

## Soil and Water Management Research Unit,NAU, Navsari

### Information of Research Station

<b>Name of the centre</b>	<b>Soil and Water Management Research Unit, NAU, Navsari</b>
<b>Year of Establishment</b>	May,1970
<b>Mandate of the centre</b>	<ul style="list-style-type: none"> <li>➤ To workout the water requirement and scheduling of irrigation of mandate crops/ cropping sequences.</li> <li>➤ To study and develop the design criteria of different surface irrigation methods for efficient use of water.</li> <li>➤ Feasibility studies of pressurized irrigation methods along with fertigation and mulching</li> <li>➤ To develop mulching technologies for different crops.</li> <li>➤ Basic studies on soil-water-plant relationship.</li> <li>➤ Drainage requirement studies for water logged and saline soils of command areas.</li> <li>➤ Creation of data base for soils of Gujarat with special reference to water logging and salinity.</li> <li>➤ Moisture retention and release characteristics of the soils command areas and state.</li> <li>➤ Creation of alternative water resources.</li> <li>➤ Crop suitability based land use planning.</li> <li>➤ Characterization and management of salt affected soils of South Gujarat (coastal and inland).</li> <li>➤ Training to the farmers, officers, VLW <i>etc.</i></li> </ul>

### Details of land at the centre (ha)

<b>Cultivated</b>	<b>Irrigated</b>	<b>Non-Irrigated</b>	<b>Area Under infrastructure</b>	<b>Total</b>
19	19	-	1	20

**Budget Provision: Plan/Non Plan /ICAR and Other agency**

<b>Funding Agency</b>	<b>Title of the scheme/project</b>	<b>Budget Head</b>	<b>Budget Provision (Rs in lakhs)</b>
<b>Plan</b>			
1. Govt. of Gujarat	Strengthening of Existing Department of Water Management	12866/00	23.10
2. Govt. of Gujarat	Centre of Excellence for Soil & Water Management Technology	12908/00	4.80
3. Govt. of Gujarat	Maximization of the total factor productivity of banana production system through value addition and by product utilization, Navsari	12026/00	38.17
4. Govt. of Gujarat	Strengthening of Soil & Water Management Training Centre	12308/00	14.87
5. Govt. of Gujarat	Research on Land Use Planning	12937/00	3.90
6. Govt. of Gujarat	Center of Excellence for Precision Agriculture at Navsari.	12037/00	17.71
<b>Non Plan</b>			
1. Govt. of Gujarat	Establishment of main irrigation research station	5023	73.02
2. Govt. of Gujarat	National agricultural research project phase-II	9091-1	13.31
<b>ICAR</b>			
1. ICAR	AICRP on Irrigation Water Management	2027	104.73
	AICRP on Irrigation Water Management, Navsari (TSP Component)	02027/0A	5.0
<b>Other Agency</b>			
1.	Establishment of Plasticulture Development (PFDC)	18009/84	24.13
2.	Training and Demonstration (PFDC)	18009/85	4.43

**Details of the Scheme (2017-18)**

<b>Funding Agency</b>	<b>Title of the scheme/project</b>	<b>Budget Head</b>	<b>Name of PI</b>	<b>Year of Starting</b>
<b><i>Plan</i></b>				
1. Govt. of Gujarat	Strengthening of Existing Department of Water Management	12866/00	Dr. V. P. Usdadia	1997
2. Govt. of Gujarat	Centre of Excellence for Soil & Water Management Technology	12908/00	"	1997
3. Govt. of Gujarat	Maximization of the total factor productivity of banana production system through value addition and by product utilization, Navsari	12026/00	"	2012
4. Govt. of Gujarat	Strengthening of Soil & Water Management Training Centre	12308/00	"	2012
5. Govt. of Gujarat	Research on Land Use Planning	12937/00		2006
6. Govt. of Gujarat	Center of Excellence for Precision Agriculture at Navsari.	12037/00	"	2014
<b><i>Non Plan</i></b>				
1. Govt. of Gujarat	Establishment of main irrigation research station	5023		AI:1970
2. Govt. of Gujarat	National agricultural research project phase-II	9091-1		NARP-II 1989
<b>ICAR</b>				
1. ICAR	AICRP on Irrigation Water Management	2027		May,1970
	AICRP on Irrigation Water Management, Navsari (TSP Component)	02027/0A	"	2011-12
<b>Other Agency</b>				
1.	Establishment of Plasticulture Development (PFDC)	18009/84	"	1988
2.	Training and Demonstration (PFDC)	18009/85	"	2016-17

**Details of Man Power at the centre(31/03/2018)**

<b>Funding Agency</b>	<b>Name of employee</b>	<b>Designation</b>	<b>Pay scale</b>	<b>B. H.</b>
<b>Plan</b>	Dr. C. S. Desai	Asstt. Res. Sci.	15600-39100(AGP-7000)	12026
	Mrs.P. U. Patel	Agril. Asstt.	29900-92300	
	Mr. K. I. Patel	"	"	
	Mr. A. M. Patel	Asstt. Res. Sci.	15600-39100(AGP-6000)	12037
	Mr K. K. Patel	Asstt. Res. Sci.	"	12866
	Mr. D. A. patel	"	"	
	Mr. B. M. Solia	"	"	12308
<b>Non Plan</b>	Mr. Parth B. Patel	Asstt. Res. Sci	15600-39100(AGP-6000)	9091-1
	Mr. D. K. Dave	Driver	19900-63200	
	Mr. N. G. Savani	Asstt. Res. Sci.	15600-39100(AGP-7000)	5023
	Mr. P. B. Patel	Agril. Asstt.	29900-92300	
	Mr. P. H. Patel	"	"	
	Mr. D. D Patel	"	"	
	Mr. C. S. Chaudhari	"	"	
	Anjali J. Patel	"	"	
	Mr. B. B. Rathod	Sr. Clark	25500-81100	
	Mr. R. B. chaudhari	Tractor Driver	19900-63200	
	Mr. R. M. Patel	Valve operator	14800-47100	
<b>ICAR</b>	Dr. V. P. Usdadia	Res. Scientist	37400-6700 (AGP-10000)	2027
	Prof.. R. B. Patel	Asstt. Res. Sci.	15600-39100 (AGP- 9000)	
	Mr. M. R. Parmar	Agril. Asstt.	29900-92300	
	Mrs. B. N. Ahir	Jr. Clark	25500-81100	
	Mr. R. M. Naika	Massager	14800-47100	

### Scheme wise details of experiment (2018-19)

Funding Agency	B.H.	Season	Title of experiment	
<b>Plan</b>				
1	12866	Rabi/ Summer	Post graduation research experiments	
2	12908	Rabi/ Summer	Study on drip system layout for different row spacing in vegetable Indian bean- sweet corn cropping sequence	
3	12026	Annual	Survey on impact of 'NAUROJI Novel Organic Liquid Fertilizer' in different crops of South Gujarat	
4	12937	Annual	Quantify the contribution of each factor towards productivity of banana	
5	12037	Rabi	Effect of water application through vertical inserted pipe in clay soil with different levels of irrigation and fertigation on growth and yield of sapota	
6	12037	Rabi	Spatial distribution of moisture and nutrient under different drip design and fertigation level in cabbage ( <i>Brassica oleracea L</i> ) grow on clay soil of South Gujarat	
<b>Non plan</b>				
1	5023	Annual	Effect of precise application of planting material, irrigation and fertilizer on productivity of sugarcane	
2	5023	Summer	Study on intercropping in drip irrigated bottle gourd	
3	5023	Rabi/ Summer	Effect of land leveling on crop water requirement & growth of sugarcane	
4	9091-1	Karif/Rabi	Performance evaluating of different method of irrigation and tillage practices on sweet corn after <i>kharif</i> paddy	
<b>ICAR</b>				
1	2027	Rabi/ Summer	Effect of different levels of irrigation and fertigation on rabi sorghum – vegetable cowpea cropping sequence	
2	2027	Rabi/ Summer	Effect of different levels of irrigation, nitrogen and foliar application of banana sap on drip irrigated sweet corn and their residual effect on succeeding summer green gram under South Gujarat conditions	
3	2027	Rabi/ Summer	Fertigation study in cauliflower on clay soils of South Gujarat	
<b>Other agency (PFDC)</b>				
1		18009- 84/85	Rabi/ Summer	Performance of roses in coloured shade net houses with different netting under South Gujarat conditions
2		18009- 84/85	Rabi/ Summer	Study of inline subsurface drip system in respect to different discharge rate, spacing and lateral depth in sugarcane

**Year wise achievements (Scheme wise- Last ten years):**

**SWMRU, NAU, NAVSARI**

**(I) Plan Project**

**Project # 1:**

1	Scheme name	:	<b>Strengthening of Existing Department of Soil and Water Management</b>
2	Plan	:	Plan
3	Budget Head	:	12866
4	Achievement	:	

	Year	:	No of experiment	Achievements
	2009-10	:	2	-
	2010-11	:	2	-
	2011-12	:	2	- <b>Onion</b> on raised bed for higher yield
	2012-13	:	2	<b>Castor:</b> Based on the yield and economics, it can be concluded that for getting higher castor seed yield and net profit from paired row planted and drip irrigated castor crop, it is necessary to impose water stress after 50% emergence of MS.
	2013-14	:	2	-
	2014-15	:	1	<b>Sugar beet:</b> The farmers of South Gujarat heavy rainfall zone (AES III and IV) intending to grow sugar beet crop (paired row: 20 cm x 40 cm (3 rows) x 70 cm, bed size: 110 cm and furrow width: 40 cm) are advised to irrigate their crop by drip method @0.8 PEF and fertilizer @ 120:60:60 kg N, P <sub>2</sub> O <sub>5</sub> and K <sub>2</sub> O/ha.
	2015-16	:	3	<b>Cabbage :</b> Farmers of South Gujarat having soil containing organic C from 0.4 to 0.8 per cent and ~ 1.0 per cent are advised to apply N:P:K @ 150: 75: 75 kg/ha and 125 :62.5 :62.5 kg/ha, respectively, to cabbage for achieving of higher yield and net profit.
	2016-17	:	2	Drip irrigation more suitable in <b>cabbage</b> crop
	2017-18	:	3	Crop sequence study: <b>Sweet corn- summer green gram</b> under drip irrigation is feasible
	2018-19	:	1	-

- Teaching of Post Graduate students, Guiding and field experiments taken
- Impart training to line department officers relate to water management

**Project # 2:**

1	Office name	:	Soil and Water Management Research Unit,NAU, Navsari
2	Scgheme name	:	<b>Centre of excellence of soil and water management technology</b>
3	Plan	:	Plan
4	Budget Head	:	12908
5	Achievement	:	

Year	:	Name of Experiment	Achievements
		Conducted	
2009-10	:	1	Constructed check dam for recharging of surrounding well
2010-11	:	Closed Sub surface Drainage	*CSSD in Farmers field
2011-12	:	Closed Sub surface Drainage	*CSSD in Farmers field
2012-13	:	Closed Sub surface Drainage:15 ha.	*CSSD in Farmers field
2013-14	:	2	<b>Rabi castor:</b> Based on the yield and economics, it is concluded that for getting higher yield and net profit realized from <i>rabi</i> castor, crop should be sown at 2.4 m x 0.6 m spacing. Further, it should be fertilized with 160:40 kg NP/ha. N is to be given through fertigation in 10 equal splits at an interval of 8-10 days starting from 15 DAS.
2014-15	:	Closed Sub surface Drainage:12 ha	*CSSD in Farmers fields
2015-16	:	2	*CSSD in Farmers fields
2016-17	:	2	*CSSD in Farmers fields
2017-18	:	1	*CSSD in Farmers fields
2018-19	:	3	CSSD in Farmers fields

\* Demonstration conducted on farmer's field on water management

**Project # 3:**

1	Scheme name	:	<b>Maximization of the total factor productivity of banana production system through value addition and byproduct utilization</b>
2	Plan	:	Plan
3	Budget Head	:	12026
4	Achievement:		

			Proposed	
	2009-10	:	Expt. 2	<ul style="list-style-type: none"> <li>- Recommendation made for the farmers community: On different vegetable, Mango, Onion , cotton and Banana crops (OLN)</li> <li>- Production and distribution of ..</li> <li>- OLN: 27000 l/ every year</li> </ul>
	2010-11	:	Expt. 3 Training:1	
	2011-12	:	Expt. 3 Training:1	
	2012-13	:	Expt. 2 Training:1	
	2013-14	:	Expt. 3	
	2014-15	:	Expt. 1 Training:2	
	2015-16	:	Expt. 2 Training:1	
	2016-17	:	Expt. 2 Training:1	
	2017-18	:	Expt. 2	
	2018-19	:	Expt.1 Training:1	

**Project # 4:**

1	Scheme name	:	<b>Strengthening of soil and water management training centre</b>	
2	Plan	:	Plan	
3	Budget Head	:	12308	
4	Achievement:			
			<b>Conducted Training and Demonstration on farmers fields</b>	
	2009-10	:	- Training: 9 - Demonstration: 12	<ul style="list-style-type: none"> <li>- Organized training and demonstration on different aspect of soil ans water management</li> <li>- Published relevant literature in vernacular language</li> <li>- Established and maintain of irrigation park at SWMRU, research farm</li> </ul>
	2010-11	:	- Training: 4 - Demonstration: 2	
	2011-12	:	- Training: 7 - Demonstration: 8	
	2012-13	:	- Training: 4 - Demonstration: 8	
	2013-14	:	- Training: 7 - Demonstration: 8	
	2014-15	:	- Training: 10	



			- Demonstration: 6	
	2015-16	:	- Training: 9 - Demonstration: 6	
	2016-17	:	- Training: 4 - Demonstration: 8	
	2017-18	:	- Training: 7 - Demonstration: 8	
	2018-19	:	- Training: 4 - Demonstration: 8	

**Project # 5:**

1	Scheme name	:	<b>Research on Land Use Planning at Navsari</b>
2	Plan	:	Plan
3	Budget Head	:	<b>12937</b>
4	Achievement	:	

			Activities	
	2006-07		2	<ul style="list-style-type: none"> <li>- Surveyed work on Characterization of Natural resources of South Gujarat was complited.</li> <li>- Assesment of soil fertility of eastern hilly belt of South Gujarat wsa complited and suggested some of the correlation among the different soil properties</li> <li>- -Characterization of Natural resources of Vanarashi village(Vansada Taluka) was complited and suggested New cropping pattern</li> <li>- Work is in progress in relation to natural resources to banana growing areas of South Gujarat</li> </ul>
	2007-08		2	
	2008-09		2	
	2009-10		1	
	2010-11		1	
	2011-12		1	
	2012-13		1	
	2013-14		1	
	2014-15		1	- Soil fertility status of paddy and sugarcane growing area of Navsari district is in progress
	2015-16	:	1	- Characterization of Natural resources of banana growing areas of South Gujarat
	2016-17	:	1	
	2017-18	:	1	
	2018-19	:	1	

**Project # 6:**

1	Scheme name	:	<b>Centre of Excellence on precision Farming</b>
2	Plan	:	Plan
3	Budget Head	:	12037
4	Achievement	:	

			Expt. Conducted	
	2014-15		1	New Project
	2015-16	:	1	
	2016-17	:	2	
	2017-18	:	2	
	2018-19	:	2	

**(II) Non Plan:****Project # 1:**

1	Scgheme name	:	<b>Establishment of main irrigation research station (Area Irrigation)</b>
2	Non Plan	:	Non-Plan
3	Budget Head	:	5023
4	Achievement:		

	Year	:	Expt. Conducted	No of Reco.	Achievements
	2009-10	:	3	1	Assesment of different sodicity levels in Command areas UKC
	2010-11	:	2	2	Irrigation and fertigation management in Tindus and Gladiolus
	2011-12	:	1	-	-
	2012-13	:	1	1	-
	2013-14	:	2	1	<b>Desuckering of Banana:</b> It is concluded that for effective sucker control in banana, 2-4 D treatment was found to be the best. However, The SSP treatments will also minimize the risk of deformation caused due to unscientific use of 2-4 D for desuckering.
	2014-15	:	2	-	-
	2015-16	:	3	1	<b>Watermelon:</b> Drip + mulch was found superior for higher the productivity of watermelon
	2016-17	:	3	-	-
	2017-18	:	2	1	<b>Sugarcane Pit plantation:</b> From the results of yield and economics it can be concluded that the highest net profit was reported with treatment D <sub>2</sub> S <sub>2</sub> which was followed by D <sub>1</sub> S <sub>2</sub> . Per cent increase in net profit over plant crop was positive up to three ratoon in case of both pit treatments. Whereas it is positive up to two ratoon crop only in case of control treatment.
	2018-19	:	3		-

**Project # 2:**

1	Scheme name	:	<b>National Agricultural Research Project phase-II</b>	
2	Non Plan	:	Non Plan	
3	B. H.	:	9091-1	
4	Achievement:			
	Year		Training and Demonstration conducted	
	2009-10	:	Training:3 Demonstration:3	<ul style="list-style-type: none"> <li>- Training program organized on different aspect of soil and water management technology.</li> <li>- Demonstrated the recommended technologies on farmers as well as on SWMRU farm.</li> </ul>
	2010-11	:	Training:4 Demonstration:5	
	2011-12	:	Training:2 Demonstration:2	
	2012-13	:	Training:1 Demonstration:1	
	2013-14	:	Training:1 Demonstration:1	
	2014-15	:	Training:1 Demonstration:1	
	2015-16	:	Training: 2, Demonstration: 5	
	2016-17	:	Training: 2, Demonstration: 2	
	2017-18	:	Training: 2, Demonstration: 3	
	2018-19	:	Training: 1, Demonstration: 2	

**(III) ICAR Project:**

1	Scheme name	:	<b>AICRP on Irrigation Water management</b>		
2	ICAR	:	ICAR		
3	B H	:	2027		
<b>Achievement:</b>					

4	Year	:	Name of Experiment Conducted	No of recommendation	Achievements
	2009-10	:	12	3	- Drip design on Onion
	2010-11	:	13	3	- CSD - Irrigation Management in pointed gourd and Lilly
	2011-12	:	12	5	- Irrigation management in Oilpalm - OLF in onion - Water stress in castor - Fertigation in turmeric
	2012-13	:	11	-	-
	2013-14	:	14	3	- Drip in Watermelon - Pit planting of Sugarcane - Irrigation management in sugar beet
	2014-15	:	14	3	- Drip in Pegion pea - Drip and N management in castor - Irrigation management in Bixa
	2015-16	:	3	2	- Spacing study in drip irrigated castor
	2016-17	:	4	2	- SSD survey
	2017-18	:	3	2	- Mango under drip irrigation and - Drip in summer paddy
	2018-19	:	4	-	-

**(IV) Other Agency Project:**

1	Scheme name	:	<b>Precision Farming Development Centre</b>
2	Plan/Non Plan/ICAR	:	Other agency
3	Budget Head	:	18009-84/85
4	<b>Achievement:</b>		

Year	:	Name of Experiment Conducted	No of recommendation	Achievements
2009-10	:	1	1	Impact of trainers' training program on knowledge level of trainees
2010-11	:	1	2	– Study on moisture regimes and fertigation in gladiolus – Large scale testing of improved package of practices for sugarcane on research farm as well as on farmers' fields
2011-12	:	1	1	– Pilot scale testing of improved package of practices for banana on research farm and farmers' fields
2012-13	:	1	1	– Effect of NAA and GA3 on yield of capsicum grown under polyhouse conditions
2013-14	:	1	-	-
2014-15	:	1	-	-
2015-16	:	1		– Fertigation in banana
2016-17	:	1	1	– Effect of different colour shade net of leafy vegetables
2017-18	:	2	1	– Fertigation and mulching in watermelon
2018-19	:	1	1	-

**Furnished the of list instrument working under metrological observatory**

- Rain gauge
- Pan evaporimeter
- Maximum and Minimum temperature thermometer
- Soil temperature meter