रणासाठी खयबोकोल १८.५ हे.प्र. २.५ मिमी किंवा खयबोकोल १५.० हे.प्र. २ मिमी किंवा विज्ञान पत्रक ३ प्रीम प्रती हेक्टर घालण्यात निरासून घ्यावी करावी. आंतरपिकेकरिता ३० दिवसांची १५ दिवसांच्या अंतराने घ्यावी.
ऊसबी	सम्राज्जेसबी	पाऊस झालेल्या ठिकाणी नवीन ऊसबी बागेची लागवड लागवड करावी. नवीन ऊसबी लागवडीसाठी प्रारंभिक नोंदणीकृत रोपवाटीकडूनच रोपवाटी खरेदी करावी.
पिठू	सम्राज्जेसबी	पाऊस झालेल्या ठिकाणी नवीन पिठू बागेची लागवड लागवड करावी. नवीन पिठू लागवडीसाठी प्रारंभिक नोंदणीकृत रोपवाटीकडूनच रोपवाटी खरेदी करावी.
भाजरीपाल	पुनर्लागवड / काढणी	पाऊस झालेल्या ठिकाणी जमिनीत ओलेपणा बघून कितीही लागवड घेण्याचा आवाज घ्यावा उदा. पोडी, कासल, भोवळा, पोडका इत्यादी भाजरीपाल पिकांची लागवड करावी. वाढीच्यावेळी तयार केलेल्या भाजरीपाल पिकांच्या रोपाने ४५ दिवस झाले असल्यास पाऊस झालेल्या ठिकाणी जमिनीत ओलेपणा बघून भाजरीपाल पिकांची (खंगी, मिरची, टोमॅटो इ.) पुनर्लागवड करावी. काढणीत तयार असलेल्या भाजरीपाल पिकांची काढणी करून घ्यावी.
पुनरुत्पत्ती	पुनर्लागवड / काढणी	पाऊस झालेल्या ठिकाणी जमिनीत ओलेपणा असल्याची काही कालावधीत पुनर्लागवड करावी. काढणीत तयार असलेल्या पुनरुत्पत्ती पिकांची काढणी करून घ्यावी.
घारा गिळे	उत्तमपेक्षा	घारा व घारागिळ्यासाठी ६०:४०:४० नत्र, सुपूर, फास्फोर प्रती हेक्टरी मात्रा पेरणीयोग्यतेसाठी घ्यावी.
सुडी रेशीम उद्योग	---	उद्योग घालण्यात रेशीम पौष्टिक संपादनार्थी विशेष काळजी घ्यावी आवश्यक आहे. काढ रेशीम पौष्टिक संपादनार्थी २५ अ.स. तापमान व ६५ टक्के सापेक्ष आर्द्रता घालून घ्यावेत असणे आवश्यक असते. कावेर घालताना ५ प्रीम प्रती घ्या. फुट घालण्यात पोस्ट काडीचा घुन अडवणेकरिता घ्यावी करावी. २४ तास घालून घ्यावेत तुरीयने काढा वेळ नये. त्यामुळे काव सोडण्यात येणे टाळावे आहे. कावे वरून उरलेला काव रोपवाटीपासून लगेचच निरुत्पन्न किंवा अंधूक पावडर अडवणेकरिता फुट घालून घ्यावी करावी करावी. १०० अंडींपासून १५ कि.ग्रे. घुन व ४.५ कि.ग्रे. विजेता कावडर घालावे.
परतून	---	परतून या विषयामध्ये रोगाचा प्रदुषीत पावसाळ्याच्या मुरुमातील काढत आता. परतून या रोगावर उपलब्ध असलेल्या लक्षांची निरा पाहणे व त्यावेळी लक्षांमधील रोगाची निवडणी घ्यावी करावी करावी. ही लक्ष घ्यावे घ्यावी रोगाची निवडणी घ्यावी करावी.
सामुदायिक विज्ञान	---	पावसाळ्यात हिऱ्या भाजी पाल्याचे, स्वच्छ घुन कमी झाल्यात सावर करावा. पावसाळ्यात काढण्या, नस का कासल, साहज, फलामना, दुधापावसा, घट्टाट, रोगा वाघा घालून सावर करावा.
हजेर	---	हजेरी मंगलापावत्याच्या व्यत्ययानेपासूनही पाऊस पडल्यानंतर सर्व जेतक-वांनी सामूहिक हिऱ्या मॉडेल तयार करून मंगलापावत्या गोळा करून घ्यावी कितीही पावसात घालून घ्यावेत त्यात कोरडे मिट अथवा घुन टाकून नष्ट कराव्यात.

सतर कृषि हवामान सल्ला पत्रक वसंतराव नाईक मराठवाडा कृषि विद्यापीठ, परभणी येथील ग्रामीण कृषि मौसम सेवा योजनेतील तज्ञ तज्ज्ञांच्या शिफारशीवरून तयार करून प्रसारित करण्यात आली.

पुनर्लागवड / काढणी
 कृषि हवामान सल्ला पत्रक
 वसंतराव नाईक मराठवाडा कृषि विद्यापीठ, परभणी

- Timing of frost damage control using irrigation and smoke to mitigate forecast frost episodes
- Compost/fertilizer application timed to maximize effects on crop growth and yield e.g. avoiding application prior to heavy rainfall to mitigate fertility loss through soil erosion.
- Vegetable nursery development based on temperature forecasts, for chillis, onions & seasonal leaf vegetables.
- Timing the harvest so as to increase the likelihood of grain being stored at optimal moisture content.
- Agro Advisory helps in protection of crop harvest and its storage avoiding rain damage at harvest/storage stage thus reducing the economic losses.
- Timely advisory bulletin with forecast of extreme weather like dry spell, heat wave, hail storm and advised management options thereof helps to protect crops. Such timely advisories alerts and benefit the farmers.

8. 6 Advisory based on Pest surveillance activity.

A. Implementation status of CROPSAP.

CROPSAP activity is implemented by the agricultural department by giving training from master trainers to all field staff. Agriculture Assistants select two villages of jurisdiction for which they select two fixed plots each. And they take compulsory four readings weekly of fixed plots in two different selected villages. Agriculture Supervisor, circle agriculture officer (CAO) and Taluka agriculture officer (TAO) randomly take weekly readings in CROPSAP. Reading is taken in various crop stages, such as seedling, vegetative growth, and pod formation and after maturity. On the basis of observation advisory preparer as given below

Status of CROPSAP

Sr. No.	District	Post	Target	Achievement	%
1	Hingoli	Agriculture Assistant	7056	6115	87 %
2	Hingoli	Agriculture Supervisor	1456	1373	94 %
3	Hingoli	Circle Agriculture officer	672	417	62 %
4	Hingoli	Taluka Agriculture Officer	168	92	55 %
5	Hingoli	Subdivisinal Agri.Officer	56	60	107 %

(Source- DSAO Office, Hingoli)

Crop-SAP Advisory

Advisory Date	Crop Name	Taluka Name	Brief Advisory (English)	Detail Advisory (English)
19/10/2023	Cotton (Kapas)	Hingoli	Release of Trichogramma bacteria@ 60,000 eggs/acre at weekly intervals. Collect and destroy rosette flowers.	For white fly, jassid and bollworm Pyriproxyfen 05 + Fenprothrin 15 % EC @ 12 ml or Fipronil 15% + Flonicamid 15% WDG @ 8 gm or Acephate 50 % + Imidacloprid 01.80 % SP @ 20 gm per 10 lit. of water.
19/10/2023	Pigeon-pea / Tur/ Red Gram/ Arhar	Aundha Nagnath	Install 5 pheromone traps/ha for monitoring & remove alternate hosts and weeds.	For spotted pod borer spray with Indoxacarb 14.5% SC@ 7 ml or Novaluron 5.25% + Indoxacarb 4.50% SC @ 16.5 ml per 10 lit. of water.
19/10/2023	Sorghum (Jowar/Great Millet)	Kalamnuri	In Rabbi season Seed treatment with Cyantraniliprole 19.8 % + Thiamethoxam 19.8 % FS @ 6 ml per kg seed for FAW.	In Rabbi season Seed treatment with Cyantraniliprole 19.8 % + Thiamethoxam 19.8 % FS @ 6 ml per kg seed for FAW.
03/10/2023	Soybean	Aundha Nagnath	Spraying with Acetamiprid 25% + Bifenthrin 25% WG @ 0.5 g/lit of water for whitefly to control Yellow Mosaic.	spraying with Carbendazim 25%+ Mancozeb 50% WS @ 2 gm or Penflufen 13.28% + Trifloxystrobin 13.28% FS @ 2 ml or Thiophanatemethy 2 gm per lit. of water for charcoal rot.

B. Impact on crop pests and diseases management

With the help of crop-sap advisory as above farmers get known proper pest management treatment to keep the pest populations below economic threshold levels (ETL). As farmers get information about upcoming pests early, it helps to control pests before damage of crops and save spraying expenditure of farmers. The pest affected areas across soybean, cotton, rice, pigeon-pea and chickpea are implemented with scientifically based pest management practices across Hingoli District.

8.7 other sources/sources of Agro-met advisory.

KVK Tondapur - The Unit has equipment to record daily minimum & maximum temperature, humidity, rainfall, evaporation rate etc. This data can be made available to farmers on demand free of cost for working out the water requirements of the plants & prediction of diseases.

8.8 Different apps/dashboards/channels/stations/means used to disseminate the information.

Krushik, Plantix and VNMKV apps are used by farmers to get agriculture related information. PCRA dashboard, Parbhani Radio Akashwani and Agro-won newspaper also used by farmers.

Chapter 9: Commodity wise status of climate Resilient Agriculture value chain

9.1. Existing marketing scenario in the district.

9.1.1 Year wise Marketable Surplus of Major Crop					
Sr. No	Name of Crop	2020 in MT	2021 in MT	2022 in MT	2023 in MT
1	Tur	11258	7575	4956	6239
2	Udid	193	225	36	41
3	Mung	30	145	30	85
4	Cotton	11983	3889	306	195
5	Jowar	42	325	229	195
6	Soybean	31865	35881	42609	24959
7	Turmeric	53741	50907	46334	65407
8	Wheat	1410	1708	2451	1948
9	Gram	3533.99	1372	3531	6445

(Source- Agricultural Marketing Information Network (Agmark net))

9.1.2 Year wise Price Variation of Major Crop					
Sr No	Name of Crop	2020	2021	2022	2023
		In Rs/qtl	In Rs/qtl	In Rs/qtl	In Rs/qtl
1	Tur	5278	6223	6436	8804
2	Udid	6120	5191	2685	7519
3	Mung	4120	5591	6493	7848
4	Cotton	5598	8136	9705	8177
5	Jowar	1450	1324	1837	2671
6	Soybean	3824	6006	5956	4869
7	Turmeric	5145	6984	6954	9438
8	Wheat	1909	1867	2159	2507
9	Gram	3950	4768	4310	4662

(Source- agricultural marketing information network -Agmark net)

9.1.3 Markets available in the district with commodities handled (e-NAM, e-Markets, APMC/ *Kharedi Vikri Sangh*) (In MT)

Name of APMC	2020			2021			2022			2023		
	Soybean	Tur	Wheat	Soybean	Tur	Wheat	Soybean	Tur	Wheat	Soybean	Tur	Wheat
Akhada-Balapur	913	496	202	5258	529	163	2111	111	73	592	54	95
Kalamnuri	887	204	59	1133	33	58	371	39	0	95	10	0
Basmat	3171	5	0	5093	84	0	9115	113	0	3674	63	0
Kuranda	1984	0	0	381	19	0	42	8	0	0	0	0
Jawala Bazar	2974	318	309	2318	265	212	3452	87	212	2775	116	0
Hingoli	11471	5354	464	11257	3682	793	14295	1995	494	9914	3097	1122
Kanergaon Naka	6968	2260	358	6415	1621	478	7574	1969	1672	4581	1461	718
Sengaon	3497	2621	18	4026	1342	4	5649	634	0	3328	1438	0

(Source- Agricultural Marketing Information Network (Agmark net))

9.2 Constraints in existing value chain

Lack of connectivity to state highways and Railway stations. Lack of storage facility along with Bank service. Lack of electronic weighing measures. Lack of awareness of daily rate update to farmers through SMS service. Lack of sorting and grading machinery. No provision for disaster management like fire. Poor awareness of traders regarding farmers' problems. Lack of availability of cold storage facilities. Processing unit are not available in catchment area

9.3 Potential for strengthening of commodity wise value chains

Sr. No	Name of Commodity	Potential to Straightening Value of Chain
1.	Turmeric	Training on best practices boiling, drying and straightening while drying for turmeric. Exposure visits to curcumin Testing Labs. Exposure visits to the processing unit of making Haldi powder.
2.	Soybean	Facilitation of linkages with Warehouses for farmers to hold the produce and evil WHR. Training of WHR (Warehouse Receipt) Training on Financial Management and Exposure visit to soya processing unit.
3.	Cotton	Exposure visits to micro spin unit and Surgical cotton processing unit.

(Source: SREP, ATMA Hingoli)

9.4 FPCs' Contribution in value chain development

9.4.1 Status of FPCs in the district

In Hingoli district total 96 FPCs formed. Among them 60 FPCs in NDKSP, 03 in SMART and 14 FPCs in MACP get the benefit of subsidy. They applied for various types of activities like CHC, Drying Yard, Godown Construction, Turmeric processing unit, Grain processing unit, Goat breeding center, Dal mill etc. in our project.

9.4.2 Assessment of FPCs in the district

9.4.2.1. Objectives of Evaluation

- The study is an attempt to assess the Farmer Producer Companies of project area and find whether these companies are performing and earning sufficient returns to sustain business. The report has also proposed a rating method to measure the performance of FPCs considering different 8 parameters. The reports analyzed 58 Farmer Producer Companies with the help of parameters. The parameters were further assigned performance scores on the basis of efficiency and effectiveness with the help of Automatic Rating Meter.
- On the basis of assessment report, suggesting the measures for strengthening of FPCs e.g. capacity building, climate resilience adaptation.

Table no. 9.4.2.1.a. Criteria for Evaluation of FPCs

Criteria	Max. Score
Organization and Administration (Core foundation strength)	21
Governance (Control System in Place)	11
Management (Decision making processes)	8
Infrastructure (Assets and resources)	5
Finance (Financial Base and health)	25
Business and Market Linkages (Resource quality)	21
Capacity Building (Resource quality)	5
Climate Resilience (Adaptability to climate risk)	4
Final Score	100

Scoring Method of Evaluation

The maximum score for the above mention parameter was 100. The FPC rating report was generated by calculating the obtained score for a FPC. From these scores the result boxes were generated in the report indicating areas where this particular FPC needs to be improved. Selected questions were grouped under every parameter and weightage was accorded to each question under each parameter. The final score was calculated by using formula:

$$\text{Score} = \frac{\text{Maximum Obtained Score}}{\text{Maximum Obtainable Score}} \times 100$$

9.4.2.2 Output of evaluation.

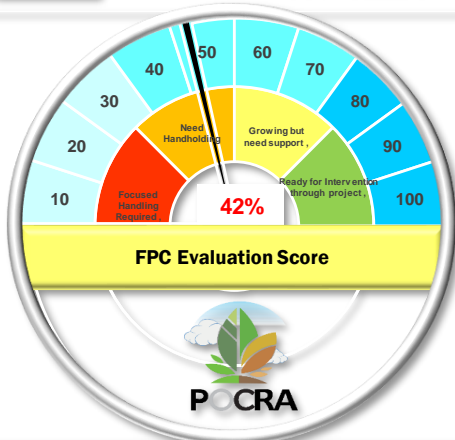
All the major parameter noted above can be classified on the basis of percentage and frequency. The total obtained percent score was use for categorization of the parameter. The parameter was categories into three categories i.e. below 50% marks, 50- 75% marks, and above 75% marks. And all the FPCs were categories in three categories which help to analyzed the present situation of the FPCs present in the project area and will also help to given suggestion to them. This analysis can be useful for the project also for developed different strategies plan for the project area.

The main findings from the survey and the observations from the detailed interactions with the member or directors of the FPCs created insights in terms of how the FPCs operate today, where the members want it to go in the future, how the Directors perceive the plan of action for the future and in which focus areas the gaps between reality and expectation lie.

Customized FPC Evaluation Report



Nanaji Deshmukh Krush Sanjivani Pralap
Maharashtra Project on Climate Resilient Agriculture
 (Project of government of Maharashtra in partnership with World Bank)
CUSTOMIZED FPC EVALUATION REPORT

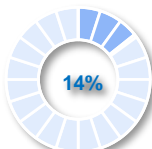


Name of FPC
Asana Farmer Producer Company

Address
 House.N 4/3272/2 Mondha
 Road, Ta. Vasmat, Dist-Hingoli, Pincode-431512

Score Report		
Criteria	Max. Score	Score Obtained
Organization & Administration (Core Foundation Strength)	21	16
Governance (Control Systems in Place)	11	4
Management (Decision making processes)	8	2
Infrastructure (Assets and resources)	5	3
Finance (Financial base and health)	25	12
Business & Market Linkages (Resource quality)	21	3
Capacity Building (Resource quality)	5	1
Climate Resilience (Adaptability to climate risk)	4	1
Final Score	100	42

What could improve your FPC?



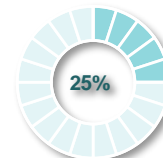
Business & Market Linkages

Bankable business plans will help in increasing financial turnover. Backward and forward linkages should be developed for commodity procurement, value addition and marketing



Capacity Building

Training is required on various climate resilient crop production practices and other new technologies. BOD trainings required for business management and legal compliances. Awareness on climate change is required so that the FPC can adapt CR practices.



Management

Responsibilities should be divided among the BODs, this will help in defining tasks and achieving the objectives. Efforts needed to increase the number of shareholders

For more Information contact us at Project Director, ATMA,

Hingoli

9.4.3 Information about FPCs supported by SMART/ NDKSP/ MAGNET (District Data)

Sr No	Scheme Name	Number of Supported FPCs
1	NDKSP	60
2	SMART	03
3	MACP	14

FPCs supported by NDKSP, Hingoli District

Sr No	Taluka	Village	Name of Farmer Group	Registered as	Activity name	Disbursed Amount Rs.
1	Aundha Nagnath	Siddheshwar	Siddhnath Nagnath Agrovet Farmer Producer Company Limited	FPC	Other Agribusiness Activity. Automatic AATA Making plant.	1197600.00
2	Aundha Nagnath	Siddheshwar	Shiv Tandav Farmers Producer Company Limited	FPC	Pulse Mill (Dal Mill) .	1171680.00
3	Aundha Nagnath	Walki	Arnesh Agro Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1199400.00
4	Aundha Nagnath	Gangalwadi	Jaybhaye Brothers Farmer Producer Company Ltd.	FPC	Establishment of Custom Hiring Centers.	1188600.00
5	Aundha Nagnath	Murtijapursawangi	Shiv Tandav Farmers Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1199400.00
6	Aundha Nagnath	Sawali	Shri Kanifnath Maharaj Producer Company Ltd	FPC	Establishment of Custom Hiring Centers.	1199400.00
7	Aundha Nagnath	Siddheshwar	Shiv Tandav Farmers Producer Company Limited	FPC	Turmeric Processing Unit.	1176000.00

8	Basnath	REULGAON	Fegade Patil Farmers Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1139940.00
9	Basnath	Adgaon	Satrang Grain Farmer Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1194379.00
10	Basnath	REULGAON	Fegade Patil Farmers Producer Company Limited	FPC	Other Agribusiness Activity. FEED MILL.	1026600.00
11	Basnath	KHAJMAPUR	Khodkeshwar Farmers Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1047629.00
12	Basnath	MAHAGAON	Pthree Agsolutions Farmers Producer Company Ltd.	FPC	Establishment of Custom Hiring Centers.	1179210.00
13	Basnath	BALEGAON	Krushimitra Baliraja Farmer Producer Company Ltd. Balegaon	FPC	Establishment of Custom Hiring Centers.	1186153.00
14	Basnath	Girgaon	Krushni Tantra Fpc Ltd.	FPC	Pulse Mill (Dal Mill)	1199578.00
15	Basnath	BORGAON KH	Kote Bandhu Farmers Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1170900.00
16	Hingoli	Sasewadi	Trilokesh Farmers Producer Company Limited	FPC	Goat Breeding Center	1181040.00
17	Hingoli	LOHGAON	Namdeo Farmer Producer Company Ltd, Lohgaon	FPC	Establishment of Custom Hiring Centers.	1196304.00
18	Hingoli	Limbala Makta	Krishi Parivartan Farmer Producer Company Ltd,Hingoli	FPC	Other Agribusiness Activity, Feed Mill	1199640.00
19	Hingoli	IDOLI	Icon Agri Producer Company Limited, Idoli	FPC	Establishment of Custom Hiring Centers.	141000.00
20	Hingoli	HINGOLI	Krishi Parivartan Farmer Producer Company Ltd,Hingoli	FPC	Oil Extraction Unit.	1170108.00
21	Hingoli	Hingoli	Anukaran Farmer Producer Company Limited Hingoli	FPC	Food Processing Unit.	1147454.00
22	Hingoli	Hingoli	Anukaran Farmer Producer Company Limited Hingoli	FPC	Goat Breeding Center	1181148.00

23	Hingoli	Hingoli	Anukaran Farmer Producer Company Limited Hingoli	FPC	Establishment of Custom Hiring Centers.	1176600.00
24	Hingoli	Paheni	Vaidyanath Jyotirling Agro Farmers Producer Co. Ltd. Vaijapur	FPC	Establishment of Custom Hiring Centers.	1148160.00
25	Hingoli	HINGOLI	Trilokesh Farmers Producer Company Limited	FPC	Grain Processing Unit (Cleaning/Sorting/Grading Unit)	1199400.00
26	Hingoli	HINGOLI	Trilokesh Farmers Producer Company Limited	FPC	Milk Processing Unit.	1189796.00
27	Hingoli	HINGOLI	Krishi Parivartan Farmer Producer Company Ltd,Hingoli	FPC	Milk Processing Unit.	1195860.00
28	Hingoli	IDOLI	Icon Agri Producer Company Limited, Idoli	FPC	Establishment of Custom Hiring Centers.	1047000.00
29	Kalamnuri	WARANGA PHATA	Bhumiputra Agrotech Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1196222.00
30	Kalamnuri	SUKALI	Anchuleshwar Farmer Producer Company Limited, Sukali	FPC	Establishment of Custom Hiring Centers.	1216470.00
31	Kalamnuri		Haripuri Farmer Producer Company Ltd.	FPC	Establishment of Custom Hiring Centers.	1190400.00
32	Kalamnuri	YELKI	Shivreshwar Farmers Producer Company Limited	FPC	Construction of Godown/ Small Warehouse	1181700.00
33	Kalamnuri	TONDAPUR	Krishi Harit Farmers Producer Company Ltd.	FPC	Construction of Godown/ Small Warehouse	2373000.00
34	Kalamnuri	Dhanora J.	Pradnya Sheel Taruna Farmers Producer Company Limited	FPC	Turmeric Processing Unit.	1199700.00
35	Kalamnuri	Jawala Panchal	J P Krushi Prakalp Farmers Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1188836.00
36	Kalamnuri	SUKALI	Anchuleshwar Farmer Producer Company Limited, Sukali	FPC	Turmeric Processing Unit.	1182000.00

37	Kalamnuri	YEDHASHI	Shriseva Sai Farmers Producer Company Limited	FPC	Turmeric Processing Unit.	1159219.00
38	Kalamnuri	Wadad	Kawale Farmers Producer Company Ltd, Wadad	FPC	Pulse Mill (Dal Mill)	1187250.00
39	Kalamnuri	YEDHASHI	Shriseva Sai Farmers Producer Company Limited	FPC	Pulse Mill (Dal Mill)	1180620.00
40	Kalamnuri	YEDHASHI	Shriseva Sai Farmers Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1191630.00
41	Kalamnuri	REDGAON	Tanmay Farmer Producer Company Limited	FPC	Turmeric Processing Unit.	1140000.00
42	Kalamnuri	SUKALI	Anchuleshwar Farmer Producer Company Limited, Sukali	FPC	Other Agribusiness Activity. TURMERIC CURCUMINE UNIT.	1131600.00
43	Kalamnuri	Nandapur	Haripuri Farmer Producer Company Ltd.	FPC	Other Agribusiness Activity. TURMERIC CURCUMINE UNIT.	1131000.00
44	Kalamnuri	SUKALI	Anchuleshwar Farmer Producer Company Limited, Sukali	FPC	Pulse Mill (Dal Mill)	1199899.00
45	Sengoan	Sengaon	Rayatecha Raja Producer Company Ltd.	FPC	Establishment of Custom Hiring Centers.	801024.00
46	Sengoan	Sengaon	Rayatecha Raja Producer Company Ltd.	FPC	Establishment of Custom Hiring Centers.	100128.00
47	Sengoan	Sengaon	Rayatecha Raja Producer Company Ltd.	FPC	Establishment of Custom Hiring Centers.	100128.00
48	Sengoan	Sawana	Krishi Parivartan Farmer Producer Company Ltd,Hingoli	FPC	Goat Breeding Center	1178062.00
49	Sengoan	Goregaon	Maroti Farmer Producer Company Limited	FPC	Construction of Godown/ Small Warehouse	1199338.00

50	Sengoan		Shankar Parvati Farmer Producer Company Ltd. Walana	FPC	Oil Extraction Unit.	1194787.00
51	Sengoan	Jamthi Bk	Jamthikar Farmer Producer Company Limited	FPC	Construction of Godown/ Small Warehouse	1170000.00
52	Sengoan	SHEGAON KHODKE	Khodke Agro Farms Producer Company Ltd	FPC	Establishment of Custom Hiring Centers.	900000.00
53	Sengoan	SHEGAON KHODKE	Khodke Agro Farms Producer Company Ltd	FPC	Construction of Godown/ Small Warehouse	1191178.00
54	Sengoan	Sengaon	Appaswami Farmer Producer Company Ltd.	FPC	Goat Breeding Center	1180350.00
55	Sengoan	SHIVANI BK	Rudra Shambhu Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1158780.00
56	Sengoan	SENGAON	Raytecha Raja Producer Company Ltd.	FPC	Goat Breeding Center	1177549.00
57	Sengoan	Jamthi Bk	Jamthikar Farmer Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1145400.00
58	Sengoan	Walana	Shankar Parvati Farmer Producer Company Ltd. Walana	FPC	Construction of Godown/ Small Warehouse	1199997.00
59	Sengoan	Goregaon	Maroti Farmer Producer Company Limited	FPC	Grain Processing Unit (Cleaning/Sorting/Grading Unit)	1197600.00
60	Sengoan	BramhanwadaP raWashim	Krishi Parivartan Farmer Producer Company Ltd,Hingoli	FPC	Medicinal/Aromatic Plants Processing Unit.	1199268.00
61	Sengoan		Harshada Farmers Producer Company Limited	FPC	Establishment of Custom Hiring Centers.	1133670.00

9.4.4 Details of commodity transacted by the FPCs

Details of commodity transacted by the FPCs In Hingoli District			
Sr No	Name of farmer producer company	Detailed Address	Commodity Name
1	Kisan Disha Farmer producer company	Jawala bu. Taluka - Sengaon	Soybean, Gram, Tur
2	Baseswar Farmer producer company	Kolsa Taluka - Sengaon	Soybean, Gram, Tur
3	Surya Farmer producer company	Telgaon Taluka Basmat	Turmeric
4	Nagnath farmer Organic producer company	Turk Pimpri Taluka - Aundha Na.	Soybean, Gram, Tur
5	Swastik farmer producer company	At Jawala Bazar Taluka Aundha	Soybean, Gram, Tur
6	A.N . Baliwansh Agro farmer producer company	Yahalegaon So.Taluka Aundha	Soybean, Gram, Tur
7	Krishi Pariwartan farmer producer company	Hingoli	Safflower, Groundnut
8	Sidhnath Nagnath farmer producer company	Sidheswar Taluka - Aundha	Safflower, Groundnut
9	Krishi Viswa farmer producer company	Aundha Na.	Soybean, Gram, Tur
10	Faleswar maharaj farmer producer company	At Falegaon Taluka Hingoli	Soybean, Gram, Tur
11	Kayadhu farmer producer company	Waranga Taluka - Kalamnuri	Soybean, Gram, Tur
12	Godha Farm farmer producer company	Kalamnuri	Soybean, Gram, Tur and Turmeric
13	Dattaguru farmer producer company	Umra Fata Taluka - Kalamnuri	Turmeric
14	Maroti farmer producer company	Goregaon Taluka - Sengaon	Soybean, Gram,,Tur
15	Icon farmer producer company	Idoli Taluka- Hingoli	Soybean, Gram, Tur

16	Krishidhan farmer producer company	At Darephal Taluka-Basmat	Soybean, Gram, Tur
17	Krushimitra Baliraja farmer producer company	At Balegaon Taluka-Basmat	Soybean, Gram, Tur
18	Trilokesh farmer producer company	Hingoli	Soybean, Gram, Tur
19	Appaswami farmer producer company	Sengaon	Soybean, Gram, Tur
20	Jamthikar farmer producer company	Jamthi bu	Soybean, Gram, Tur
21	Rudra Sambho farmer producer company	Shivani kute Taluka - Sengaon	Soybean, Gram, Tur

(Source- ATMA office Hingoli)

9.4.5 Details of services provided by FPCs

Sr No	Name of farmer producer company	Detailed Address	Service Provided by FPCs
1	Kisan Disha Farmer producer company	Jawala bu. Taluka - Sengaon	Seed Production, Cleaning / Grading and Trading
2	Baseswar Farmer producer company	Kolsa Taluka - Sengaon	Cleaning/Grading and Trading
3	Surya Farmer producer company	Telgaon Taluka Basmat	Processing unit
4	Nagnath farmer Organic producer company	Turk Pimpri Taluka - Aundha Na.	Seed Production, Cleaning / Grading, and Trading
5	Swastik farmer producer company	At Jawala Bazar Taluka Aundha	Cleaning / Grading and Trading
6	A.N . Baliwansh Agro farmer producer company	Yahalegaon So. Taluka Aundha	Trading
7	Krishi Pariwartan farmer producer company	Hingoli	Oil Mill/ Dairy product
8	Sidhnath Nagnath farmer producer company	Sidheswar Taluka - Aundha	Oil Mill
9	Krishi Viswa farmer producer company	Aundha Na.	Seed Production, Cleaning / Grading and Trading

10	Faleswar Maharaj farmer producer company	At Falegaon Taluka Hingoli	Seed Production, Cleaning / Grading and Trading
11	Kayadhu farmer producer company	Waranga Taluka - Kalamnuri	Seed Production, Cleaning / Grading and Trading
12	Godha Farm farmer producer company	Kalamnuri	Seed Production, Trading and Turmeric Processing Unit
13	Dattaguru farmer producer company	Umra Fata Taluka - Kalamnuri	Processing unit
14	Maroti farmer producer company	Goregaon Taluka - Sengaon	Seed Production
15	Icon farmer producer company	Idoli Taluka- Hingoli	Trading
16	Krishidhan farmer producer company	At Darephal Taluka- Basmat	Trading and Seed Production
17	Krushimitra Baliraja farmer producer company	At Balegaon Taluka- Basmat	Trading and Seed Production
18	Trilokesh farmer producer company	Hingoli	Cleaning/Grading
19	Appaswami farmer producer company	Sengaon	Goat Breeding / Cleaning/ Grading
20	Jamthikar farmer producer company	Jamthi Bk.	Seed Production and Cleaning / Grading
21	Rudra Sambho farmer producer company	Shivani kute Taluka - Sengaon	Trading

(Source- ATMA office Hingoli)

Chapter 10: Extension strategies for adaptation to climate change

10.1 Preparation of Village Adaptation Plan

- Need for participatory micro-planning and pre-season meetings
- Process for micro-planning and seasonal meetings- agenda, stakeholders, duration, material required, information needed etc.
- Role of Village Agriculture Development Committee of Gram panchayat
- Components of Village Adaptation Plan to be prepared for each village

❖ **Planning for water security**

- a. Computation of water budget
- b. Water conservation structures
- c. Groundwater recharge structures (including recharge of wells)
- d. Water harvesting structures
- e. Micro-irrigation plan

❖ **Planning for soil health**

- a. Soil health Card status of the village
- b. Status of Organic Carbon content
- c. Soil health based advisory- crop suitability
- d. On-farm production of biofertilizers
- e. Production of organic inputs
- f. Regenerative agriculture plan
- g. Soil erosion/ degradation arresting measures

❖ **Crop planning based on water budget and market demand**

- a. Current cropping pattern
- b. Available water balance (post monsoon)
- c. Last year prices of crops
- d. Crop diversification
- e. Proposed cropping pattern (season and crops)

❖ **Planning for Carbon sequestration**

- a. Agro-forestry plantation
- b. Horticulture plantation
- c. Forage/ Cover crop cultivation
- d. Bamboo plantation
- e. Live fencing plan

❖ **Planning for reduction of production cost**

- a. Reducing cost on labour intensive operations (by mechanization)
- b. Reducing use of chemical fertilizers (by enhancing use of bio/ organic fertilizers)
- c. Reducing use of chemical pesticides (by enhancing use of bio/ natural pesticides)
- d. Reducing tillage operations (by conservation agriculture)
- e. Reducing excessive water usage (by micro-irrigation)

❖ **Planning for conservation and production of climate resilient variety seed**

- a. Identification of CRV.
- b. Production programme for Truthful/ Certified/ Foundation seeds- status
- c. Conservation of indigenous seed having climate resilient characters- details of such seeds with location and characteristics

❖ **Adoption of climate resilient technologies**

- a. Identification of CRT useful to the village and creating awareness
- b. Plan of demonstration of CRT (FFS, Method/ Result Demonstrations)
- c. Most prominently adopted technologies and their impact
- d. Innovative technologies adopted
- e. Validation of technologies developed by Progressive farmers

❖ **Integrated Pest Management Plan**

- a. Identification of common pests on major crops based on *CROPSAP*
- b. Plan of IPM technologies to be adopted
- c. On-farm production of bio-pesticides, natural pesticides etc.
- d. Skill training to reduce pesticide hazard

❖ **Integrated farming systems**

- a. Potential for crop based and other livelihood activities
- b. Households to be engaged in IFS
- c. Plan for market linkage for IFS produce

❖ **Preparation of contingency plan**

- a. Village level weather forecast mechanism
- b. Preparedness for contingencies
- c. Crop insurance promotion and status
- d. Monitoring of contingencies
- e. Assessment of losses due to natural calamities if any

❖ **Strengthening of commodity value chains**

- a. Assessing existing commodity value chains
- b. Identification of gaps in existing value chains

- c. Assessing volume of commodity to be marketed
- d. Assessing warehouse availability and available capacity
- e. Assessing transportation facilities
- f. Plan for infrastructure
- g. Plan for market linkage of major commodities
- h. Role of Women Self Help Groups, Farmer Groups, FPCs

II. Convergence of govt. programs with extension plan (Source: District data)

1) Nanaji Deshmukh Krishi Sanjivani Project implementing villages in Hingoli district have other Government Scheme benefits to Farmers as Prime Minister Fasal Vima Yojana for sustainable agriculture crop.

2) Weather based Fruit insurance scheme for Fruit Plantation

3) Chief Minister sustainable irrigation scheme for farm pond, IWMP, Jalyukt Shivar and MREGS

4) CROPSAP With the help of cropsap advisory farmer get know proper pest management to keep the pest populations below economic threshold levels (ETL)

5) Agriculture Sanjeevani week: From 1st July to 7st July 2020, meetings were organized in 391 villages with the participation of 21150 farmers and guidance was given regarding preparation of Kharif season, importance of seed germination, seed treatment, soil testing, various schemes of agriculture department, precautions to be taken while handling/spraying chemical pesticides.

6) SMART: 43 applications have been received under the project for various activities and 27 applications have received pre-sanction and 12 construction work, procurement process is in progress.

7) NDKSP: Till date 80008 farmers of the district have been registered on the online portal DBT Pokhara and a total of 133643 individual benefit applications have been registered. Out of which till date 55040 farmers have been given subsidy amounting to Rs.25062.97 cr.

Also, under the agribusiness component till date 168 farmer groups and farmer producer companies in the district have distributed subsidies amounting to Rs.1973.63cr.

III. Monitoring mechanism for village adaptation progress

Weekly pendency Hon. DSAO signed reports regularly circulated to field staff to work out at the concerned pending table to complete or minimize it. We manage visits to the field of any successful farmer with field staff and farmers, for example Shri Dnyaneshwar Gangadhar Sadhu at Kandarbon Taluka Basmat. As per USP guidelines all Officers and field staff carrying out spot verification with their checking percentage eg. Supervisor have 25% checking in horticulture plantation and NRM work. At the time of regular field visit and in monthly workshops with Agricultural University, KVK scientist and agri department field staff visit arranged in problem occurred villages to guide and resolve it. At the time of spot checking (Moka Tapasni) of various activities like Horticulture plantation, Farm Pond and well etc.100% checking by Agriculture assistant. The Agriculture Supervisor has 100% checking of Drip and Sprinkler irrigation activity whereas farm mechanism activity 100% spot verification by circle agriculture officers. Sub divisional Agriculture officer also carried out 100% spot verification of Shade Net activity.



Field visit - Shree Dnyaneshwar Gangadhar Sadhu, Kandarban, Basmat Custard Apple Fruit plantation in KSP Spot Verification By Shri B R Wagh SDAO Hingoli

Activity name- Planting material in shed net, crop -Shimla mirchi, Farmer -Pandurang Baburao Bhokare Village- Maishgavan Taluka -Kalamnuri



Monthly Workshop - VNMKV and KVK Scientist, DSAO, SDAO, TAO and field staff visit to orange Fruit plantation in MREGS at Vaijapur taluka -Hingoli

IV. Strategy for revisiting of village adaptation plan (Source: District data)

Revisiting a village adaptation plan is essential to ensure that it remains effective and relevant to the changing needs and circumstances of the communities it serves. Here's a strategy for revisiting and updating a village adaptation plan.

Stakeholder Engagement: Identify and engage with key stakeholders, including local government officials, community leaders, farmers, NGOs, and agricultural experts. Conduct meetings and workshops to gather input and feedback on the existing plan and to understand the evolving needs and challenges of the villages.

Assessment of Changing Climate Patterns: Consider the impact of changing climate patterns on agriculture and rural communities. Assess the need for climate-resilient strategies and adaptations.

Technology and Mechanization: Review the adoption of modern agricultural technologies and machinery in the villages. Evaluate the effectiveness of any support or subsidies provided for technology adoption.

Market and Value Chain Analysis: Analyze the local and regional markets for agricultural produce. Identify opportunities to strengthen value chains, improve market access, and increase farmers' income.

Resource Management: Evaluate the sustainable management of natural resources, including water, soil, and forests. Consider strategies for resource conservation and sustainable practices.

Climate-Smart Agriculture: Incorporate climate-smart agricultural practices and technologies to help farmers adapt to changing weather patterns. Promote techniques such as crop diversification and water management.

Capacity Building and Training: Review the effectiveness of training and capacity-building programs for farmers. Ensure that farmers have access to knowledge and skills needed for modern and sustainable farming practices.

Community Participation: Involve local communities in the planning and decision-making process. Encourage community-led initiatives and self-help groups.



कृषी विभागाच्या कार्यशाळेतून शेतकऱ्यांना मार्गदर्शन

लोकमत न्यूज नेटवर्क
नर्सी नामदेव : हिंगोली तालुक्यातील
केसापूर, वैजापूर येथे शेतकऱ्यांसाठी
कृषी विभागाच्या कार्यशाळेतून
शेतकऱ्यांना विविध फळ व पिकांबाबत
मार्गदर्शन करण्यात आले. यावेळी
विविध योजनांची माहिती शेतकऱ्यांना
देण्यात आली.

यावेळी केसापूर येथे पुण्यश्लोक
अहिल्यादेवी होळकर रोपवाटिकेची
पाहणी करण्यात आली. तसेच हळद,
कांदा बीज प्रक्रिया, खताचे नियोजन,
सामूहिक शेततळे, पाण्याचे योग्य
नियोजनाबाबत मार्गदर्शन करण्यात
आले. वैजापूर येथील शेतकरी






तुळसाबाई अन्ना डांगे व हारजी
बळीराम डांगे यांनी
'एमआरईजीएस'अंतर्गत लागवड
केलेल्या संत्रा फळ पिकाची पाहणी
करून कीड व रोगांपासून संरक्षण
करण्यासंदर्भात मार्गदर्शन केले.

त्याचबरोबर 'आरएडी'अंतर्गत
तृणधान्य, सोयाबीन पिकावरील वाण,
खत, उत्पादन खर्च, विक्री आदीबाबत
माहिती व मार्गदर्शन केले.

कार्यक्रमास प्रा. राजेश भालेराव, के.
व्ही. तोंडापूर, डॉ. गजानन गडदे, जिल्हा
कृषी अधीक्षक शिवराज घोरपडे,
भालचंद्र वाघ, कमलाकर सांगळे,
गजानन पवार, संदीप वळकुंडे, ए. एस.
मुळे, अरुण पडघाण, नंदू वाईकर,
शंकर राठोड, उल्हास राठोड, गणेश
पवार, शंकर कोटे, मांडगे, पंढरीनाथ
डांगे, हारजी डांगे, गजानन डांगे, लक्ष्मण
गाडे, उद्धव डांगे आदी उपस्थित
होते.

ANNEXURE I

Sample Village Level Micro-plan https://mlpv2.mahapocra.gov.in/vdp.php?census_code=545879)



गाव विकास आराखडा प्रपत्र

महाराष्ट्र शासन - कृषि विभाग
नानाजी देशमुख कृषि संजीवनी प्रकल्प

गाव विकास आराखडा

गाव समुहाचा क्रमांक- 512_ppg-9_01

गावाचे नाव-	दुर्गसावंगी	सेन्सस कोड-	545879
महसुल मंडळ-	Sirsam Bk.	तालुका-	हिंगोली
उपविभाग-	हिंगोली	जिल्हा-	हिंगोली

गावसमुहातील इतर समाविष्ट गावे

अ. क्र	गावाचे नाव	सेन्सस कोड	अ. क्र	गावाचे नाव	सेन्सस कोड
1	रीक्त	545881	2	रीक्त	545883
3	रीक्त	545882	4	रीक्त	545878
5	रीक्त	545877	6	रीक्त	545880
7	रीक्त	545890	8	रीक्त	545876

सुक्ष्मनियोजन प्रक्रिया कालावधी - 09-07-2021 ते 09-07-2021
गाव विकास आराखडा तयार करणा-या कृषि सहाय्यकाचे नाव - Sanjay S Nimadeo
गाव विकास आराखड्याची तांत्रिक तपासणी करणारे कार्यालय - उपविभागीय कृषि अधिकारी, हिंगोली
ग्राम कृषि संजीवनी समिती मंजूरी ठराव क्रमांक व दिनांक - ठराव क्रमांक 23 दि. 21-08-2015
ग्रामसभा मंजूरी ठराव क्र व दिनांक - ठराव क्रमांक 0 दि. 16-07-2021
जिल्हास्तरीय समन्वय समितीकडील मंजूरीचा दिनांक - _____
जिल्हा अधिक्षक कृषि अधिकारी, हिंगोली कार्यालय

दुर्गसावंगी - 5458791 / 65

अनुक्रमणिका

अ. क्र	तपशील	पृष्ठ क्र
1	प्रस्तावना व पार्श्वभूमी, प्रकल्पाची गरज	4
2	गावाचा विकास आराखडा तयार करण्यासाठी राबविलेला कार्यक्रमाचा तपशील	5
2.1	सुक्ष्मनियोजन प्रक्रिया कालावधी	5
2.2	ग्राम कृषि संजीवनी समिती रचना	6
2.3	ग्राम कृषि संजीवनी समिती स्थापनेबाबतचा ग्राम सभेचा ठराव	7
2.4	नानाजो दशमुख कृषि संजीवनी प्रकल्प व अन्य शासकिय योजनांची अंमलबजावणी करणारासाठी गावपातळीवर उपलब्ध कर्मचारीवृंद	7
2.5	लोकसहभागीय सुक्ष्मनियोजन प्रक्रिया राबविण्यासाठी उपलब्ध असलेले प्रशिक्षक व स्वयंसेवक यांचा तपशील	8
3	गाव व गावसमुह दर्शविणारा नकाशा	9
4	गावाची कृषि विषयक माहिती	10
4.1	गावाची एकूण लोकसंख्या	10
4.2	सुक्ष्मपाणलोट संख्या	10
4.3	भुमी उपयोगिता वर्गीकरण	11
4.4	क्षेत्र धारणेनुसार एकूण खातेदार संख्या	11
4.5	सामाजिक वर्गीकरणानुसार खातेदार संख्या	12
4.6	पिकनिहाय क्षेत्र	12
4.7	गावातील वृक्ष लागवड बदलाची स्थिती (फलोत्पादन सोडून)	12
5	पर्जन्यमान विषयक माहिती	13
5.1	पाऊसमान	13
5.2	गावातील भुजल स्थितीचा तपशील (पाणलोट निहाय):-	14
5.3	सूक्ष्म नियोजन आराखड्यानुसार गावतील सरासरी भुजल पातळी ----- (खोली मी मध्ये) निरीक्षण साठी निवडलेल्या विहिरीचा तपशील	15
5.4	पाण्याचा कार्यक्षम वापर	15
5.5	सिंचन स्रोतानुसार बागायतदार क्षेत्र	15
5.6	सुक्ष्म सिंचनाखालील क्षेत्र (2018-19 पर्यंत)	15
6	पाण्याचा ताळेबंद	16
6.1	गावाचा पाण्याचा ताळेबंद- सद्यस्थितीत	16
6.2	गावाचा पाण्याचा ताळेबंद- प्रस्तावित कामांनुसार	17
6.3	गावाचा पाण्याचा ताळेबंद- प्रस्तावित पिकरचनेनुसार	17
7	सामाजिक माहिती	17
7.1	शैक्षणिक तपशील	18
7.2	कौटुंबिक वर्गावारीनुसार उत्पन्न (प्रतिवर्ष :-)	18
7.3	स्थलांतरणाविषयी माहिती	19
8	पशुधन व चारा उपलब्धता	19
9	गावामध्ये असणा-या कृषि यंत्रे व अवजारांचा तपशील	20
10	गावातील सध्या अस्तित्वातील असलेले शेतकरी गट व इतर संख्या	20
11	कृषि पतपुरवठा विषयक तपशील	20

ANNEXURE II: Village-Profile-545879-2024-32.pdf

(<https://ffsauditlogs.blob.core.windows.net/mahapocra/scripts/pdf/pocra-village-profile-545879-2024-32.pdf>)

नानाजी देशमुख कृषि संजीवनी प्रकल्प		कृषि विभाग महाराष्ट्र शासन	
अहवाल क्रमांक : नादेकूसप्र/गामाप्र/545879/2023/303			दिनांक : 30/10/2023
ग्राम कृषि संजीवनी विकास दर्शिका			
गावाचे नाव : दुर्गासावंगी	गावाचा सांकेतांक : 545879	ग्रामपंचायत: Durgasawagi	
गावाचा (प्रकल्प) टप्पा : 2	गाव खारपान मध्ये येते का ? : नाही	समूह कोड: 512_ppg-9_01	
तालुका : हिंगोली	उपविभाग : हिंगोली	जिल्हा : हिंगोली	
प्रकल्प कर्मचारी/अधिकारी			
पदनाम	पूर्ण नाव	भ्रमणध्वनी क्रमांक	
उपविभागीय कृषि अधिकारी	Wagh B	8208981696	
तालुका कृषि अधिकारी	Sangle Kamalakar P	8552824952	
कृषि सहाय्यक	Nimadeo Sanjay S	7057381551	
समूह सहाय्यक	Khandare Jivak Babarao	7720806177	
शेतीशाळा प्रशिक्षक	NA	NA	
कृषिमित्र	Shangle Shankr Dattrao	8390675776	
कृषिताई	Khandare Vishali Ashok	7743923424	
ग्राम कृषि संजीवनी समिती			
पदनाम	पूर्ण नाव	भ्रमणध्वनी क्रमांक	
सरपंच	Sonune Nanda Ganesh	9765752824	
उपसरपंच	Khandare Sudam Ukandi	8208096868	
ग्रामपंचायत सदस्य	Malgunde Shobhabai Babarao	8605221177	
ग्रामपंचायत सदस्य	Chavhan Anusaya Arun	8412087930	
प्रगतिशील शेतकरी	Malgunde Sarjerao Madhavrao	7798634867	
प्रगतिशील शेतकरी	Waghmare Madhukar Gangaram	7798623874	
महिला शेतकरी	Sathe Vimalbai Mariba	7507691942	
महिला शेतकरी	Kavade Ratnabai Vitthal	9049445505	
महिला शेतकरी	Jamdhad Nandabai Dashrath	8805589145	
शेतकरी उत्पादक कंपनी प्रतिनिधी	Sonune Santosh Babanrao	7507041734	
बचत गट महिला प्रतिनिधी	Chavhan Manisha Pravin	7798004628	
कृषि पूरक व्यावसायिक शेतकरी	Shinde Dnyaneshwar Rajaram	9322086930	
कृषि पूरक व्यावसायिक शेतकरी	Chavhan Balu Kanha	9579878033	
ग्राम कृषि संजीवनी विकास दर्शिका - दुर्गासावंगी(545879). Digital Innovation Lab, PoCRA. Government of Maharashtra.			
			Page # 1



भौगोलिक तपशील

एकूण भौगोलिक क्षेत्र (हे.) - 679	वनक्षेत्र (हे.) - 0
निव्वळ पेरणी क्षेत्र (हे.) - 602.58	बागायती क्षेत्र (हे.) - 602.58
एकूण लोकसंख्या - 1539	एकूण कुटुंब संख्या - 289
शेतकरी संख्या - 279	शेतकरी (अनुसूचित जाती) - 11
अल्प व अत्यल्प भूधारक - 279	शेतकरी (अनुसूचित जमाती) - 0

हवामान अंदाज व पीक सल्ला

माहिती उपलब्ध नाही

वैयक्तिक लाभार्थी तपशील

नोंदणी केलेले शेतकरी - 201	अर्जांची एकूण संख्या - 562
पूर्वसंमती दिलेले अर्ज - 141	लाभ दिलेले अर्ज - 136
लाभार्थी संख्या - 101	लाभार्थी महिला शेतकरी - 22
अनुसूचित जाती लाभार्थी - 1	अनुसूचित जमाती लाभार्थी - 4
वितरीत अनुदान रक्कम - 2525716	बँकेसोबत आधार संलग्न नसलेले शेतकरी - 4

घटकनिहाय वितरित अनुदान

घटक/बाब	एकूण अर्ज	पूर्व संमती प्राप्त अर्ज	नाकारलेल्या अर्जांची संख्या	लाभार्थी शेतकरी	वितरीत केलेला निधी (₹)
Apiculture	2	0	2	0	0
Backyard Poultry	11	0	11	0	0
Compost (Vermicompost / NADEP / Organic input production unit)	10	0	10	0	0
Drip Irrigation	66	10	55	9	417590
Farm Mechanization	13	0	13	0	0
Farm Pond (Individual)	7	0	7	0	0
FFS host farmer assistance / Promotion of BBF technology/ Zero Tillage Technology etc.	9	5	4	4	11200
Horticulture Plantation / Agroforestry	58	5	32	5	80156
Others	2	0	2	0	0



पिकनिहाय क्षेत्र (क्षेत्र हेक्टर)

अ.क्र.	पिकाचा वर्ग	पिकाखालील क्षेत्र
1	तृणधान्य	0
2	कडधान्य	200
3	गळितधान्य	482.42
4	नगदी पिके (कापूस, ऊस)	10
5	भाजीपाला पिके	0
6	फळपिके	0
7	चारा पिके	0
8	इतर	0
एकूण		692.42

निरीक्षण विहिरींची पाण्याची पातळी

सूक्ष्म नियोजन आराखड्यानुसार गावतील सरासरी भुजल पातळी 6 (खोली मी मध्ये) निरीक्षण साठी निवडलेल्या विहिरीचा तपशील

अ.क्र.	पाणलोट क्रमांक	शेतकरी संख्या	भुजल पातळी स्थिती (मी)	दिनांक
1	512_ppg-9_01	35	26	9-7-2021

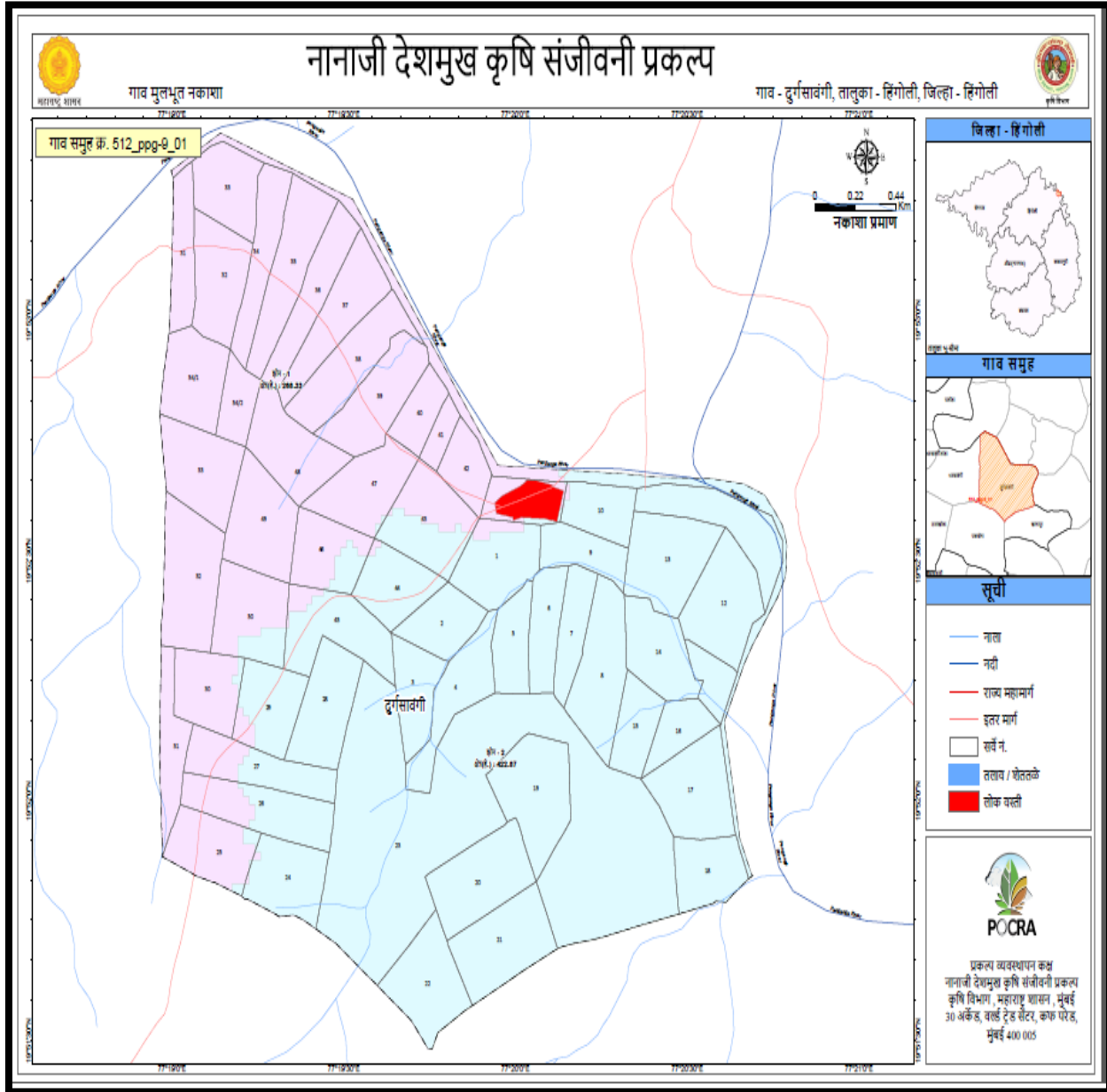
शेतमाल निहाय घाऊक बाजारातील आवक व बाजार भाव बाबत माहिती
माहिती उपलब्ध नाही

नजिकचे गोदाम / वखारकेंद्रा बाबत माहिती

एकूण क्षमता (MT)	उपलब्ध क्षमता (MT)	तारीख
7830	3682	29/10/2023
गोदाम नाव	ईमेल	दूरध्वनी
PUSAD	pusad.wh@mswc.in	07233-246161
गोदामाचा पत्ता -MSWC, WASHIM ROAD ,PUSAD - 445215		
गावापासून अंतर(कि.मी.) - 22.51		

ANNEXURE III: Village Base Map

(<https://mahapocra.gov.in/maps/BaseMap/545879.pdf>)



ANNEXURE IV: AGROMET ADVISORY (हवामान अंदाज व कृषी सल्ला)
https://mahapocra.gov.in/home/taluka_advisory/54)



नानाजी देशमुख कृषि संजीवनी प्रकल्प
कृषी विभाग महाराष्ट्र शासन





सत्यमेव जयते

मुख्य शासन प्रकल्पाच्या तालुकानिहाय हवामान निविदा सुचना संदर्भसुची जाहिरात प्रकल्प आराखडा गंजुरी

पृष्ठ निर्णय विविध पुस्तिका अंदाज व कृषी सल्ला (Tenders)

मार्गदर्शक सुचना अहवाल प्रगती संनियंत्रण व मुल्यमापन संपर्क आणि समर्थन गॅलरी DBT Login

Latest Updates!

क माहितीसाठी **9355056066** या हेल्पलाईन क्रमांकावर संपर्क साधा. **Request for Quotation- to print the flex** **Digitizing Agriculture**

कृषी हवामान सल्ला - जिल्हा: हिंगोली, तालुका: हिंगोली

पुढील पाच दिवसांसाठी हवामानाचा अंदाज (IMD कडून प्राप्त)

दिनांक	०२/०२/२०२४	०३/०२/२०२४	०४/०२/२०२४	०५/०२/२०२४
पाऊस (मिमी)	०.०	०.०	०.०	०.०
कमाल तापमान (अं.से.)	३१.८	३१.०	३२.१	३३.१
किमान तापमान (अं.से.)	१५.४	१५.१	१५.६	१६.२
सकाळची सापेक्ष आर्द्रता (%)	४०	३५	३२	३२
दुपारची सापेक्ष आर्द्रता (%)	१९	१९	२०	१८
वा-याचा वेग (किमी / तास)	१२	११	८	७

कृषी हवामान सल्ला - जिल्हा: हिंगोली, तालुका: हिंगोली

पुढील पाच दिवसांसाठी हवामानाचा अंदाज (IMD कडून प्राप्त)

दिनांक	०२/०२/२०२४	०३/०२/२०२४	०४/०२/२०२४	०५/०२/२०२४	०६/०२/२०२४
पाऊस (मिमी)	०.०	०.०	०.०	०.०	०.०
कमाल तापमान (अं.से.)	३१.८	३१.०	३२.१	३३.१	३४.६
किमान तापमान (अं.से.)	१५.४	१५.१	१५.६	१६.२	१६.५
सकाळची सापेक्ष आर्द्रता (%)	४०	३५	३२	३२	३२
दुपारची सापेक्ष आर्द्रता (%)	१९	१९	२०	१८	१८
वा-याचा वेग (किमी / तास)	१२	११	८	७	७



कृषि हवामान सल्ला

जिल्हा : हिंगोली

तालुका : हिंगोली

पुढील पाच दिवसांसाठी हवामानाचा अंदाज (IMD कडून प्राप्त)

दिनांक
पाऊस (मिमी)
किमान तापमान (अं.से.)
कमाल तापमान (अं.से.)
सकाळची सापेक्ष आर्द्रता (%)
दुपारची सापेक्ष आर्द्रता (%)
वा-याचा वेग (किमी / तास)
वा-याची दिशा (या दिशेकडून येणारा वारा)
दग स्थिती (आकाश)

मागील आठवड्यातील हवामान Automatic Weather Station (AWS) कडून प्राप्त माहिती

दिनांक	०१/०२/२०२४	३१/०१/२०२४	३०/०१/२०२४	२९/०१/२०२४	२८/०१/२०२४
पाऊस (मिमी)	०	०	०	०	०
किमान तापमान (अं.से.)	१७.४२	१२.१६	९.१४	१०.४३	११.०६
कमाल तापमान (अं.से.)	३०.१७	२९.२१	२७.९	२८.७५	२९.७६
किमान आर्द्रता (%)	६५.७४	६२.०७	४१.५१	३५.६६	४९.९
कमाल आर्द्रता (%)	९७.३३	८९.३३	८८.२	९३.५	९४.५
वा-याचा वेग (किमी / तास)	५.०४	४.७६	५.५२	५.५६	४.९९

हवामान अंदाज

हवामान कोरडे राहण्याची शक्यता. आकाश स्वच्छ ते अंशतः स्वच्छ राहण्याची शक्यता. तापमान ० ते ० अंश से. दरम्यान असण्याची शक्यता.

मागील आठवड्यातील हवामान Automatic Weather Station (AWS) कडून प्राप्त माहिती

दिनांक	०१/०२/२०२४	३१/०१/२०२४	३०/०१/२०२४	२९/०१/२०२४	२८/०१/२०२४
पाऊस (मिमी)	०	०	०	०	०
किमान तापमान (अं.से.)	१७.४२	१२.१६	९.१४	१०.४३	११.०६
कमाल तापमान (अं.से.)	३०.१७	२९.२१	२७.९	२८.७५	२९.७६
किमान आर्द्रता (%)	६५.७४	६२.०७	४१.५१	३५.६६	४९.९
कमाल आर्द्रता (%)	९७.३३	८९.३३	८८.२	९३.५	९४.५
वा-याचा वेग (किमी / तास)	५.०४	४.७६	५.५२	५.५६	४.९९

हवामान अंदाज

हवामान कोरडे राहण्याची शक्यता. आकाश स्वच्छ ते अंशतः स्वच्छ राहण्याची शक्यता. तापमान ० ते ० अंश से. दरम्यान असण्याची शक्यता.