ANNUAL PROGRESS REPORT-2019

KRISHI VIGYAN KENDRA
JUNAGADH AGRICULTURAL UNIVERSITY, PIPALIA

1. GENERAL INFORMATION ABOUT THE KVK

1.1 Name and address of KVK with phone, fax and e-mail

Address	Telephone	e-mail	Web Address
KrishiVigyan Kendra, Junagadh Agricultural University, Pipalia (Dhoraji) Dist: Rajkot, Gujarat	02824-292584	kvkpipalia@jau.in	www.jau.in

1.2 Name and address of host organization with phone, fax and e-mail

Address	Telephone		e-mail	Web Address
	Office	FAX		
Junagadh Agricultural University, Junagadh (Gujarat)	0285-2672080	0285-2672653	-	www.jau.in

1.3 Name of the Senior Scientist and Head with phone & mobile no.

Name	Telephone /Contact		
	Residence	Mobile	e-mail
Dr.N.B.Jadav	"Dharmnandan" 50, City BusColony, Gandhigram, Junagadh-362001	09924012649	dr_nbjadv@jau.in

1.4 Year of sanction: 16, March-2012

1.5 Staff Position (as on Dec, 2019)

Sl. No.	Sanctioned post	Name of the incumbent	Discipline	If Permanent, Please indicate		Date of joining
				Current Pay Band	Current Grade Pay	
1.	Senior Scientist and Head	Dr. N. B. Jadav	Extension Education	37400-67000	9000	18.08.06
2.	Subject Matter Specialist	S. V.Undhad	Plant Protection	15600-39100	6000	27.03.15
3.	Subject Matter Specialist	Dr. V. S. Prajapati	LPM	15600-39100	6000	01.04.15
4.	Subject Matter Specialist	A.R Parmar	Horticulture	15600-39100	6000	17.01.17
5.	Subject Matter Specialist	P.S Sharma	Home Sci.	15600-39100	6000	19.01.17
6.	Subject Matter Specialist	Vacant	Agronomy	-	-	-
7.	Subject Matter Specialist	Vacant	Extension	-	-	-
8.	Programme Assistant	P D Chaudhary	M.Sc.(Agri)	9300-34800 (38090/- fix)		04.08.18
9.	Computer Programmer	R. G.Panseriya	Com. Operater	9300-34800	4400	31.12.13
10.	Farm Manager	K D Chaudhari	B.Sc.(Agri)	9300-34800 (38090/-fix)		27.07.18

11.	Accountant/Superintendent	K. G.Dhaduk	Accounting & Admins.	9300-34800	4400	12.06.13
12.	Stenographer	K. R. Yadav	Steno.Grade III	5200-20200	2400	06.02.14
13.	Driver 1	Vacant	-	-		-
14.	Driver 2	Vacant	-	-		-
15.	Supporting staff 1	Vacant	-	-		-
16.	Supporting staff 2	Vacant	-	-		-

1.6. Total land with KVK (in ha): 20.00 ha

Sl. No.	Item	Area in hectare(s)*
1	Under Building and Road	-
2	Under Demonstration units	-
3	Under crops	16.00
4	Orchard	-
5	Agro-forestry	-
6	Others	4.00
	Total	**20.00**

1.7. Infrastructural Development:

A) Buildings

Sl. No.	Name of building	Source of funding	Stage					
			Complete			Incomplete		
			Comp-letion Date	Plinth area (Sq.m)	Expen-diture (Rs.)	Star-ting Date	Plinth area (Sq.m)	Status of const-ruction
1.	Administrative Building	-	-	-	-	-	-	-
2.	Farmers Hostel	-	-	-	-	-	-	
3.	Staff Quarters (6)	-	-	-	-	-	-	
4.	Demonstration Units	-	-	-	--	-	-	-
5	Fencing	-	-	-	-	-	-	-
6	Rain Water harvesting system	-	-	-		-	-	-

B) Vehicles

Type of vehicle	Year of purchase	Cost (Rs.)	Total kms. Run	Present status
Jeep (Bolero)	2013	661107	70820	Working
Mahindra Tractor	2013	565000	-	Working
Mini Tractor (Mahindra)	2016	248000	-	Working

C) Equipment& AV aids

Name of the equipment / Implements	Year of purchase	Cost (Rs.)	Present status
Cultivator (9 tine)	2013	19000	Working
Blade Harrow	2013	11500	Working
Automatic seed drill	2016-17	37619	Working
Mini tractor drawn spray pump	2016-17	69500	Working
Rotavator	2016-17	91245	Working
Reversible MB Plough	2016-17	37500	Working
Pusa STFR meter kit (WST-312P)	2016-17	80600	Working
Mrida parikshak soil testing mini lab	2016-17	90300	Working

1.8. Details of SAC meeting conducted in the year (7thSAC Meeting)

Sr. No.	Date	Number of Participants	Salient Recommendations	Action taken
1	19-3-2019	34	1.In cotton (IPM) frontline demonstration, Pheromone trap replaces with MDP as a critical input	Ten FLDs were conducted as MDP tube as a critical inputs
			2.Frontline demonstration of sesamum (Summer), var. GT-3 replace with var. GT-5	Ten FLDs were conducted of sesamum var. GT-5
			3.In FLD it is need to specify check variety	Suggestions accepted and specify check variety
			4.In Brinjal FLDs, use of MDP technology which is available with university	Ten number of FLDs were conducted on Brinjal with MDP tube
			5.Give due weightage to leafy vegetable and fertigation, either in training or FLDs	Two number of green leafy vegetables were added i.e. *spinach and Amaranthus* as input in each demonstration
			6.Only those success stories include in APR in which KVK had made intervention or farmers use new technology or innovative technology	Suggestion accepted
			7.Add parameter in related to animal husbandry practices in OFT and FLD	Suggestions accepted
			8.Add training regarding CMT kit in animal husbandry	Three number of training organized regarding CMT kit including 113 participants
			9.Add OFT in home science using biofertified Bajra biscuits	One training were organized and one folder published on biofertified bajra
			10.To work out impact studies of long term programme, FLDs and training	Two impact studies conducted 1.Seed treatment in Groundnut 2.Role of CFLDs in yield enhancement in Groundnut
			11.Create awareness about benefit of topping in Bt.Cotton	Suggestions accepted

2.DETAILS OF DISTRICT

2.1 Major farming systems/enterprises (based on the analysis made by the KVK)

Sr. No.	Farming system/enterprise
1	Groundnut-Wheat/Coriander, Cumin, Garlic, Cotton-Summer Groundnut/Pulse crop/Sesame
2	Live stock
3	Farm waste management specially cotton stalk
4	Fruit and vegetable preservation
5	Value addition in Groundnut and wheat

2.2 Description of Agro-climatic Zone & major agro ecological

S. No	Agro-climatic Zone	Characteristics
Zone–VI	North Saurashtra	The influence area of North Saurashtra Agroclimatic Zone is spread among five districts (35.2 lakh Ha). Out of total area 73.40 per cent area falls under arid and semi-arid region. The soils of this zone are shallow to moderately deep. The soils of Rajkot district are medium blackand low in their availability of nitrogen while medium phosphorus and high in available potash. Monsoon commences usually by the end of June and withdraws by middle of September. Average annual rainfall of districts is 1141.2 mm.
Zone-VII	South Saurashtra	The influence area of South Saurashtra Agro climatic Zone is spread among four districts. (Part of Rajkot, Bhavnagar, Amreli and whole district of Junagadh). Type of soil is shallow medium black calcareous soils. Soil are medium to high in nitrogen content, phosphorus low and potash high. Average annual rainfall of the zone is 625-750 mm.

Agro – Ecological situation in the District

Sr. No.	Agro Ecological Situation	Characteristics	Taluka covered	Remarks
1	Situation No. 2	Medium Black Soil with 500-600 mm Rainfall	Gondal, Jamkandorna	North Saurashtra Zone, Zone-VI
2	Situation No.4	Shallow Black Soil with 500-600 mm Rainfall	Lodhika, Kotadasangani	
3	-	Shallow medium black soil with 620-750 mm Rainfall	Jetpur, Dhoraji, Upleta	South Saurashtra Zone, Zone-VII

2.3 Soil type

Sr.No.	Soil type	Characteristics
1	Clay to clay loam	Medium black calcareous soil
2	Sandy clay loam to clayey	Well drained soil with rapid permeability
3	Sandy to sandy 10 cm calcareous	Well drained soils

2.4 Area, Production and Productivity of major crops cultivated in the district (Year-17-18)

S. No	Crop	Area (ha)	Production (MT.)	Productivity (Qt./ha)
1	Groundnut (Kharif+ summer)	263915	925525	29.25
2	Sesamum	2613	2494	10.49
3	Castor	8546	25348	29.66
4	Cotton	238643	664512	27.85
5	Wheat	60015	258337	43.05
6	Green gram	178	252	14.16
7	Coriander	4143	6149	14.84
8	Cumin	21962	19508	8.88

9	Garlic	2936	25872	88.12
10	Onion	3722	110502	300.90
11	Chickpea	16660	34865	20.93

Source: District agriculture department.

2.5. Weather data (2019)

Month	Rainfall (mm)	Temperature 0 C		Relative Humidity (%)	
		Maximum	Minimum	Maximum	Minimum
April	-	-	-	-	-
May	-	-	-	-	-
June	84	-	-	-	-
July	197.5	-	-	-	-
August	267	-	-	-	-
September	593	-	-	-	-
October	13	-	-	-	-
November	51	-	-	-	-
December	-	-	-	-	-
Total	**1205.5**	-	-	-	-

2.6. Production and productivity of livestock, Poultry, Fisheries etc. in the district

Category	Population	Production	Productivity
Cattle			
Cow	515003	1150 lit /lactation	4.60 lit / day
Buffalo	430795	1390	5.26 lit/day
Sheep	192994	-	-
Goats	171515	-	-
Pigs	-	-	-
Crossbred	-	-	-
Indigenous	-	-	-
Rabbits	212	-	-
Poultry			
Hens		100 eggs /year	-
Desi	9988	140 eggs /year	-
Improved	13527		-
Category		Production (Q.)	Productivity
Fish (Reservoir)			

2.7 Details of operational area (Villages)

Taluka	Name of the block	Name of the village	Major crops & enterprises	Major problem identified	Identified Thrust Areas
Dhoraji	Dhoraji	Nani Parabadi	Groundnut, Cotton, Sesamum, Wheat, Cumin, Chickpea, Garlic and onion. Enterprise are dairy business, vermi composting	- Heavy infestation of pink bollworm in cotton -Sucking pest in all crops - Stem rot disease in groundnut -Sesamum wilt - Less area under horticultural crops -Infertility in livestock	- IPM, IDM and INM in major crops - Motivate the farmers for horticulture crop - To create awareness for value addition - Popularization of MIS - Create awareness of artificial insemination
		Patanvav			
Jetpur	Jetpur	Amrapur			
		Mandlikpur			
Jamkadorana	Jamkadorana	Jasapar			
		NaniDhudhivadar			
		Sanala			
Upleta	Upleta	Nagvadar			
		Talangana			
Gondal	Gondal	Daliya			
		Shemla			
		Bhojpara			

2.8 Priority thrust areas

Sl. No	Crop/ Enterprise	Thrust area
1.	Groundnut, Sesame etc.	Increase productivity of crops by adopting recommended practices in integrated pest management & IDM (Management of white grub and stem rot)
2.	Cotton	-Integrated pest management (management of pink bollworm in Bt.cotton) & INM in cotton -Recycling of cotton stalk (Popularizing of cotton shredder)
3.	Coriander, Sesame, etc.	Increasing the productivity of major crops by adopting recommended technologies, newly release variety and to create awareness of value addition
4.	Cumin	Integrated disease management
5.	Farm waste	Recycling of farm waste through composting, Vermicomposting, green manuring, etc.
6.	Micro irrigation	Efficient use of water by micro irrigation system, water harvesting structure, and water conservation techniques
7.	Farm Women	Farm women empowerment by training in value addition, handicrafts, and small scale enterprises
8.	Horticulture (Papaya, Pomegranate, Chilly etc.)	Postharvest technology and value addition in fruit and vegetable, INM, canopy management in orchard
9.	Animal Husbandry	Increasing the productivity of livestock animals by adopting scientific practices and to create awareness about clean milk production

3. TECHNICAL ACHIVEMENT

3. A. Achievement on technology assessed and refined during 2019

OFT				
	Number of OFTs		**Number of Farmers**	
Year-2019	Targets	Achievement	Targets	Achievement
OFT	6	6	35	35

FLD	Area of FLD (ha)		No. of Farmers	
	Targets	**Achievement**	**Targets**	**Achievement**
Summer -2019				
Sesame	4	4	10	10
Papaya (GJP-1)	1.2	1.2	3	3
***Kharif* -2019**				
Ground nut (GG-22)	1.5	1.5	10	10
Groundnut (*Trichoderma*)	4	4	10	10
Groundnut (IPM)	4	4	10	10
Groundnut (CFLD, GG-22)	50	50	125	125
Cotton (IPM)	4	4	10	10
Cotton (INM)	4	4	10	10
Tomato(INM)	4	4	10	10
Brinjal (IPM)	4	4	10	10
Total (A)	**80.7**	**80.7**	**208**	**208**
Rabi-2019-20				
Wheat	5	5	10	10
Chick pea	4	4	10	10
Cumin	4	4	10	10
Brinjal (GRB-5)	4	4	10	10
Garlic (INM)	4	4	10	10
Total (B)	**21**	**21**	**50**	**50**
Animal Husbandry (By pass fat)	-	-	20	20
Animal Husbandry (Bypass protein)	-	-	20	20
Animal Husbandry(Calpar Gold)	-	-	10	10
Kitchen gardening	0.5	0.5	50	50
Total (C)	**0.5**	**0.5**	**100**	**100**
Total (A+B+C)	**102.2**	**102.2**	**358**	**358**

Training (including sponsored, vocational and other trainings carried under Rainwater Harvesting Unit)					**Extension Activities**			
3					**4**			
Number of Courses			**Number of Participants**		**Number of activities**		**Number of participants**	
Clientele	**Targets**	**Achievement**	**Targets**	**Achievement**	**Targets**	**Achievement**	**Targets**	**Achievement**
Farmers/ Farm women and Rural Youth	57	71	1425	3350	-	5619	-	11710
Extn.Func.	2	1	50	25	-		-	
Total	59	72	-	3375	-	5619	-	11710

3.B. Abstract of interventions undertaken

Sl. No	Thrust area	Crop/ Enterprise	Identified Problem	Interventions

1	Integrated Pest Management	Groundnut	White grub infestation	OFT conducted -1 FLDs – 10 No. Training, Campaign Diagnostic visit
2.	Improved variety of Groundnut	Groundnut	Low yield and infestation of stem rot	FLDs-10 (GJG-22) CFLD FLDs : 125 No. (GJG-22) Training, Advisory service
3.	Integrated Disease Management	Groundnut	Stem rot infestation	FLDs : 10 Training, Diagnostic visit, Provide technological product (Trichoderma selling : 4860 kg)
4.	Integrated pest management	Cotton	Pink Bollworm Infestation	FLDs : 10 (MDP Tube) Training Diagnostic visit, Campaign Provide technological product (Beauveria :2211 kg)
5.	Integrated Nutrient Management	Cotton	Nutrient deficiency	FLDs : 10 Training Advisory service
6.	Integrated nutrient management	Wheat	Lack of knowledge about INM and Biofert.	OFT-1, FLDs:10 Training, Advisory service Provide technological product (Azoto : 283)
7.	Improved variety of cumin	cumin	Wilt incidence in cumin	FLDs : 10 Training Advisory service
8.	Improved of variety of chick pea	Chick pea	Low yield of chick pea	FLDs : 10 (GG-5) Training Advisory Service
9.	Integrated Disease Management	Chilli	Fungal Disease	OFT -1 Training, Diagnostic visit
10.	Improved variety (Horticulture)	Papaya Brinajal	Low Yield	Frontline demonstrations Papaya (GJP-1) Brinjal (GRB-5) Training, Advisory service
11.	Improved variety of sesame	Sesame	Low yield	Frontline demonstrations Sesame (GT-5) Training and advisory service
12	Nutritional security	Nutritional security	Unaware about the concept of kitchen gardening to combat balanced Nutrition with easy availability	FLDs : 50 Training
13	Nutritional Security	Nutritional Security	Less knowledge regarding the	OFT :1 Training

			importance of solar cooker	
14	Nutrition Management in cattle	Cattle	Lack of knowledge about nutrition management in cattle	OFT:1 Training Diagnostic visit Advisory Service
15	Nutrition Management in cattle	Cattle	Lack of knowledge about nutrition management in cattle	FLDs: 50 (calcium supplement, Bypass protein & fat) Training
16	Nutrition Management in cattle	Cattle	Lack of knowledge about nutrition management in cattle	FLDs: 50 (calcium supplement, Bypass fat, Bypass protein) Training

3.1 Achievements on technologies assessed and refined

A.1 Abstract of the number of technologies **assessed*** in respect of crops/enterprises

Thematic areas	Cereals	Oilseeds	Pulses	Com-ercial Crops	Veget-ables	Fruits	Flower	Plant-ation crops	Tuber crops	TOTAL
Varietal Evaluation	-	-	-	-	-	-	-	-	-	-
Seed / Plant production	-	-	-	-	-	-	-	-	-	-
Weed/Thinning Management	-	-	-	-	-	-	-	-	-	-
Integrated Crop Management	-	-	-	-	-	-	-	-	-	-
Integrated Nutrient Management	1	-	-	-	-	-	-	-	-	1
Integrated Farming System	-	-	-	-	-	-	-	-	-	-
Mushroom cultivation	-	-	-	-	-	-	-	-	-	-
Drudgery reduction	-	-	-	-	-	-	-	-	1	1
Farm machineries	-	-	-	-	-	-	-	-	-	-
Value addition	-	-	-	-	-		-	-	-	
Integrated Pest Management	-	1	-	-	-	-	-	-	-	1
Integrated Disease Management	-	-	-	-	1	-	-	-	-	1
Resource conservation technology	-	-	-	-	-	-	-	-	-	-
Small Scale income generating enterprises	-	-	-	-	-	-	-	-	-	-
TOTAL	1	1	-	-	1		-	-	1	4

A.2. Abstract of the number of technologies refined* in respect of crops/enterprises

Thematic areas	Cereals	Oilseeds	Pulses	Comm-ercial Crops	Veget-ables	Fruits	Flower	Plant-ation crops	Tuber Crops	TOTAL
Varietal Evaluation	-	-	-	-	-	-	-	-	-	-
Seed / Plant production	-	-	-	-	-	-	-	-	-	-
Weed Management	-	-	-	-	-	-	-	-	-	-
Integrated Crop Management	-	-	-	-	-	-	-	-	-	-
Integrated Nutrient Management	-	-	-	-	-	-	-	-	-	-
Integrated Farming System	-	-	-	-	-	-	-	-	-	-
Mushroom cultivation	-	-	-	-	-	-	-	-	-	-
Drudgery reduction	-	-	-	-	-	-	-	-	-	-
Farm machineries	-	-	-	-	-	-	-	-	-	-

Post-Harvest Technology	-	-	-	-	-	-	-	-	-	-
Integrated Pest Management	-	-	-	-	-	-	-	-	-	-
Integrated Disease Management	-	-	-	-	-	-	-	-	-	-
Resource Conservation Technology	-	-	-	-	-	-	-	-	-	-
Small Scale income generating enterprises	-	-	-	-	-	-	-	-	-	-
TOTAL	-	-	-	-	-	-	-	-	-	-

A.3. Abstract of the number of technologies **assessed** in respect of livestock / enterprises

Thematic areas	**Cattle**	**Poultry**	**Sheep**	**Goat**	**Piggery**	**Rabbitary**	**Fisheries**	**TOTAL**
Evaluation of Breeds	-	-	-	-	-	-	-	-
Nutrition Management	2	-	-	-	-	-	-	2
Disease of Management	-	-	-	-	-	-	-	-
Value Addition	-	-	-	-	-	-	-	-
Production and Management	-	-	-	-	-	-	-	-
Feed and Fodder	-	-	-	-	-	-	-	-
Small Scale income generating enterprises	-	-	-	-	-	-	-	-
TOTAL	**2**	-	-	-	-	-	-	**2**

A.4. Abstract on the number of technologies **refined** in respect of livestock / enterprises

Thematic areas	**Cattle**	**Poultry**	**Sheep**	**Goat**	**Piggery**	**Rabbit**	**Fisheries**	**TOTAL**
Evaluation of Breeds	-	-	-	-	-	-	-	-
Nutrition Management	-	-	-	-	-	-	-	-
Disease of Management	-	-	-	-	-	-	-	-
Value Addition	-	-	-	-	-	-	-	-
Production and Management	-	-	-	-	-	-	-	-
Feed and Fodder	-	-	-	-	-	-	-	-
Small Scale income generating enterprises	-	-	-	-	-	-	-	-
TOTAL	-	-	-	-	-	-	-	-

***** *Technology that is refined in collaboration with ICAR/SAU Scientists for improving its effectiveness.*

3.B2 List of Technology Assessed during- 2019

S. No	**Thematic area**	**Name of the technology assessed**	**Area (ha.)**	**Number of trials**	**Remarks**
1	Integrated Pest Management	Integrated Pest Management	1.5	3	-
2	Integrated Nutrient Management	Use of Bio-Fertilizer	1.2	3	-
3	Feed management	Nutritional management of milch animals	-	20	-
4	Nutrition management	Nutritional management of milch animals	-	20	-

5	Nutrition management	Nutritional management of milch animals	-	10	-
6	Health improvement	Comparison of solar Cooker with Traditional Cooking system.	-	3	-
7	Integrated Disease Management	Integrated Disease Management	1.2	3	-

3.B3 List of Technology Refined during - 2019

S. No	Thematic area	Name of the technology refined	Area (ha.)	Number of trials	Remarks if any
-	-	-	-	-	-

B. Details of On Farm Trials carried out on farmer's field (2019)

OFT: 1

1. Title of OFT: - Assessment of management of white grub in Groundnut

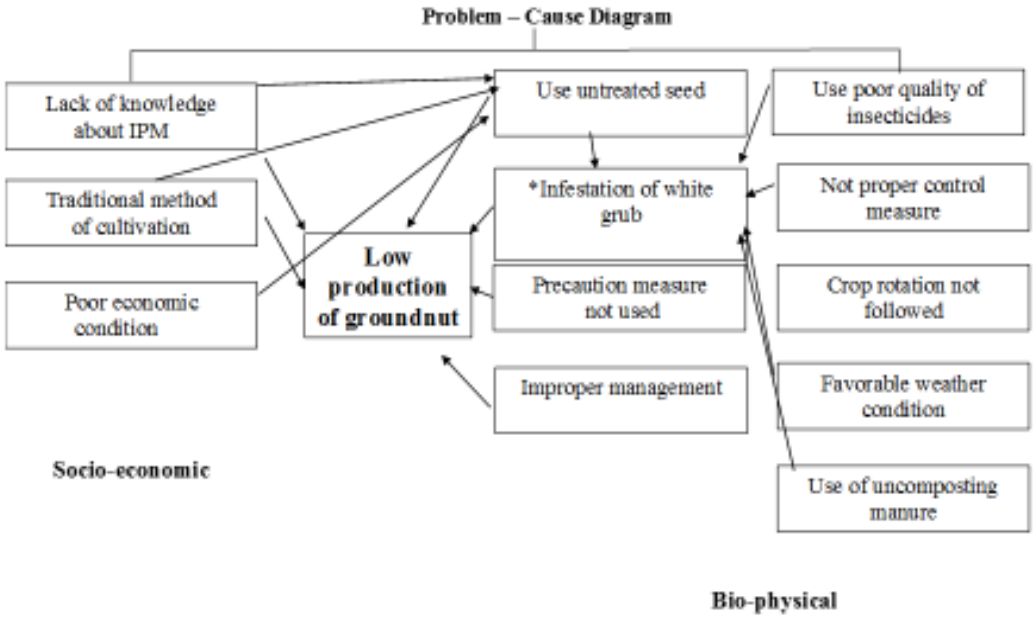
2. Introduction: -

The area under groundnut cultivation in Rajkot district is higher after cotton crops as compare to other crops. in this area groundnut crops are well suitable crops and gave higher production and productivity.

But last two to three years this crops suffering from heavy infestation of white grub insect. This insect cause severe damage to groundnut crops and resulting in yield loss. It is difficult to manage this pest. Farmer spent lots of money for uses of insecticides for control of this insect but not proper control. Therefore, it is very necessary to management through different possible solution of white grub in groundnut.

3. Problem definition : Low yield from groundnut cultivation

4. Problem cause diagram :



5. **Intervening point** : Management of white grub in groundnut
6. **Crop** : Groundnut
7. **Season/Year** : Kharif-19
8. **Plot size** :- 0.4 ha
9. **No. of Replication:** 3 (Farmer)
10. **Cost** : Rs. 4575 /-
11. **Source of technology:** Junagadh Agricultural University, Junagadh
12. **Treatments**:

Farmer's practice : Chloropyriphos @ 4 lit./ha at the time of attack

Recommended practice: 1.Seed treatment with Chloropyriphos @ 25 ml/kg
2. Application of Chloropyriphos @ 4 lit./ha
3. Spraying the trees on bund with lambda cyalothrin 1.5 ml/1 lit water

Intervention: **1.** Application of carbofuran 3G@ 40kg/ha at time of sowing
2.Spraying the trees on bund with lambda cyalothrin 1.5 ml/1 lit water
3.Application of UREA @ 50 kg/ha with irrigation water at time of infestation.

5.Results:

Details	Yield (Kg/ha)	Net profit	BCR
Farmer's practices	1958	44179	1:1.80
Recommended practices	2375	64413	1:2.14
Intervention	2083	51792	1:1.95

Economic Impact (Continuation of previous table)

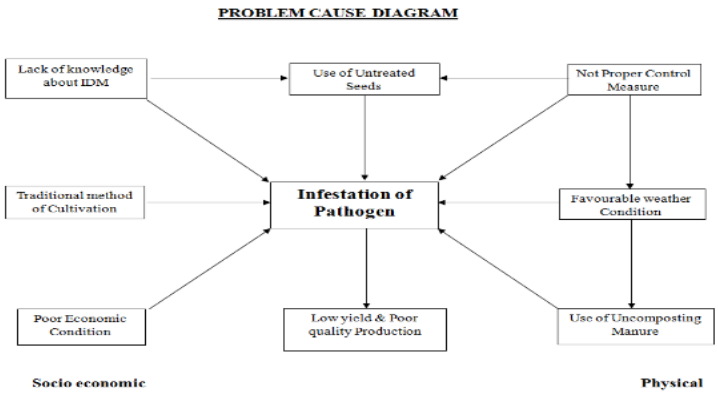
Average Cost of cultivation (Rs./ha)			Average Gross Return (Rs./ha)			Average Net Return (Profit) (Rs./ha)			Benefit-Cost Ratio (H)
Farmer practices	RP	Intervention	FP	RP	Intervention	FP	RP	Intervention	
55500	56445	54250	99680	120888	106041	44179	64413	51792	1:2.14

White grub infestation (Observation)							
Treatments	Percent plant damage and No of white grub per 1 meter row length						
	35 DAS		60 DAS		90 DAS		Percent pod damage per plant
	No. of White grub	No of Damage plant	No. of White grub	No of Damage plant	No. of White grub	No of Damage plant	
Recommended practices	0	0	1	1	2	1	1.15
Farmer practices	3	2	5	5	4	4	9.47
Intervention	1	0	4	3	3	2	6.36

OFT : 2 Assessment of effect of the fungicides on disease of chilli

Objective : To inhibit the growth of pathogen.

1. **District** : Rajkot
2. **Intervention points** : IDM
3. **Problem diagnosed /definition**:



4. Treatment:

Farmer practices: Two spray of Hexaconazole @ 1ml/liter of water. at 15 days interval

Recommended practices: Seed treatment of carbendenzim @ 3gm/kg seed + + soil application of Trichoderma @2.5 kg/ha at 15 DAS + soil drenching of C.O.C. @ 40 gm./10 ltr.of water during disease infestation

Intervention: Two spray of Hexaconazole @ 1ml/liter of water. At 15 days interval + soil drenching of C.O.C. @ 40 gm./10 ltr.of water during disease infestation

5. Plot: 0.40 ha(1 Acre)/farmer

6. No. of farmers : 3

7. Source of technology : JAU, Junagadh

8. Critical inputs to be supplied : 1 kg Trichoderma and 500 gm copper oxychloride

9. Results:

Details	Yield (Kg/ha)	Net profit	BCR
Farmer's practices	10208	100125	1:2.89
Intervention	10333	102000	1:2.92
Recommended practices	13750	154025	1:3.95

Wilt disease incidence (Observation)		
Treatments	**Wilt disease incidence (%)**	
	90 (DAS)	120 (DAS)
Farmer practices	15.00	25.00
Intervention	12.00	17.00
Recommended practices	7.00	10.00

10.Economic Impact (Continuation of previous table)

AverageCost of cultivation (Rs./ha)			**AverageGrossReturn (Rs./ha)**			**AverageNetReturn (Profit) (Rs./ha)**			**BCR**
FP	**RP**	**Inter vention**	**FP**	**RP**	**Inter vention**	**FP**	**RP**	**Inter vention**	
53000	52225	53000	153125	206250	155000	100125	154025	102000	1:3.95

OFT 3.

Title: Comparison of solar Cooker with traditional cooking system

Items: -

1. Boiled Rice
2. Boiled Sweet potato

3. Salted groundnut

Objective: -

(1) To improve quality and nutrition of Prepared items
(2) To reduce drudgery of farm women
(3) To reduce time and fuel consumption

Treatment: -

1) Preparation by traditional method
2) Preparation by roasting
3) Preparation by solar cooker

No. of Replications: - 5
No. of beneficiaries: 3 Farm women from three different locations
Observations: -

(1) Time consumption
(2) Fuel consumption
(3) Movement
(4) Cost saving
(5) Organo-leptic test
   i. Colour
   ii. Texture
   iii. Taste

Results:

Sr. No.	Item	Boiled Rice			Salted Groundnut			Sweet Potato		
	Observation	Traditional Method (Firewood)	Preparation by Roasting (Gas)	Solar Cooker	Traditional Method (Firewood)	Preparation by Roasting (Gas)	Solar Cooker	Traditional Method (Firewood)	Preparation by Roasting (Gas)	Solar Cooker
1	Time Consumption (minute)	35	15	50	60	30	180	20	60	120
2	Fuel Consumption (g)	190	60.	-	410	100	-	350	210	-
3	Cost Saving (%)	-	1.86	7.01	-	10.4	26.9	-	43.70	73.9
4										
a	Taste	5	5	6	4	6	7	4	4	6
b	Consistency	4	5	7	3	5	8	3	4	6
d	Overall Acceptance	-	-	√	-	-	√	-	-	√

OFT-4

Title: Effect of concentrate and bypass fat feeding on milk production in Gir cattle.

Problem definition:

- ✓ Lack of knowledge about bypass fat feeding technology
- ✓ Low milk production due to improper feeding
- ✓ Lack of energy for milk production

Performance of the technology with performance indicators:

Treatments:

- ❖ T1- Farmers practice (Green fodder, dry fodder, cake)
- ❖ T2- T1+Concentrate (1.5 kg/cow/day for maintenance + 500 gm for each lit. milk production)

- ❖ T3- T1 +T2+Bypass Fat (@50-100 gm/cow/day)

Detail of OFT programme:

- ❖ No. of villages- 5
- ❖ No. of animals- 30 (10 animals/Treatment)
- ❖ Each animal will be in similar physiological condition (age, lactation yield etc.)

Parameters to be evaluated/ recorded:

- ✓ Milk production (lit./cow/day)
- ✓ Fat percentage
- ✓ B:C ratio
- ✓ Net return

Result: Awaited

OFT-5

Assessment of response of Bio fertilizers to wheat yield

Title of OFT: - Assessment of Response of Bio fertilizers to wheat yield

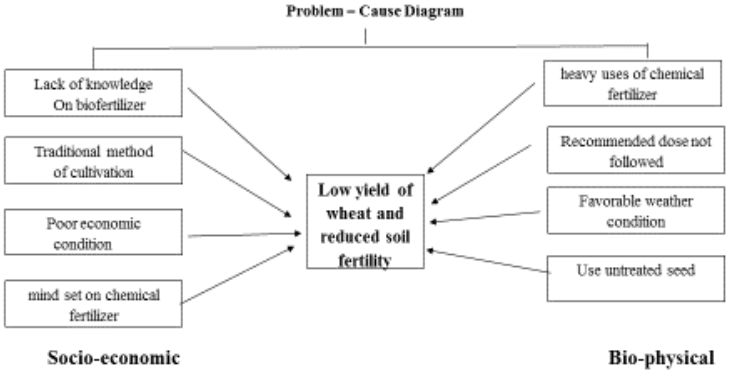
Introduction: -

In Rabi season the area of wheat cultivation in Rajkot district is higher after coriander crops as compare to other crops. due to cannel facilities in this area the production and productivity is higher.

But the continues use of chemical fertilizer in this crops the productivity is decreasing day by day and cost of cultivation increased. High uses of chemical fertilizer in crops the soil fertility also reduced. In this situation the KVK decide to increase uses of bio fertilizer to reduce cost of cultivation and increase soil fertility as well as quality and quantity of wheat yield.

Problem definition : Reduce yield and soil fertility

Problem cause diagram :



5. **Intervening point** : Response of Bio fertilizers to wheat yield
6. **Crop** : Wheat
7. **Season/Year** : Rabi 2019-20
8. **Plot size** :- 0.4 ha
9. **No. of Replication:** 3 (Farmer)

10. Cost : Rs. 360 /-

11. Source of technology: Junagadh Agricultural University, Junagadh

12. Treatments:

Farmer's practice :- Application of only DAP & Urea in different doses

Recommended practice :- 120-60-0 NPK kg/ha

Intervention:- Application of Azatobacter& PSB culture (250g/10kg) + 75% of RDF

13. Observations and results: Results awaited

OFT-6

Title : Assessment of micro nutrient in Garlic

Problem definition: Low yield due micro nutrient deficiency

Treatments : 1.Farmer's practices: Application of only DAP and Urea in different Doses

2.Recommended practices: Recommended dose of Fertilizer.RDF 50-50-50 (N-P-K) Kg/ha.

3. Intervention : Apply foliar spray of multi-micronutrient formulation Grade IV (Fe-Mn-Zn-Cu-B, 4.0-1.0-6.0-0.5-0.5 %) @ 1% at 60, 75 and 90 DAS in addition to recommended dose of fertilizers (50-50-50 N-P2O5-K2O kg/ha)

Observations : B:C ratio and farmers perception

Results : Awaited

3.2 ACHIEVEMENTS OF FRONTLINE DEMONSTRATIONS

a. Follow-up for results of FLDs implemented during previous years

List of technologies demonstrated during previous year and popularized during 2018-19 and recommended for large scale adoption in the district

S. No	Crop/ Enterprise	Thematic Area*	Technology demonstrated	Details of popularization methods suggested to the Extension system	Horizontal spread of technology		
					No. of villages	No. of farmers	Area in ha
1	Groundnut *	IPM	IPM	FLDs, Field days, Group discussion, Extension lit	16	80	56
2	Groundnut	IDM	Trichoderma	FLDs, Field days, Group discussion, Extension lit	25	247	87
3.	Sesame	Varietal	GT-3	FLDs, Field days, Group discussion	12	65	70
4.	Chick pea	Varietal	GG-5	FLDs, Personal visit, Training,	20	180	105
5.	Wheat	Varietal	GW-366	FLDs, Extension literature, Training	11	34	17
6.	Cumin	Varietal	GC-4	FLDs, Training	9	46	19
7.	Cotton	INM	INM	FLDs, Field days, Group discussion	22	187	112
8.	Cotton	IPM	IPM	FLDs, Personal visit, Training, Extension literature	5	45	10

9	Onion	Varietal	GJRO-11	FLDs, Personal visit, Training, Extension literature	4	4	1.6
10	Brinjal	Varietal	GJLB-4	FLDs, Field days, Group discussion	5	5	2
11	Brinjal	Varietal	GJHB-4	FLDs, Field days, Group discussion	5	5	2
12	Okra	Varietal	GJOH-4	FLDs, Personal visit, Training,	3	3	1.2
13	Papaya	Varietal	GJP-1	FLDs, Personal visit, Training,	3	3	1.2
14	Animal Husbandry	Feed Management	Calcium supplement	FLDs, Personal visit, Training,	16	128	5
15	Kitchen Gardening	Household food security	Kitchen Gardening	FLDs, Personal visit, Training,	6	48	4

** Thematic areas as given in Table 3.1 (A1 and A2)*

b. Details of FLDs implemented during 2019 (Information is to be furnished in the following three tables for each category i.e. Oilseed, Pulse and Other)

Sl. No.	Crop	Thematic area	Technology Demonstrated	Season and year	Area (ha)		No. of farmers/ demonstration			Short fall
					Pro.	Actual	SC/ ST	Others	T	
Oilseeds										
1	Groundnut	Variety	GG-22	*Kharif*2019	1.5	1.5	2	8	10	-
2	Groundnut	IDM	Trichoderma	*Kharif*2019	4	4	2	8	10	-
3	Groundnut	IPM	IPM	*Kharif*2019	4	4	2	8	10	
4	Sesame	Variety	GT-5	*Summer* 19	4	4	2	8	10	-
Pulse										
5	Chickpea	Varietal	GG-5	*Rabi* 2019	4	4	2	8	10	-
Others: Cereals										
6	Wheat	INM	GW-496	*Rabi* 2019	5	5	3	7	10	-
Others: Vegetables										
7	Brinjal	Varietal	GJRO-11	*Rabi* 2019	4	4	2	8	10	-
8	Brinjal	IPM	Local	*Kharif* 2019	4	4	2	8	10	-
9	Garlic	INM	Local	*Kharif* 2019	4	4	2	8	10	-
Others: Fruits										
10	Papaya	Varietal	GJP-1	*Summer 19*	1.2	1.2	1	2	3	-
Others: Spices										
11	Cumin	IDM	GC-4	*Rabi* 2019	4	4	2	8	10	-
Others: Commercial crops										

12	Cotton	INM	INM	*Kharif* 2019	4	4	2	8	10	-
13	Cotton	IPM	IPM	*Kharif*2019	20	20	10	40	50	
Animal Husbandry										
14	Cattle	Feed Management	Calcium	2019	10	10	4	6	10	-
15	Cattle	Nutrient magt.	Bypass Protein	2019	-	-	4	16	20	
16	Cattle	Nutrient magt.	Bypass fat	2019	-	-	5	15	20	
Home Science										
17	Vegetable Crops	Household food security	Kitchen Gardening	*Kharif*2019	0.5	0.5	10	40	50	-

Performance of Frontline Demonstrations (2019)

Sr. No.	Crop	Technology Demo.	Variety	No. of Farmers	Area (ha.)	Demo. Yield Qtl/ha			Yield of local Check Qtl./ha	Increase in yield (%)	Data on parameter in relationtotechnology demonstrated	
						H	L	A			Demo	Local
1	2	3	4	5	6	7	8	9	10	11	12	13
Kharif-2019												
Oilseeds												
	Groundnut	Variety	GG - 22	10	1.5	31.3	21.3	26.1	22.3	17.42	Yield	Yield
	Groundnut (Trichoderma)	IDM	GG - 20	10	4	31.3	18.8	25.1	22.1	13.56	Yield	Yield
	Groundnut	IPM	GG - 20	10	4	37.5	20.0	25.9	22.3	16.29	Yield	Yield
Pulses												
	Chick pea	Varietal	GG-5	10	4	Awaited					Yield	Yield
Cereals												
	Wheat	INM	Biofertilizer	10	4	Awaited					Yield	Yield
Other												
	Cotton	INM	Bt.	10	4	25.0	10.0	15.6	14.3	9.65	Yield	Yield
	Cotton	IPM	Bt.	50	20	25.0	10.0	18.4	17.3	6.52	Yield	Yield
Spices												
	Cumin	IDM	GC-4	10	4	Awaited					Yield	Yield
Horticulture												
	Brinjal	IPM	Local	10	4	143.8	125.0	134.8	113.0	19.25	Yield	
	Tomato	INM	Local	10	4	287.0	256.3	272.0	248.8	9.35	Yield	
	Brinjal	Varietal	GRB-5	10	4	Awaited					Yield	
	Garlic	INM	Local	10	4	Awaited					Yield	
Home Science												
	Kitchen gardening	Nutritional security	-	50	0.5	214.1	178.5	214	207.2	3.87	Yield	Yield
Animal Husbandry												
	Livestock		Nutrition	20	-	Awaited					Yield	Yield
	Livestock		Nutrition	20	-	Awaited					Yield	Yield
	Livestock		Nutrition	10	-	Awaited					Yield	Yield

Crops	Average Cost of cultivation (Rs./ha)		Average Gross Return (Rs./ha)		Average Net Return (Profit) (Rs./ha)		Benefit-Cost Ratio
Demonstrations	**Demo**	**LC**	**Demo**	**LC**	**Demo**	**LC**	
	14	**15**	**16**	**17**	**18**	**19**	**20**
Oil seed							
Groundnut (Var.)	50810	4856	132977	113253	82167	64693	1:2.62
Groundnut (IDM)	49250	51250	127887	112616	82469	61610	1:2.68
Groundnut (IPM)	49235	51642	131703	113252	60949	40779	1:2.08
Pulses(Chick pea)	Awaited						
Cereals (Wheat)	Awaited						
Other							
Cotton (INM)	57440	59163	84375	76950	26935	17787	1:47
Cotton (IPM)	56500	54000	99225	93150	42725	39150	1:1.76
Spices (Cumin)	Awaited						
Horticulture							
Brinjal	52750	55000	134750	113000	82000	58000	1:2.55
Tomato	61202	65000	204000	186562	142797	121562	1:3.33
Home Science							
Kitchen gardening	115070	118450	202340	210380	95870	86930	1:1.79
Animal Husbandry							
Livestock	Awaited						
Livestock	Awaited						
Livestock	Awaited						

Technical Feedback on the demonstrated technologies

Sl. No.	Crop	Variety/ Technology	Farmers' Feed Back
1	Groundnut	IPM	Application of chlorpyriphos 25 ml /kg as a seed treatment of groundnut seed reduce infestation of white grub (Very less white grub infestation)
2	Groundnut	Varietal	GJG-22 variety gives higher yield as compare to GG-20 and less infestation of stem rot as compare to other variety in kharif season
3	Groundnut	IDM	Application of Trichoderma in Groundnut crop reduce infestation of stem rot and increase yield
4	Cotton	IPM	Integrated approach for management of pink boll worm i.e. MDP tube and two or three spray of Beauveria reduce incidence of pink boll worm
5	Cotton	INM	Application of Azotobactor and PSB culture reduce cost of chemical fertilizer and increase yield
6	Wheat	INM	Application of biofertilizer reduce the cost of chemical fertilizer and increase yield
7	Wheat	INM	Application of Azotobactor and PSB culture increase yield
8	Cumin	IDM	Application of trichoderma with castor cake reduce wilt in cumin and increase yield
9	Chick pea	Varietal	Less incidence of wilt in GG-5 var of chick pea and higher yield as compare to other variety
10	Sesame	Varietal	G.T-5 var. Bold and white seeded and higher yield
11	Papaya	Varietal	GJP-1 newly released variety and gives higher yield and market price as compare to other
12	Tomato	INM	Application of micro nutrient Grade -4 reduce nutrient deficiency and increase yield
13	Brinjal	IPM	MDP tube in brinjal field control the shoot and fruit borer
14	Nutritional security	Balanced Nutrition	Provide balanced Nutrition with easy availability
15	Nutritional Security	Importance of solar cooker	Nutritional enrichment with high nutritious and tasty low cost diet with reducing drudgery of women

16	Cattle	Nutrient management	-Balance ration feeding, increase in use of mineral mixture feeding in animals helps to increase milk production and reduce the reproduction disorders
17	Cattle	Nutrient management	Increase milk production and reduce cost of production through probiotic feeding of animal
18	Cattle	Nutrient management	Reduce the metabolic disorder to feeding a calcium supplementation in animal
19	Buffalo	Integrated nutrient management	Improve nutritional status of cattle and increase animal productivity of milch animal through feeding bypass fat
20	Cattle	Integrated nutrient management	Improve nutritional status of cattle and increase animal productivity of milch animal through feeding bypass protein

Extension and Training activities under FLD

Sr. No.	Activity	No. of Activity organized	Date	No. of Participants			Remarks
				Male	Female	Total	
1.	Field days	17	-	256	73	329	
2.	Training for farmers	24	-	556	113	669	
3.	Training for extension functionaries	1	-	28	-	28	-

3.3ACHIEVEMENTS ON TRAINING

A. On Campus

Thematic Area	No. of Courses	Participant		
		Total		
		Male	Female	Total
Plant Protection	5	192	23	215
Home Science	4	25	140	165
Animal Husbandry	5	165	68	233
Horticulture	5	126	25	151
Extension	2	52	0	52
Grand Total	**21**	**560**	**256**	**816**

B. Off Campus

Thematic Area	No. of Courses	Participant		
		Total		
		Male	Female	Total
Plant Protection	6	229	55	284
Home Science	5	48	213	261
Animal Husbandry	9	408	97	505
Horticulture	5	105	95	195
Extension	2	65	20	85
Grand Total	**27**	**855**	**480**	**1330**

C. Consolidated table (On and Off Campus)

Thematic Area	No. of Courses	Participant		
		Total		
		Male	Female	Total
Plant Protection	11	421	78	499

Home Science	9	73	353	426
Animal Husbandry	14	573	165	738
Horticulture	10	231	120	346
Extension	4	117	20	137
Grand Total	**48**	**1415**	**736**	**2146**

(D) Vocational training programmes for Rural Youth

Crop / Enterprise	**Date**	**Training title***	**Identified ThrustArea**	**Duration (days)**	**No. of Participants**								
					General			**SC/ST**			**Total**		
					M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**
Home Science	15-8-2019 To 18-8-2019	Preservation of fruits & vegetables & preparation of different bakery items	Value addition	4 days	**-**	**62**	**62**	**-**	**2**	**0**	**-**	**64**	**64**

(E) Sponsored Training Programmes

Sr. No	**Date**	**Title**	**Duration**	**Total No. of participants**									**Sponsoring Agency**
				Other			**SC/ ST**			**Total**			
				M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
1	28.1.19	Pl. Protection	1	58	0	58	6	0	6	64	0	64	ATMA
2	7.2.19	Horticulture	1	20	0	20	2	0	2	22	0	22	ATMA
3	5.2.19	Pl.Protection	1	52	0	52	7	0	7	59	0	59	GSFC
4	20.6.2019	Animal Hus.	1	28	12	40	0	0	0	28	12	40	ICICI
5	29.6.2019	Plant Protection	1	33	0	33	10	0	10	43	0	43	State Dept
6	27.7.2019	Plant Protection	1	185	0	185	15	0	15	200	0	200	UPL
7	3.8.2019	Plant Protection	1	35	10	45	4	2	6	39	12	51	State Dept
8	8.8.2019	Plant Protection	1	50	0	50	4	0	4	54	0	54	ATMA
9	13.8.2019	Animal Hus.	1	38	0	38	4	5	9	42	5	47	State Vet. Dept
10	14.8.2019	Home Science	1	38	0	38	8	0	8	46	0	46	ICICI
11	24.9.2019	Plant Protection	1	55	0	55	6	0	6	61	0	61	State Dept
12	26.9.2019	Plant Protection	1	16	0	16	3	0	3	19	0	19	State Dept
13	26.9.2019	Horticulture	1	21	0	21	16	0	16	37	0	37	Horti Dept
14	11.10.2019	Home science	1	0	40	40	0	5	5	0	45	45	AFPRO
15	12.10.2019	Animal Hus.	1	62	0	62	6	0	6	68	0	68	GNFC
16	15.11.2019	Animal Hus.	1	18	30	48	0	4	4	18	34	52	State Vet. Dept

17	29.11.2019	Plant Protection	1	35	0	35	0	0	0	35	0	35	GSFC
18	5.12.2019	Horticulture	1	28	0	28	4	0	4	32	0	32	GSFC
19	10.12.2019	Animal Hus.	1	6	38	44	2	6	8	8	44	52	ICICI
20	11.12.2019	Plant Protection	1	42	0	42	8	0	8	50	0	50	GSFC
21	12.12.2019	Home Science	1	0	34	34	0	3	3	0	37	37	AFPRO
22	21.12.2019	Animal Hus.	1	0	32	32	0	8	8	0	40	40	ICICI
23	23.12.2019	Animal Hus.	1	15	20	35	8	7	15	23	27	50	ICICI
		Total	23	835	216	1051	113	40	153	948	256	1204	

3.4 Extension programmes (including activities of FLD Programmes)

Sl No	**Nature of Extension Activity**	**No. of activities**	**Participants**											
			Farmers (Others) (I)			**SC/ST (Farmers) (II)**			**Extension Officials (III)**			**Grand Total (I+II+III)**		
			M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**
1	Field Day	13	315	0	315	25	0	25	1	0	1	341	0	341
2	KisanMela	0	0	0	0	0	0	0	0	0	0	0	0	0
3	KisanGosthi	7	154	15	169	8	4	12	2	0	2	164	15	179
4	Exhibition	2	87	0	87	0	0	0	2	0	2	89	0	89
5	Film Show	25	725	130	855	25	10	35	8	2	10	758	132	890
6	Group meetings	9	403	98	501	12	10	22	4	0	4	419	98	517
7	Lectures delivered	18	725	52	777	28	12	40	16	4	20	769	56	825
8	Newspaper coverage	2	0	0	0	0	0	0	0	0	0	0	0	0
9	Radio talks	0	0	0	0	0	0	0	0	0	0	0	0	0
10	TV talks	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Popular articles	4	0	0	0	0	0	0	0	0	0	0	0	0
12	Extension Literature	1850	1625	213	1838	125	94	219	0	0	0	1750	213	1963
13	Advisory Services	2071	1901	45	1946	125	25	150	0	0	0	2026	45	2071
14	Scientific visit to farmers field	45	162	12	174	15	0	15	0	0	0	177	12	189
15	Farmers visit to KVK	1521	1072	398	1470	51	26	77	0	0	0	1123	398	1521
16	Diagnostic visits	37	35	8	43	10	2	12	2	0	2	47	8	55
17	Exposure visits	1	38	0	38	3	0	3	2	0	2	43	0	43
18	Kisan Diwas	1	30	0	30	5	0	5	2	0	2	37	0	37

19	Soil Health Day	1	42	0	42	0	0	0	2	0	2	44	0	44
20	Animal Health Camp	4	38	14	52	1	0	1	2	0	2	41	14	55
21	Swachh Bharat Abhiyan	1	145	82	227	4	0	4	5	0	5	154	82	236
22	Soil test	1	10	0	10	0	0	0	0	0	0	10	0	10
23	Technology Week	1	159	99	258	8	4	12	4	0	4	171	99	270
24	Swachhata Hi Sewa	1	650	225	875	52	0	52	4	0	4	706	225	931
25	Kisan Vigyan Diwas	1	28	4	32	0	0	0	0	0	0	28	4	32
26	Fertilizer Awarness Prog	1	95	12	107	5	0	5	2	0	2	102	12	114
27	Constitution day cele	1	37	4	41	0	0	0	2	0	2	39	4	43
28	Mahila Kisan Divas	1	0	39	39	0	8	8	1	1	2	1	40	41
Total		**5619**	**8476**	**1450**	9926	**502**	**195**	697	697	892	1589	9675	2342	11710

3.5 Production and supply of Technological products (2018-2019)

SEED MATERIALS

Sr. No.	Crop	Variety	Stage	Area (ha)	Quantity (kg.)	Value (Rs.)
Kharif - 2019						
1.	Groundnut	GJG-31	Breeder	5.4	Harvesting over Grading left	
2.	Groundnut	GJG-17	Breeder	3.8		
3.	Groundnut	GAUG-10	Breeder	4.7		
4.	Soyabean	GJS-3	Mega	2.00		
5.	Sesame	GT-5	Mega	1.00		
6.	Castor	GCH-9	Breeder	1.00	Crop Standing	
			Total	**17.9**		
Rabi-2019						
1	Wheat	GW-496	Certified	9.00	Crop Standing	
2	Wheat	GW-463	Certified	9.00		
			Total	**18.00**		

Technological products

Sr. No.	Particular	Quantity	Provide to No. of farmers	Amount
1	Trichoderma	4841		338870
2	Beauveria Bassiana	1177		176550
3	Azotobacter culture	66		3960
4	PSB culture	39		2340
5	Rhizobium culture	18		1080

6	Pheromone Trap	559		11180
7	Pink bollworm Lure	1490		14900
8	Green Lure	4		40
			Total	**548920**

3.6 Literature Developed/Published (with full title, author and reference

(A) Literature developed: (Folder) (B) Popular articles and research paper published:

Contributors	Year of publication	Title	Journal Name	Vol /Issue /Page No
Kapuriya T.D., Jadav N.B. and Zala P. H.	2019	Association between attributes of respondents and their attitude towards avoidance of agriculture as a profession	Indian Journal of Extension Education,	55(3):135-137 (NAAS=5.32)
Zala, P.H., Jadav N.B. and Kapuriya T.D.	2019	Perception of the groundnut growers about damage caused by pests in Junagadh district of Gujarat state	International Journal of Agriculture Sciences	Volume XI, Issue 5, pp.7988-7989 (NAAS=4.20)
Zala, P.H., Jadav N.B. and Kapuriya T.D.	2019	) Relationship between profiles of the Groundnut growers and their perception about damage caused by pests	International Journal of Agriculture Sciences	Volume XI, Issue 5, pp.7986-7987 (NAAS=4.20)
Undhad, S.V., Prajapati, V.S., Sharma P.S. and Jadav N.B.	2019	Impact of Frontline Demonstration on the Yield and Economics of Chickpea (CicerarietinumL.) production in Rajkot District of Gujarat	Int.J.Curr. Microbiol .App.Sci	8(8): 95-100 (NAAS=5.38)
PrajapatiV.S.,Sharma P.S., Undhad S.V. and Jadav N.B	2019	Socio-economic status of dairy farm women in Rajkot district of Gujarat	International Journal of Agriculture Sciences	Volume 11, Issue 17704-7706 (NAAS=4.20)
Prajapati V.S., Sharma P.S., Undhad S.V., Jadav N.B. and Parmar A.R	2019	Training Needs of Dairy farm Women Regarding Scientific Animal Husbandry Practices in Rajkot District of Gujarat,	International Journal of Current Microbiology and Applied Sciences	8(3) :263-268 (NAAS=5.38)
Undhad, S.V., Prajapati, V.S., Sharma P.S., Jadav N.B. and Parmar A.R	2019	Role of cluster frontline demonstrations in enhancement of groundnut production	Journal of Pharmacognosy and Phytochemistry	8(4): 1862-1863 (NAAS=5.38)

(B) Popular/ Technical articles (vernacular language)

Sr. No.	Contributors	Year of publication	Title	Magazine Name	Vol /Issue /Page No

1.	V.S.Prajapati, N.B.Jadav and P.S.Sharma	2019	"Navjat vacharda /padio ni sar sambhar	Krushi Govidya	Oct-2019, Vol-6, pp.22-24.

(c) Books/ book chapters / Manuals etc. : nil

(D) Folder published in vernacular language :

Sr. No.	Name	Year	No. of copies
1	Pasupalan and Marghapalan	2019	1000
2	Makai na pak ma akrakmak jivat: Puchade char tapkavadi laskari ial	2019	1000
3	Plug Tray ma Dharu Ucher	2019	1000
4	Bajra ni Banavat ane tatha tenu samtol ahara mahtav	2019	1000
5	Bt. Kapasma Gulabi Ial nu Sankalit Niyantran	2019	1000
6	Marchi na Pak ma Khetikariyonu Pakhvadik Samaypatrak	2019	1000

C) Workshop/Seminar/Conference/Meeting/Training Attended

Sr. No.	Date	Name of Scientist	Title	Venue	Type
1	17-01-2019 19-01-2019	Dr. V.S. Prajapati	National Conference on Ënhancing Rural Livelihood Through Improved Buffalo productivity and Health	Navsari Agricultural University, Navsari	National Conference
2	27-01-2019 30-01-2019	A.R.Parmar	Master Trainer's Programme for Developing Entrepreneurship	KVK Narayangaon. PUNE-II	Workshop cum training
3	18-2-2019	S.V.Undhad	State level seminar on "GauvAdharitSajivKheti"	Gujarat Vidhiyapith, Abad	Seminar
4	1-3-2019 to 2-3-2019	Dr.N.B.Jadv	Annual Action Plan workshop of KVKs Zone-VIII	NAU, Navsari	Workshop
5	08-06-19 09-06-19	S.V Undhad, A.R.Parmar and P.S.Sharma	Pragmatic perspectives of agricultural development programmes in present scenario	NAU, Navasari	National Seminar
6	14-6-2019 to 16-6-2019	Dr.N.B.Jadv	Annual Zonal Workshop of KVKs zone-VII	Goa	Workshop
7	26-7-2019 to 27-7-2019	P.S.Sharma	National conference "Challenges and innovative approaches in agriculture and allied science research"	SCAS, Salem, Tamil nadu	National Conference
8	26-7-2019 to 27-7-2019	Dr.N.B.Jadv	National conference "Challenges and innovative approaches in agriculture and allied science research"	SCAS, Salem, Tamil nadu	National Conference

9	3.10.2019 to 23.10.2019	A.R. Parmar	Up scaling of water productivity in arid and semi arid areas for sustainable agriculture	MPUAT, Udaipur	Training
10	3.10.2019 to 23.10.2019	P.S. Sharma	Up scaling of water productivity in arid and semi arid areas for sustainable agriculture	MPUAT, Udaipur	Training
9	08-11-2019	S. V. Undhad	krushi ane bagayati pakoma pravatman pak sharkshan na prashno ane nirakaran	AAU, Anand	State level Seminar
10	14-11-2019 to 16-11-2019	Dr.N.B.Jadv	ISEE national seminar "Holistic approach for enhancing agricultural growth in changing rural scenario"	SKRAU, Bikaner	National Seminar
11	19-12-2019	Dr.N.B.Jadv	QRT meeting of Zone-VIII	JAU, Junagadh	QRT meeting

3.7. Success stories/Case studies, if any (two or three pages' write-up on each case with suitable action photographs)

---NIL--

3.8 Give details of indigenous technology practiced by the farmers in the KVK operational area, which can be considered for technology development (in detail with suitable photographs)

S. No.	Crop / Enterprise	ITK Practiced	Purpose of ITK
1.	Chilly	Use castor as a trap crop	For controlling thrips and jassids
2	Crop husbandry	Crop rotation and mixed cropping	Control weed
3	Fertility Management	Application of *tach / morum*	To improve soil physical condition
4	Fertility Management	Sheep and goat penning	To improve soil fertility
5	Harvesting	Harvest pulse crop in the morning hours	To reduce shattering

3.9 Indicate the specific training need analysis tools/methodology followed:----

3.10 Field Activities

i. Number of villages adopted : 12

Sr. No	Name of village	Sr. No.	Name of Village	Sr. No.	Name of Village
1.	Talangana	5.	Mandlikpar	9.	Dalia
2.	Nagavadar	6.	Amrapar	10.	Sanala
3.	Patanvav	7.	Bhojpara	11.	NaniDudhivadar
4.	NaniParabdi	8.	Shemla	12.	Jashapar

3.11 Activities of Soil and Water Testing Laboratory

Details of samples analyzed during 2019

Details	No. of Samples	No. of Farmers	No. of Villages	Amount realized
Soil Samples	65	65	10	-
Water Samples	-	-	-	-

Total	**65**	**65**	**10**	**-**

4. Impact:

Impact study :1. Impact of Recommended seed treatment practices in Groundnut of South Saurashtra agro climatic zone

Introduction:

The Groundnut (*Arachis hypogaea* L.) has been recognized around the word by an assortment of colorful names. In India it is known as Mungfali and Magfali in Gujarat. In India, around 85 percent area of groundnut is grown under rainfed conditions in marginal lands. Gujarat cultivates kharif groundnut in about 1.62 million ha with an annual production of 3.05 million MT and productivity of 1979 kg/ha. Rajkot district of Gujarat has 0.43 million hectares under Kharif groundnut and produces 0.55 million MT of groundnut with an average yield of 1874 kg/ha., which is substantially lower than the Potential yield. Considerable scope of enhancement in productivity leading to higher production exists, especially in Saurashtra region, which is a remarked as important Agro Export Zone for HPS (Hand Picking Seed) groundnut in the country. It is feasible through regular surveys, farmer's meetings and field diagnostics visit followed by persuasion for provision of timely management of pest and diseases. There may be many reasons for such a low productivity of groundnut.

It is proven fact that for successful cultivation of any crop the seed must be free from pest and diseases especially seed and soil born mycoflora which affect germination, emergence and performances of crops. These may include incidence of collar rot, stem rot diseases and white grub pest infestation and that cause production losses of groundnut. The several recommendations practices especially by seed treatments made by university for reduce these losses. Keeping in view of all the points in mind the present study was carried out with the following specific objectives.

The study was conducted in KVK operational area of Rajkot district with 120 Groundnut growers The study concluded that for conducting more effective training, training method must be subject-wise with computer presentation, training place must be a Krishi Vigyan Kendra followed by SSK, training time must be before monsoon followed by before cropping season, training duration must be one or two days, organized four time in a year and trainer must be a female teacher trainer. Among all component of training, training time is most important followed by trainer and venue of training.

Objectives:

1) To study the personal characteristics of the respondents
2) To measure the knowledge level of respondents regarding recommended seed treatment practices
3) To know the yield level of respondents regarding the recommended seed treatment practices
4) To compare all the variables of demonstrator and non demonstrator respondents
5) To identify the constraints faced by the respondents in adoption of recommended seed treatment practices and seek suggestions

METHODOLOGY:

Selection of respondents:

The study was conducted in Krishi Vigyan Kendra, Junagadh Agricultural University, Pipalia (Rajkot-2) operational area of Saurashtra region. Out of seven operational taluka viz. Dhoraji and Jam kandorana were selected purposively for the study and Three villages were selected from each of taluka. Thus, total 6 villages selected from Two taluka and 10 seed treatment adopted and 10 non adopted farmer respondents were selected randomly from each village, mean 20 farmer selected from each villages. Total 120 respondents were selected for the study.

Table :1 : Selection of respondents according to village, taluka of Rajkot district.

Sr. No.	Taluka	Villages	Respondents	
			Demonstrator	Non Demonstrator
1	Dhoraji	1.Patanvav	10	10

		2.Dumiyani	10	10
		3.Chinchod	10	10
2.	Jam Kandorana	1.Boriya	10	10
		2.Sanala	10	10
		3.Bandhiya	10	10
			60	60
		Total	120	

Measurement of variables

For measuring the knowledge of respondents about recommended seed treatments, the teacher made knowledge test was developed and used. A set of twenty-two statement questions was prepared by referring related review of literature and in consultation with field experts. The objective questions were prepared in which the responses can be recorded as yes/no, correct/incorrect, True/False. The anomalies in the questions were rectified by making necessary correction for finalising the knowledge test final schedule. questions were kept in the schedule while exercising the matter to measure the knowledge of respondents. A unit score was given to correct answer and total score obtained by individual respondents for all the statement was calculated. With the help of mean and standard deviation the respondents were categorized as low, medium and high level of knowledge. In order to test the significance of difference in average for different variables of both categories of the respondents under study. "Z" test was used (Rao, 1983). Constraints and suggestions kept open ended and data was collected by personal interview method. The collected data was quantified, categorized and tabulated by using frequencies and percentage.

FINDINGS:

1. Characteristics of the respondents

The data presented in table no. 2 revealed that majority of the respondents; demonstrator (66.67%) and non-demonstrator (60.00) belonged to middle age group. While in case of education one half (51.68%) demonstrator and 65.00 non –demonstrator had educated up to primary level. While 28.33 per cent demonstrators and 20.00 per cent non-demonstrator were from secondary education group. Demonstrator respondents only 6.67 per cent were illiterate and non-demonstrator farmers (11.67 per cent) were illiterate.

More than one half (53.33 %) demonstrator farmers holding land in between 1.1 to 2 ha. while in non-demonstrator 60.00 per cent respondents had medium size of land holding. Only 18.33 per cent demonstrator farmers had big size of land holding while 16.67 per cent non-demonstrator farmers were from big size land holding group. 65.00 per cent of the respondents in demonstrator farmers belonged to medium size of family group followed by 23.33 per cent respondents in demonstrator farmers had less than 5 members in family. In case of non-demonstrator 71.67 per cent farmers had medium size of family followed by 18.33 per cent respondents belonged to small size of family group. Majority (60.00 %) of demonstrator farmers had medium level of annual income followed by 21.67 per cent respondents were from high annual income group. While in non demonstrator farmers 58.33 per cent farmers had medium annual income followed by 25.00 per cent respondents had low annual income group.

The psychological variables i.e. social participation and innovativeness. 58.33 per cent demonstrator farmers were from medium social participation while 60.00 per cent non-demonstrator farmers belong to medium social participation group. 28.33 per cent respondents of demonstrator farmers had high social participation while 13.33 per cent respondents had high social participation in non-demonstrator. In case of innovativeness, majority (61.67 %) respondents of demonstrator farmers were from medium innovativeness group while 66.67 per cent respondents of non-demonstrator farmers were from medium innovativeness group. 25.00 per cent of respondents of demonstrator farmers belonged to high innovativeness group and only 13.33 per cent respondents of non demonstrator group had high innovativeness.

Table :2 Distribution of respondents according to their selected characteristics

Sr.	Characteristics	Categories of respondents

		Demonstrator (n1=60)		Non-Demonstration (n2=60)	
		Frequency	**Percentage**	**Frequency**	**Percentage**
1	**Age**				
	Young age (Up to 35 years)	8	13.33	6	10.00
	Middle age (36 to 55 years)	40	66.67	36	60.00
	Old age (above 55 years)	12	20.00	18	30.00
	Total	**60**	**100**	**60**	**100**
2	**Education**				
	Illiterate	4	6.67	7	11.67
	Primary (Up to 8th std.)	31	51.67	39	65.00
	Secondary (9 to 10th std.)	17	28.33	12	20.00
	Higher Secondary (11th to 12th std.)	5	8.33	2	3.33
	Graduate (above 12th std.)	3	5.00	0	0.00
	Total	**60**	**100**	**60**	**100**
3	**Size of land holding**				
	Small size (up to 1ha)	17	28.33	14	23.33
	Medium size (1.1 to 2 ha)	32	53.33	36	60.00
	Big size (above 2 ha)	11	18.33	10	16.67
	Total	**60**	**100**	**60**	**100**
4	**Size of family**				
	Small size family (Below 5 members)	14	23.33	11	18.33
	Medium size family (5 to 8 members)	39	65.00	43	71.67
	Large size family (Above 8 members)	7	11.67	6	10.00
	Total	**60**	**100**	**60**	**100**
5	**Annual income**				
	Low (Up to Rs. 50,000)	11	18.33	15	25.00
	Medium (Rs. 50,001 to 1,00,000)	36	60.00	35	58.33
	High (Above Rs. 1,00,000)	13	21.67	10	16.67
	Total	**60**	**100**	**60**	**100**
6	**Social Participation**				
	Low social participation (X-SD)	8	13.33	16	26.67
	Medium social participation (X+-SD)	35	58.33	36	60.00
	High social participation (X+SD)	17	28.33	8	13.33
	Total	**60**	**100**	**60**	**100**
	Mean	2.91		2.11	
	SD	1.89		1.63	
7	**Innovativeness**				
	Low innovativeness	8	13.33	12	20.00
	Medium innovativeness	37	61.67	40	66.67
	High innovativeness	15	25.00	8	13.33
	Total	**60**	**100**	**60**	**100**
	Mean	2.13		1.38	
	SD	1.06		1.14	

2. Knowledge level of respondents

The data of Table: 3 clearly indicate that 50.00 per cent and 36.67 per cent demonstrator farmers were from categories of medium and high level of knowledge group respectively. In case of non-demonstrator 56.67 per cent and 33.33 per cent respondents were from medium and low level of knowledge group respectively. The reset of 13.33 per cent respondents in demonstrator farmers belonged to low level of knowledge while in case of non demonstrator farmers, only 10.00 per cent of farmers had high level of knowledge. More over the mean knowledge score of demonstrator was 13.33 against the mean score of non demonstrator was 11.06. Thus the demonstrator was found superior than non demonstrator farmers regarding the seed treatment in groundnut.

Table 3 : Distribution of respondents according to their knowledge level

Sr.	Knowledge level	Categories of respondents			
		Demonstrator (n1=60)		Non-Demonstrator (n2=60)	
		Frequency	Percentage	Frequency	Percentage
1	Low level of knowledge	8	13.33	20	33.33
2	Medium level of knowledge	30	50.00	34	56.67
3	High level of knowledge	22	36.67	6	10.00
	Total	**60**	**100**	**60**	**100**
	Mean	13.13		11.06	
	SD	4.15		3.93	

3. Yield level of the respondents about recommended seed treatment in groundnut

Data presented in Table 4 indicated that majority (56.67 %) demonstrator respondents belong to high yield level category while majority non demonstrator respondents (63.33 per cent) belonged to medium yield level category. The 26.67 per cent and 16.67 per cent demonstrator respondents were from medium and low yield level category respectively. in case of non demonstrator respondents 26.67 per cent and 10.00 per cent respondents were from high and low level category respectively. The mean yield score of demonstrator respondents was 2376.38 kg/ha agonists mean yield score 1628.01 kg/ha of non demonstrator respondents. Thus the demonstrator respondents were found superior over the non demonstrator respondents regarding yield level.

Table 4 : Distribution of respondents according to their Yield level

Sr.	Yield level	Categories of respondents			
		Demonstrator (n1=60)		Non-Demonstrator (n2=60)	
		Frequency	Percentage	Frequency	Percentage
1	Low yield level	10	16.67	16	26.67
2	Medium yield level	16	26.67	38	63.33
3	High yield level	34	56.67	6	10.00
	Total	**60**	**100**	**60**	**100**
	Mean	2376.38 kg/ha		1628.01 kg/ha	
	SD	478.81		590.14	

4. Comparison between the selected characteristics of the demonstrator and non-demonstrator respondents

The impact of demonstration is influenced by different characteristics of the respondents. It was not possible to consider all the characteristics of the respondents for the study. However, some of the important characteristics were selected. The responses obtained from the respondents were subjected to statically test to find out the different between two group of respondents with respect to eight selected characteristics. For this purpose, Z-test was applied.

The data in table: 5 indicate that Z-value were not significant in case of age, education, size of land holding and size of family. Hence it can be concluded that there was no significant different in case of age, education, size of land holding and size of family of demonstrator and non-demonstrator respondents while in case of annual income significant difference was observed at 0.05 level of significant. While remaining variable like social participation, innovativeness, knowledge and yield were highly significant difference were observed at 0.01 level of significance. Looking to the mean value to these characteristics of demonstrator and non-demonstrator respondents, it can be concluded that demonstrator respondents found superior than non-demonstrator respondents in case of annual income, social participation, innovativeness, knowledge and yield level.

5. Constraints faced by the respondents in adoption of recommended seed treatment in groundnut

Table no. 6 indicate that the majority of the farmers expressed constraints in adoption of recommended seed treatment practices were difficult to give three treatment at a time (93.33 per cent) ranked I, seed treatment of insecticides reduced groundnut germination in pre kharif sowing (90.00 per cent) ranked II, unawareness regarding recommended dose of seed treatment in groundnut (81.67 per cent) ranked III, seed treatment increase the cost (75.00 per cent) ranked IV, lack of knowledge about sequence of seed treatment in groundnut (72.50 per cent) ranked V, seed treatment of Chlorpyriphos 25 ml/kg detoriate fodder quality (70.83 per cent) ranked VI, adoption of recommended seed treatment increase seed rate (68.33 per cent) ranked VII, it is difficult to maintain seed rate of treated through automatic seed drill (67.50 per cent) ranked VIII and lack of availability of rhizobium culture at local level (62.50 per cent) ranked IX.

Table :6 Constraints faced by the respondents in adoption of recommended seed treatment in Groundnut (n=120)

Sr. No.	Constraints	Frequency	Percent	Rank

Table : 5 Comparison between the selected characteristics of demonstrator and non-demonstrator respondents

Sr. No.	Variables	Unit	Mean Values		Mean difference	"Z" Value
			DF (n=60)	Non-DF (n=60)		
1	Age	Year	41.2	42.05	-0.85	0.29^{NS}
2	Education	Std	7.4	6.9	0.5	1.01^{NS}
3	Size of land holding	Hect.	1.52	1.2	0.32	1.06^{NS}
1	Size of family	Number	5.43	5.2	0.23	0.78^{NS}
4	Annual income	Rank	1.98	1.24	0.74	2.01*
5	Social participation	Score	2.91	2.1	0.81	2.88**
6	Innovativeness	Score	2.13	1.8	0.33	4.78**
7	Knowledge	Score	13.13	11.06	2.07	2.76**
8	Yield	Kg/ha	2376.38	1628.01	748.37	19.3**

* = Significant at 0.05 level

** = Significant at 0.01 level

NS = Non significant

1	Lack of availability of rhizobium culture at local level	75	62.50	IX
2	Seed treatment of insecticide reduce groundnut germination in pre Khari sowing	108	90.00	II
3	Seed treatment increase the cost	90	75.00	IV
4	Seed treatment of Chlorpyriphos 25ml /kg detoriate fodder quality	85	70.83	VI
5	Difficult to give three treatment at a time	112	93.33	I
6	Adoption of recommended seed treatment increase seed rate	82	68.33	VII
7	It is difficult to maintain seed rate of treated seed through automatic seed drill	81	67.50	VIII
8	Unawareness regarding recommended dose of seed treatment in Groundnut	98	81.67	III
9	Lack of knowledge about sequence of seed treatment in Groundnut	87	72.50	V

6.Suggestion offered by respondents in adoption of recommended seed treatment practices in Groundnut

The data presented in Table no. 7 revealed that majority of the farmers suggested that training should be imparted to the groundnut growers (81.67 per cent) ranked first, method demonstration should be organized (70.83 per cent) ranked second, provision of seed dressing drum at local level (68.33 per cent) ranked third, input for seed treatment must be subsidized (65.00 per cent) ranked fourth and all input made available at local level (60.00 per cent) ranked fifth.

Table : 7. Suggestions offered by the respondents in adoption of recommended seed treatment in Groundnut (n=120)

Sr. No.	Suggestions	Frequency	Percent	Rank
1	Training should be imparted to the Groundnut growers	98	81.67	I
2	Method demonstrations should be organized about seed treatment	85	70.83	II
3	All inputs made available at local level	72	60.00	V
4	Provision of seed dressing drum at local level	82	68.33	III
5	Input for seed treatment must be subsidized	78	65.00	IV

CONCLUSION:

It can be concluded that majority demonstrator and non-demonstrator groundnut growers was middle age, medium size of land holding, medium size of family and majority of respondents educated up to primary level. More than fifty per cent of demonstrator and non-demonstrator farmers had medium social participation, annual income and medium innovativeness. Majority of demonstrator and non demonstrator farmers' were from medium level of knowledge about seed treatment practices in groundnut. Demonstrator farmers had more knowledge as compare to non demonstrator farmers resulted in higher mean score of demonstrator farmers. In case of yield level, majority of demonstrator farmers were from high yield level category while non-demonstrator farmers, majority farmers were from medium yield level category. There is no significant difference between demonstrator and non-demonstrator respondents in case of age, education, size of land holding, size of family while in case of annual income, social participation, innovativeness, knowledge and yield level of demonstrator and non-demonstrator respondents differed significantly. It can be revealed that demonstrator respondents were found superior than non demonstrator respondents. Major constraints faced by farmers in adoption of recommended seed treatment practices was difficult to give three treatments at a time and

majority farmers suggested that training and method demonstrations should be organized for specific seed treatment practices.

Reference:

Rao, N.G. (1983). Statistics for agricultural sciences. Oxford & IBH Publishing com. Bombay

Impact study: 2 Role of Cluster Frontline Demonstrations in Enhancement ofGroundnut Production

INTRODUCTION

India is the largest producer of oilseeds in the world and the oilseed sector occupies an important position in the country's economy. The country accounts for 12-15 per cent of global oilseeds area, 6-7 per cent of vegetable oils production, and 9-10 per cent of the total edible oils consumption (FAO, 2011). The continuous increase in import of oilseeds crops specially groundnut and mustard occupies a prominent position in Indian oilseeds scenario. Groundnut is an important oilseed crop of Gujarat covering an area of 17485 ha with production of 52779 MT and 3019 kg/ha productivity. In Gujarat, specially cultivate during *Kharif* season in Rajkot, Junagadh, Porbandar district of Saurashtra region, Rajkot districts has been considered as productively potential region of groundnut due to assured irrigation facilities, precise irrigation management through sprinkler and favorable soil and climate conditions. However, there is a wide gap between the potential and the actual production realized by the farmers due to partial adoption of recommended package of practices by the growers. Technology gap i.e. poor knowledge about newly released crop production and protection technologies and their management practices in the farmers' fields is a major constraint in groundnut production. So far, no systematic approach was implemented to study the technological gap existing in various components of groundnut cultivation. Awareness of scientific production technology viz., new variety, seed treatment with fungicide, insecticide and biofertilizers which were a key reason for low productivity of groundnut. The production potential could be increased by adopting recommended scientific and sustainable management production practices with improved high yielding varieties and other critical inputs through cluster frontline demonstration (CFLD). Conducting cluster front line demonstrations on farmer's field help to identify the constraints and potential of the groundnut in specific area as well as it helps in improving the economic and social status of the farmers. The aim of the front-line demonstration is to convey the technical message to the farmers that if they use recommended package and practices then the yield of this crop can be easily doubled than their present level of production. Keeping this point in view, the FLD on groundnut using improved production technologies was conducted with the objective of showing the productive potentials of the integrated production technologies under actual farm situation.

MATERIALS AND METHODS

The present investigation of CFLDs was conducted during *Kharif* season 2017-18 by the Krishi Vigyan Kendra (Rajkot - II) of Gujarat. Three cluster demonstration were arranged in KVK jurisdiction. Total 125 farmers and 50-hectare area were selected for the cluster demonstration. Farmers were trained to follow the package and practices for Groundnut cultivation as recommended by the State Agricultural Universities and need based input provided to the farmers (Table 1).

The farmers followed the full package of practices like soil testing, seed treatment with bio-fertilizer, Trichoderma, fertilizer application, weed and water management, IPM practices etc. In case of local check, the traditional practices were followed in existing varieties by the farmers. The yield data were collected from both CFLD and farmers practice plot (local check) and compiled results has been given in (Table 2).

Table 1. Details of need based input material given on CFLDs of Groundnut

Cluster	No. of demon-stration	Variety	Technology demonstration	Need base input

I	55	GJG - 22	Variety, INM, IPM &IDM	Improved variety, Trichoderma, Beauveria, PSB and rhizobium
II	37	GJG - 22	Variety, INM, IPM &IDM	Improved variety, Trichoderma, Beauveria, PSB and rhizobium
III	33	GJG - 22	Variety, INM, IPM &IDM	Improved variety, Trichoderma, Beauveria, PSB and rhizobium

Table 2. Details of yield and economics of cluster frontline demonstration on Groundnut

Treatment	Yield (Q/ha)	Gross cost (Rs./ha)	Gross return (Rs./ha)	Net return (Rs./ha)	B:C ratio	Yield increase (%)
Farmers practice	22.39	58262	112218	53955	1:1.92	--
Frontline line demonstration (Variety GJG – 22 100 kg/ha + seed treatment of Rhizobium & PSB @ 10 ml/kg + Soil application of Trichoderma 5 kg/ha + Spraying of Beauveria @ 60 gm/15 lit. of water.)	25.76	56649	123560	66911	1:2.18	14.88

Result and Discussion:

Cluster Frontline demonstrations on Groundnut were conducted by using variety GJG - 22 in Three cluster of KVK operational area. The need based inputs provided to farmers were variety GJG -22 seed 100 kg/ha, Liquid Rhizobium @10 ml/kg seed, PSB @10 ml/kg seed, Trichoderma viride @ 5 kg/ha and Beauveria bassiana @ 60 gm/15 lit water. Results concluded that average highest yield 25.76 q/ha found in demonstration plot followed by 22.39 q/ha in control plot. The similar results were also observed by Dubey et al., (2010) and Poonia and Pithia (2011). The same trend found in case of CFLDs gross and net returns, was Rs. 123560/- and Rs. 66911/- ha and for control Rs. 112218/- and Rs. 53955/-ha, respectively. The similarly findings was also obtained by Bairwa et al., (2013). Benefit cost for demonstration and control was 2.18 and 1.92 respectively. This improvement in yield might be due to the new variety, application of seed treatment, use of Trichoderma, spraying of Beauveria bassiana for pest control, timely weed and water management and integrated pest management practices.

CONCLUSION:

Cluster frontline demonstrations on Groundnut conducted in three clusters in KVK, Pipalia operational villages and result concluded that average highest yield 25.76 q/ha found in demonstration plot followed by 22.39 q/ha in control plot. There was 14.88 per cent increase in yield observed in demonstration plot over farmers' practice. It was observed that ratio potential yield can be achieved by imparting scientific knowledge to the farmers, providing the quality need based inputs and proper application of inputs. Horizontal spread of improved technologies may be achieved by the successful implementation of frontline demonstrations and various extensions activities like training programme, field day, exposure visit organized in CFLDs programmes in the farmer's yields. For wide dissemination of technologies recommended by SAUs and other research institute, more number of FLDs should be conducted.

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Dubey S, Tripathi S, Singh P and Sharma R K (2010). Yield gap analysis of black gram production through frontline demonstration, *J Prog Agric* 1(1): 42-44

Poonia TC and Pithia MS (2011). Impact of front line demonstrations of chickpea in Gujarat, *Legume Reeserach*, 34(4): 304- 307

5:Linkage

5.1 Functional linkage with different organization

Sr. No.	Name of organization	Nature of linkage
A	**Junagadh Agricultural University**	
1	College of Agriculture, Junagadh.	Impart training on Agril. aspects.
2	College of Agril. Engg, Junagadh	Impart training on Engg. aspects
3	Pulse Research Station, Junagadh	Supply of seeds for FLDs
4	Oilseeds Research Station, Junagadh	Supply of seeds for crop museum
5	Oilseeds Research Station, Amreli	Supply of seeds for crop museum
6	Director, DGR, Ivnagar, Junagadh	Training & exposure visit
7	Bio-control Lab, Dept of Ento. JAU. Junagadh	Supply of Beauveria, P. Trap, Lure etc.
8	Dept. of Plant Pathology, JAU, Junagadh	Supply of Bio fertilizer and Trichoderma
9	Vegetable Research Station, JAU, Junagadh	Supply of Vegetable Seeds
10	Cattle Breeding Farm, JAU, Junagadh	Training & exposure visit
B	**State corporation and state deptt.**	
1	District Agricultural Officer, Deptt. of Agriculture, District Panchayat, Rajkot	➢ Joint diagnostic team visit at farmers' field ➢ Organizing collaborative training to farmers ➢ For collaborative off campus training ➢ For collaborative training and demonstration Programme ➢ Collaborative on campus training programme ➢ For providing hostel facilities to participants and organizing collaborative Mahila Krishi Mela
2	District Rural Development Agency, Rajkot	
3	Deputy Director of Veterinary, Department of veterinary &Animal Husbandry, Rajkot	
4	Deputy Director of Horticulture, Rajkot	
5	Deputy Director of Agriculture (Training), Farmer Training Centre, Rajkot	
6	Deputy Director of Agriculture (Extension), Rajkot	
10	Estate Engineer, Department of Irrigation, Dhoraji	
11	All Taluka Development Officers, and their team at Taluka level	
13	ATMA, Rajkot	

Note: The nature of linkage should be indicated in terms of joint diagnostic survey, joint implementation, and participation in meeting, contribution received for infrastructural development, conducting training programmes and demonstration or any other

5.2 List Special programmes undertaken by the KVK, Which have been financed by state Govt/ other agencies

Name of the scheme	Date/ Month of initiation	Funding agency	Amount (Rs.)
CLFDs (Oil seeds)	2018-19	GOI	215000
Evaluation of Bioefficacy and Phytotoxicity of PII 301 (10) % SC against Chillithrips sponsored by PI Industries Ltd.	2018-19	-	219500

5.3 Details of linkage with ATMA

a) Is ATMA implemented in your district (Yes/No) :- Yes

S. No.	Programme	Nature of linkage	Remarks
1	District Level Training	Impart Training and diagnostic visit on Agricultural Aspects	-
2.	Block level training	Impart Training and diagnostic visit on Agricultural Aspects	

5.4 Give details of programmes implemented under National Horticultural Mission

S. No.	Programme	Nature of linkage	Constraints if any
1	-	-	-

5.5 Nature of linkage with National Fisheries Development Board

S. No.	Programme	Nature of linkage	Remarks
1.	-	-	-

6. PERFORMANCE OF INFRASTRUCTURE IN KVK

6.1 Performance of demonstration units (other than instructional farm)

Sl. No.	Demonstra-tion Units	Year of Establi-shment	Area	Details of production			Amount (Rs.)		Remarks
				Variety	produce	Quantity (Qtl)	Cost of inputs	Gross income	
-Nil-									

6.2 Performance of instructional farm (livestock and fisheries production)

Sl. No	Name of the animal / bird / aquatics	Details of production			Amount (Rs.)		Remarks
		Breed	Type of Produce	Qty.	Cost of inputs	Gross income	
-Nil-							

7. FINANCIAL PERFORMANCE

7.1 Details of KVK Bank accounts

Bank account	Name of the Bank	Location	Account Number
With Host Institute	---	--	---
With KVK	State Bank of India	Galaxy chowk, Dhoraji	32586636847

7.2. Utilization of KVK funds during the year 2019-20 Up to March-2020)

Sr. No.	Particulars	Sanctioned	Released	Expenditure
A. Recurring Contingencies				
1	**Pay & Allowances**			
2	**Traveling allowances**			
3	**Contingencies**			
	TOTAL (A)			
B. Non-Recurring Contingencies				
1	**Works**	-	-	-
2	**Equipment's including SWTL & Furniture**	-	-	-
3	**Vehicle (Four wheeler)**	-	-	-
4	**Library (Purchase of assets like books & journals)**	-	-	-
	TOTAL (B)	-	-	-
C. REVOLVING FUND		-	-	-

GRAND TOTAL (A+B+C)			

7.3. Status of revolving fund

Year	Opening balance as on 1st April	Income during the year	Expenditure during the year	Net balance
April 2012 to March 2013	100000	10970	0	110970
April 2013 to March 2014	110970	48464	28	159406
April 2014 to March 2015	159406	424853	299225	285034
April 2015 to March 2016	285034	217280	266000	236314
April 2016 to March 2017	236314	1833862	1047720	1022456
April 2017 to March 2018	1022456	1992227	2331203	683480
April 2018 to March 2019	683480	3637873	2219930	2206893
April 2019 to March 2020				

8.0 PLEASE INCLUDE INFORMATION, WHICH HAS NOT BEEN REFLECTED ABOVE (WRITTEN IN DETAILS)

8.1 Celebration of Technology Week:

The technology week was celebration at KVK Pipalia w.e.f 16/9/2019 to 21/09/2019 with a view to receive technological training and lectures on different subjects related to Agriculture and allied subjects. The programme was seven day programme in which farmers and farmwomen had actively participated from different villages of KVK Operational areas.

Sl. No.	Date	Name of Village	No. of participants
1.	16.9.2019	Bhadajaliya, Motimarad, Udakiya	56
2.	17.9.2019	Taravda	50
3.	18.9.2019	Khakhijaliya, Pipalia	55
4.	19.9.2019	Vavadi, kolki, Murkhada	65
5.	20.9.2019	Dhoraji	47
6.	21.9.2019	Vegdi, Pipalia	46
		Total	319

8.2 "MeraGaonMera Gaurav" Scheme:

TheMeraGaonMeraGuarav scheme was implemented during the year 2019. Under this scheme, first following two groups of scientists were formed for village selection and base line survey.

Table 1: Details of MGMG Team and status of benchmark survey of selected villages

Team	Name of scientists with discipline	Name of village	Name of block	Name of district	Benchmark survey Status
1	2	3	4	5	6
Team 27	Dr. N. B. Jadav (ExtnEdu) MsPinki Sharma (Home Sci.) Shri S V Undhad (Pl. Prot.)	Patanvav	Dhoraji	Rajkot	Completed
		Toraniya	Dhoraji		
		Zanzmer	Dhoraji		
		Arni	Upleta		
		Pedhala	Jetpur		
Team 28	Dr. V. S. Prajapati (LPM), Shri A R Parmar (Horti.) Shri P D Chaoudhry (Plant Breeding)	KhajuriGundala	Jetpur	Rajkot	Completed
		CharanSamdhiyala	Jetpur		
		Jasapar	Jamkandorna		
		Satodad	Jamkandorna		
		Chitravad	Jamkandorna		

Table 2: Activities carried in the selected villages

Team	Visit to village		Goshthis/ Interface meetings conducted		Demonstrations conducted		
	No. of visits	No. of farmers	No. of goshthis/ interface meetings	No. of farmers	Title of demonstration	No. of demons	No. of farmers
1	2	3	4	5	6	7	8
Team 27	20	273	3	136	Feed Management	7	7
Team 28	17	234	4	158	Kitchen gardening	11	11

Team	Trainings conducted		Mobile-based advisory		Literature support provided		Input support	
	No. of training	No. of farmers	No. of farmers	No. of advisories	No. of literature	No. of farmers	Area (ha)	No. of farmers
9	10	11	12	13	14	15	16	17
Team 27	7	183	223	19	658	298	-	-
Team 28	5	146	198	17	672	269	-	-

Table 3: Any other activity carried out

Team	Name of activity	No. of farmers
1	2	3
Team 27	Mahila Krishi Divas	38
	Technology week	27
Team 28	Mahila Krishi Divas	23
	Technology week	36

8.3 Celebration of "Mahila KISAN Diwas"

Mahila Kisan Diwas was celebrated at Krishi Vigyan Kendras Rajkot II on dated 15th October 2019 to recognize the contribution of women in Agriculture. The programme was held at Nani Parabdi Village of Dhoraji Taluka in which 35 farmwomen had actively participated. During the programme they also exhibit their handmade handicarafts which is again a sign of women empowerment by generation self employment generation activities.

8.4 CELEBRATION OF MAHILA KRUSHI DIWAS

"Mahila Krushi Divas" was celebrated at Krishi Vigyan Kendra, JAU, Pipalia on 6th august, 2019, in which 176 participants had keenly participated in which 151 were farm women and 25 were farmers from different nine villages, covering four talukas of kvk Pipalia Jurisdiction had participated. The programme was organized collaboratively with ATMA Rajkot along with other State Agriculture and Horticulture department.

Sr.No.	Village Name	Taluka	Participant (Farm Women)
1.	Motimarad	Dhoraji	32
2.	Upleta	Upleta	10
3.	Khatli	Jamkandorna	17
4.	Kolki	Upleta	20
5.	Travda	Jamkandorna	13
6.	Raiydi	Jamkandorna	15
7.	Lath	Upleta	12
8.	Bhadhajadiya	Dhoraji	22
9.	Jetpur	Jetpur	10
Total	9	4	151

8.5 KISAN VIGYAN DIWAS

As per the instructions of the Director, ATARI-PUNA, KVK Pipalia had conducted "Kisan Vigyan Diwas" on 25.12.2019. The available Scientists, office staff, and farmers had attended and participated in the programme. The programme was attended by 34 Number of farmers from Thana Galol Village of Jetpur Taluka along with Scientist (Plant protection) KVK, Pipalia where he briefed the importance and role of latest Technologies for higher productivity in major crops for increasing the farm income.

8.6 CELEBRATION OF CONSTITUTION DAY

As per the recommendation of ICAR, KVK had celebrated Constitution Day (Samvidhan Diwas) on 26 November 2019 at Nani vavdi village of Dhoraji Taluka of Rajkot District. The objective of this programme was to inculcate national spirit among the school going children and farmers. The major theme of the constitution day was to create awareness among the farmers and young kids about the fundamental duties which have been imprinted in the Indian constitution.

In this programme, all the staff members of school were present along with the forty five children and eight farmers and 10 farmwomen had participated.

8.7 CELEBRATION OF KISAN DIWAS

Kisan Diwas (Farmer's Day) is observed every year on 23 December to celebrate the birth anniversary of the fifth prime minister and kisan leader, late Chaudhary Charan Singh. Agriculture extension officers and all other scientists interact with farmers at Vegdi village and provide them information about the latest agriculture insurance schemes. A total 40 number of farmers and 2 number of extension officers were actively participated during the programme

8.8 Celebration of "Swachhata Pakhwada "

Swachchta Pakhwada was celebrated by KVK Pipalia during 15th September to 2nd Oct as a part of Swachh Bharat Mission. A campaign was organized by KVK in which many activities were performed by the Staff i.e. celebration of Sewa Divas, tree plantation, shramdaan, etc

8.9 CELEBRATION OF WORLD SOIL HEALTH DAY (05/12/2019)

The event was celebrated to know the importance of soil health and its role to increase the soil fertility which directly enhances their farming income with increase in productivity. The objective of the programme was to improve knowledge on soil health card based fertilizer application. The event was conducted at Kolki Village of KVK Operational area where 42 numbers of farmers had actively showed their presence and grasp the knowledge on the day of occasion.

8.10 Bruhad Vruksha Ropan Abhiyan (17.9.2019)

8.11 Fertilizer Awareness Programme (22.10.2019)

8.12 Award Received

1. **Dr. N B Jadav** had received an award of "**ISEE Fellow Award"** by the Indian Society of Extension Education, New Delhi during ISEE national seminar at SKRAU Bikaner during 14-16, November, 2019.
2. **Dr. N B Jadav** had received an award of "**Excellence in Extension Education Award "** by the Society for biotic and environmental research, Tripura at SCAS, Salem during 26-27, July 2019.

8.13 Technical Programme (Results):

Technical Programme 1

Title: Knowledge of dairy farmers about recommended animal husbandry practices in Rajkot districts of Saurashtra

Name of the lead organization: Krishi Vigyan Kendra, JAU, Pipalia
Name of principle investigator & Associates: Dr. N. B. Jadav (PI), Senior Scientist & Head
Dr.V.S.Prajapati (Co-PI) Scientist (LPM)
S. V. Undhad (Associate) Scientist
P S Sharma (Associate) Scientist
A. R. Parmar (Associate) Scientist

INTRODUCTION:

As per the figures of 18th livestock census, India has about 199.07 million cattle, which is around 14.0 per cent of the world cattle population. The current buffalo population is about 105 million which accounts for 56.7 per cent of the world buffalo population. Milk production in India grew at a compound annual growth rate of 3.77 percent in the last decade and reached a volume of 112.5 million tonnes milk in the year 2009-10 (GOI, 2010). Buffalo was the largest contributor to the milk pool with about 59.2 million tonnes followed by crossbred cows (25.3 million tonnes) and indigenous cows (22.4 million tonnes).

Production potential of livestock depends mostly on the management practices under which they are reared and these practices vary significantly across various agro-ecological regions due to many factors. Understanding of livestock management practices followed by farmers in a region is necessary to identify the strengths and weaknesses of the rearing systems and to formulate suitable intervention policies. Each component of management practices interacts either directly or indirectly to affect the productivity of the livestock. Proper housing reduces the energy wastage in maintaining thermo neutral zone as well as reduces the incidence of disease. Balanced and proper feeding results in better utilization of nutrients and optimum milk production. It is generally agreed that an animal fail to prove its genetic potential for higher production when fed at low levels. Underfeeding of young stock leads to undergrowth, delay in maturity and lower productivity than optimum after attaining the breeding age. For increasing the milk production and making the dairy business more remunerative it is essential to go for adoption of improved breeding practices.

The total geographical area of Saurashtra is 6.43 million hectares representing 32.82 per cent area of the state out of which 3.70 million hectares (61%) is cropped area. The Saurashtra area is

divided in two agro climatic zone viz. North Saurashtra Agro-climatic zone and South Saurashtra Agro-climatic zone. As per the 2012 census, there is 238 lakh total livestock population in Gujarat state in which sharing of Saurashtra region is about 26.71 per cent with population of 64 lakhs. Saurashtra is the home of famous breed of cattle (Gir), buffalo (Jafrabadi), Goat (Zalawadi) and Horse (Kathiavadi). The animal husbandry programme in Rajkot district performs various activities and schemes to welfare of animals. DRDA, District Panchayat and Dairy sector are doing effective efforts to secure livelihood of the farmers through adoption of mix/integrated farming system. Numbers of cows, buffalo and sheep-goat are 273401, 345901 and 396385, respectively.

Considering these facts, the present study was designed to outline information on the dairy animal management practices followed by dairy animal owners of Rajkot district of Saurashtra Region with following objectives:

OBJECTIVES:

1) To study the profile dairy farmers in the study area
2) To determine knowledge level of dairy farmers about recommended animal husbandry practices
3) To ascertain relationship between knowledge level of dairy farmers about recommended animal husbandry practices with their profile
4) To identify the constraints faced by the farmers in adoption of recommended animal husbandry practices and seek suggestion

METHODOLOGY:

Selection of respondents:

The study was conducted in KrishiVigyan Kendra, Junagadh Agricultural University, Pipalia (Rajkot-2) operational area of Saurashtra region. Out of seven operational talukas viz. Dhoraji, Upleta,Jam kandorana and Gondal were selected purposively. Twovillages from each taluka selected randomly thus total eightvillages selected for the study. For the selection of respondents, ten respondents were randomly selected from each village and total 80 respondents interviewed for the study. *Ex-post facto* research design was followed for the study.

Table:1 Selection of respondents according to village, taluka of Rajkot district.

Sr. No.	Taluka	Villages	Respondents
1.	Upleta	1. Arani	10
		2. Nagvadar	10
2.	Dhoraji	1. Supedi	10
		2. Toraniya	10
3.	Jam Kandorana	1. Jasapar	10
		2. Rayadi	10
4.	Gondal	1. Shemla	10
		2. Bhojpura	10
		Total	80

Measurement of variables

To determine dairy farmers knowledge about recommended animal husbandry, thirty-two item statements were presented under four main indicator and assessment based on teacher made knowledge test. The objective question was prepared in which the responses can be recorded as multiple choice and blank etc. A unit score was given to the correct answer and zero to incorrect answer the total score obtained by individual respondents for all the statement was calculated. With the help of mean and standard deviation, the respondents were categorised as low medium and high. To explore the relationship between independent and dependent variables, the person product moment method of computing correlation coefficient was used. To assess the constraints of dairy farmers in doption t

recommended animal husbandry practices and suggestionswere kept open-handed and percentage work out and ranked given accordingly.

FINDINGS:

(1) Profile of dairy farmers

The data presented in Table 2.1 indicated that majority (55.00 per cent) of the respondents was in the middle age group followed by 25.00 and 20.00 per cent of the respondents belonged to the young and old age group respectively. The probable reason that could be attributed to these findings may be that this is the major group who can physically look after their animals.

While in case of education that is presented in Table 2.2, majority 40.00 per cent of the respondent were educated up to primary level whereas, 31.25.00 per cent of the respondents were educated up to secondary level followed by 15.00 per cent respondents were educated up to high secondary level, 7.50 per cent respondents were illiterate and 6.25 per cent respondents were graduate.

The data presented in Table 2.3 revealed that 38.75 per cent dairy farmers was found to have small size land holding, while 37.50 percent dairy farmers were found to have marginal size of land holding, whereas 18.75 percent dairy farmers had mediumsize of land holding, and only 5.00 per cent dairy farmers had large size of land holding. This might be due to that dairy farmers had main occupation is rearing the animals, and in order to maintain their animals, they may be cultivating the land and land was more limited resource hence lesser number of large farmers was observed in surveyed areas.

Table:2 Distribution of respondents according to their profile (n=80)

Sr.	Characteristics	Frequency	Percentage
1	Age		
	Young age (Up to 35 years)	20	25.00
	Middle age (36 to 55 years)	44	55.00
	Old age (above 55 years)	16	20.00
		80	**100.00**
2	Education		
	Illiterate	6	7.50
	Primary (1 to 7^{th} std.)	32	40.00
	Secondary (8 to 10^{th} std.)	25	31.25
	Higher Secondary (11^{th} to 12^{th} std.)	12	15.00
	Graduate (above 12^{th} std.)	5	6.25
		80	**100.00**
3	Size of land holding		
	Marginal (up to 1 ha)	30	37.50
	Small (1.01 to 2 ha)	31	38.75
	Medium (2.01 to 4 ha)	15	18.75
	Big (above 4 ha)	4	5.00
		80	**100.00**
4	Annual income		
	Very low annual income (up to Rs. 1000,00)	3	3.75
	Low annual income (Rs. 100000 to 150000)	12	15.00
	Medium annual income (Rs. 150000 to 200000)	23	28.75
	High annual income (Rs. 200000 to 250000)	28	35.00
	Very high annual income (above Rs. 250000)	14	17.50

		80	**100.00**
5	Dairying experience		
	Low experience (blow 4)	10	12.50
	Medium experience (between 4.1 to 11.2)	52	65.00
	High experience (more then 11.2)	18	22.50
		80	**100.00**
6	Social participation		
	Low social participation (below 1.03)	21	26.25
	Medium social participation (1.04 to 3.1)	47	58.75
	High social participation (above 3.1)	12	15.00
		80	**100.00**
7	Herd size		
	Low herd size (Up to 2 animal)	12	15.00
	Medium herd size (3-7 animal)	55	68.75
	High herd size (above 7 animal)	13	16.25
		80	**100.00**
8	Milk Yield		
	Low milk production (up to 3250 lit.)	34	42.50
	Medium milk production (3251 to 9300 lit.)	35	43.75
	High milk production (above 9300 lit.)	11	13.75
		80	**100.00**

The perusal of data in Table 2.4 indicated that 35.00 per cent of dairy farmers belonged to high annual income followed by 28.75 per cent of dairy farmers had medium annual income. Whereas 17.50 and 15.00 per cent dairy farmers belonged to very high and low annual income group respectively. Only 3.75 of dairy farm women had low annual income i.e. up to Rs. 100000. It might be due to the fact that in surveyed areas dairying is more commercial, profitable enterprise and practiced with larger herd size hence overall income generated is also higher.

The data revealed that in table 2.5 indicated that majority, 65.00 per cent of dairy farmers had medium experience as dairying followed by 22.50 per cent respondents had high dairying experience. Only 12.50 per cent farm women possessed low dairying experience.

The data presented in Table 2.6 revealed that 58.75 per cent dairy farmers fell in medium social participation category followed by 26.25 per cent dairy farmers fell in low social participation category and 15.00 per cent dairy farmers belonged to high social participation group. This might be due to that dairy farmers are less active in social activities.

In case of herd size, Table 2.7 data inferred that 68.75 per cent dairy farmers had a medium herd size (i.e. 3-7 animal) while 16.25 per cent dairy farmers had more than 7 animal followed by 15.00 per cent dairy farmers had less than 2 animal.It might be due to the fact that in surveyed areas demand of milk is usually higher and they also get higher price hence farmers tend to have larger to medium herd size.

Milk yield production data presented in Table 2.8 in which 43.75 per cent dairy farmers had medium animal milk yield while by 42.50 per cent dairy farmers had low animal milk yield followed by 13.75 per cent dairy farmers had higher animal milk yield.

2) Distribution of farmer's knowledge according to statement-wise

Table :3 Statement-wise distribution of farmers regarding recommended animal husbandry practices(n=80)

Sr. No.	Recommended animal husbandry practices	Frequency	Percentage	Rank

A	**Feeding**	**44.875**	**37.40**	**IV**
1	What is the ideal time interval to feed colostrum to newly born calf after birth	65	54.17	II
2	In your opinion which is the balanced feed	60	50.00	III
3	How dry fodder should be fed	22	18.33	VI
4	How much concentrate should be given to milking cow	67	55.83	I
5	How much concentrate should be given to an advanced pregnant animal per day?	54	45.00	V
6	From which month onward extra concentrate mixture should be given to pregnant animals	59	49.17	IV
7	Do you know the process of silage making	15	12.50	VIII
8	Do you know about urea treatment for improving the poor quality dry roughages	17	14.17	VII
B	**Breeding**	**50.75**	**42.29**	**II**
1	After how many days the cow/buffalo normally repeat its estrous cycle	40	33.33	V
2	What is the correct time for conceiving cow/buffalo after coming in heat	70	58.33	III
3	When the buffalo/ cow can be presented for pregnancy diagnosis after insemination	45	37.50	IV
4	When should the buffalo/ cow be served after calving	37	30.83	VII
5	If your cow/ buffalo is not conceived by more than three inseminations, what will you do for it	39	32.50	VI
6	Which one is the best method of breeding	72	60.00	II
7	Do you ask AI worker regarding breed of the animal whose semen is to be inseminated to your cow/buffalo	28	23.33	VIII
8	Do you know your Cow/Buffalo belongs to which breed	75	62.50	I
C	**General Management**	**48**	**40.00**	**III**
1	How many months the buffalo/ cow are to be kept dry before calving	62	51.67	II
2	Which one is the best method of milking	45	37.50	V
3	Washing of teat & udder before milking is necessary	32	26.67	VII
4	What is the proper place for milking a buffalo/ cow for producing clean milk	52	43.33	IV
5	If your buffalo/ cow feel difficulty in calving what will you do	76	63.33	I
6	Do you know about importance of pre and post milking teat dip	18	15.00	VIII
7	How much colostrum should be fed to a calf weighing 25 kg in a day	38	31.67	VI
8	Do you know about importance of record keeping	61	50.83	III
D	**Health Care**	**63.25**	**52.71**	**I**
1	Please indicate which are the more reliable symptoms of H.S. disease	58	48.33	VI
2	Is there any advantage of vaccinating the animal	68	56.67	V

3	How many times an adult animal should be vaccinated against F.M.D. in a year	48	40.00	VII
4	Do you know about deworming of animals?	72	60.00	III
5	Do you know about segregation	73	60.83	II
6	Do you know about deworming schedule	42	35.00	VIII
7	Do you know about signs of ill health	71	59.17	IV
8	Do you know cleanliness of animal house reduces disease incidence to your animal	74	61.67	I

Table 3 locates the statewise distributions of respondentsregarding knowledge of recommended animal husbandry practices with respect to feeding, breeding, general management and health care practices. Overall, if we go, result found that farmers were very much concerned and followed the recommended animal husbandry practices in terms of health care of the animal and thusthe health care practices scored first rank. Second rank in which dairy farmers were following the recommended practices is breeding practices as nearly half of the dairy farmers were concerned about the breeding practices of the animal in a recommended way followed by the general management of the animals and its practices. Lastly result was analysed that respondents were giving least concern on animal feeding related issues in a recommended way which is a matter of concern.

If we further go deep in the result, we found that among health care practices, farmers were very much concerned about the cleanliness of animal house and level opf its relation with respect disease incidence and thus scored first rank. Knowledge about the segregation scored second rank and timely deworming of animals scored third rank.

Similarly, in case of breeding related practices, dairy farmers were very much strictly concern about the type of breed of which their cattle belong to and their characteristics and thus scored first rank followed by knowledge of best method of breeding practices in a recommended way (IInd Rank). Knowledge about the correct time for conceiving cow/buffalo after coming in heat (IIIrd Rank). As far as knowledge about general management is concerned in a recommended way, which is subcategorized and first rank goes to the concern about the cattles difficulty in calving as 63.33% of beneficiaries says it's a matter of concern and should followed in a recommended way. More than half (51.67%) beneficiaries know about the duration of months in which their cattle should be kept dry before calving and thus scored second rank. Third rank goes to the record keeping (50.81%) of all animal husbandry practices.

Lastly feeding practices related knowledge resulted that 55.83 percent of dairy farmers were having good knowledge about the quantity of concentrate should be given to milking cow and scored 1st rank followed by concern about ideal time interval to feed colostrum to newly born calf after birth (54.17%). Information about the concept of balanced feed (IIIrd rank) with a 50.00 percent of the respondents.

3 Distribution of farmers according to over all knowledge about recommended animal husbandry practices

Table 4 represents the knowledge about recommended animal husbandry practices is pre-requisite for adoption of it which ultimately improves the dairy production. The results revealed that the distribution of respondents according to their knowledge on recommended animal husbandry practices revealed that 68.75 per cent of the respondents of Rajkot district of Saurashtra were having medium level of knowledge whereas remaining 18.75 and 12.5 per cent of them were having low and high levels of knowledge, respectively.

Table :4 Distribution of farmers according to over all knowledge (n=80)

Sr. No.	Category	Frequency	Percentage
1	Low level of knowledge (Below 13.20.00 score)	15	18.75

2	Medium level of knowledge (13.20 to 22.70 score)	55	68.75
3	High level of knowledge (Above 22.70 score)	10	12.5
	Total	80	100
Mean = 17.96	S.D. = 4.73		

4. Correlation between knowledge of farmers with their selected characteristics

The correlation co-efficient was computed to ascertain the association between dairy farmers knowledge regarding recommended animal husbandry practices and their selected characteristics. The data in Table 5 revealed that there was high significant association between knowledge of recommended animal husbandry practices and their age. It means less age dairy farmers, needed more knowledge regarding recommended animal husbandry practices. In case education, there was high significant association between knowledge of recommended animal husbandry practices and their education. Those dairy farmers, which had lower education, needed more knowledge about recommended animal husbandry practices. In case of size of land holding wasnon-significant association with knowledge about recommended animal husbandry practices. It means knowledge of recommended animal husbandry practices was irrespective with size of land holding. The data revealed that there was high significant association between annual incomes, dairying experience, social participation, herd size and animal milk yield about knowledge regarding recommended animal husbandry practices. It proved that those dairy farmers possessed more number of animals; more dairy experience and more social participation possessed more knowledge about recommended animal husbandry practices.

Table: 5 Correlation between level of knowledge and their selected characteristics

Sr. No.	Characteristics	"r" value
1	Age	0.3054**
2	Education	0.2984**
3	Size of land holding	0.2036 ^{NS}
4	Annual income	0.2975**
5	Dairying experience	0.4836**
6	Social participation	0.3287**
7	Herd size	0.5029**
8	Milk yield	0.5233**

* Significant at 0.05 level r = 0.195
** Significant at 0.01 level r = 0.254
NS = Non significant

5.Constraints in adoption of recommended animal husbandry practices

There are certain factors which restricts dairy farmers to adopt improved management practices. These constraints are usually area specific and farmer specific. Hence an attempt was made to study the management constraints of dairy animal owners of Rajkot district. In doing so respondents were asked about the nature and type of constraints faced by them in adoption of various management practices and results werepresented in Table.

6.1 Constraint on Feeding

Major constraints which get in the way of dairy animal owners of Rajkot district in the adoption of improved feeding practices to their dairy animals were lack of knowledge about lack of awareness about treatment of poor quality straw to improve its nutritive value (87.5%), non- availability of green fodder round the year (81.25%), Poor availability of seeds of high yielding variety of fodder(61.25), lack of knowledge of about balanced ration (52.5%) and under feeding due to limited financial resources (27.5%). However, lack of knowledge about lack of awareness about treatment of poor

quality straw to improve its nutritive value, non- availability of green fodder round the year,Poor availability of seeds of high yielding variety of fodder, lack of knowledge of about balanced ration, under feeding due to limited financial resources.

6.2 Constraint on Breeding

Major constraint faced by the dairy animal owners of Rajkot district in adoption of improved breeding practices were belief that PD through rectal palpation is harmful for pregnant animals (87.5%), repeat breeding in dairy cattle (77.5%), lack of availability of insemination in time (52.5%), low conception rate through A.I. (33.75%) and inadequate knowledge of heat detection (8.75%). poor availability of resources to maintain crossbred/superior breed of milch animals (70%). However,PD through rectal palpation is harmful for pregnant animals, repeat breeding in dairy cattle, lack of availability of insemination in time and low conception rate through A.I. were major constraints found.

In surveyed areas majority respondents had knowledge related to heat detection of dairy animals and regularly insemination in your animals.

6.3 Constraint on General Management

The major constraints observed in Rajkot district related to general management were high production cost of milk (91.25%), Lack knowledge in clean milk production (87.5%), Lack preservation facilities for milk (85%), High construction cost(72.5%) and lack of adequate space (40%).

6.4 Constraint on Health Care

The major constraints observed in Rajkot district related to healthcare were high cost of veterinary medicine (90%), distant location of veterinary hospital (87.5%), problem of mastitis in crossbred cow (77.5%), lack of awareness of deworming of milch animals (15%) and lack of awareness about importance of vaccination (11.25%). However, high cost of veterinary medicine, distant location of veterinary hospital and problem of mastitis in animal were major constraints.

Table:6 Constraints faced by farmers in adoption of recommended animal husbandry practices

Sr. No.	Practices	Constraints	Freq.	%	Rank
1	Feeding		49.6	62	IV
		Under feeding due to limited financial resources	22	27.5	V
		Lack of knowledge of balancing ration	42	52.5	IV
		Poor availability of seeds of high yielding variety of fodder	49	61.25	III
		Non availability of green fodder round the year	65	81.25	II
		Lack of awareness about treatment if poor quality straw improve its nutritive value	70	87.5	**I**
2	Breeding		41.6	52	II
		Lack of knowledge of heat detection	7	8.75	V
		Low conception rate through A.I.	27	33.75	IV
		Repeat breeding problems in dairy cattle	62	77.5	II
		Lack of availability of insemination time	42	52.5	III
		Belief that PD through rectal palpation is harmful for pregnant animals	70	87.5	**I**
3	General Management		60	75	**I**
		High construction cost	58	72.5	IV

		Lack of preservation facilities for milk	68	85	III
		Lack of knowledge in clean milk production	70	87.5	II
		Lack of adequate space	32	40	V
		High production cost of milk	73	91.25	**I**
4	Health care		45	56.25	III
		Problem of mastitis in animal	62	77.5	III
		High cost of veterinary medicine	72	90	**I**
		Lack of awareness about importance of vaccination	9	11.25	V
		Lack of awareness of deworming of milch animals	12	15	IV
		Distant location of veterinary hospital	70	87.5	II

6. Suggestions to overcome constraints in adoption of recommended animal husbandry pratices

1. The farmers of this district should be educated about importance of balanced feeding as well as methods to follow it.
2. Milk unions and Animal Husbandry Department should be suggested to provide financial credit to farmers through village co-operative societies or other appropriate agencies to encourage construction of proper animal houses.
3. Farmers should be advised to chaff dry and fodders green for efficient utilization of them and also for mixing the green with dry fodder.
4. Farmers who did not practice feeding mineral mixture to their dairy animals are advised to adopt mineral supplementation as it is required for production and reproduction.
5. Farmers should keep farm records of their animals which will help in better overall management of the animal.
6. Dairy farmers of this district should be advised to adopt full hand and dry hand milking. Further they should be advised to strip out all the milk at the end of milking to reduce the chances of mastitis.
7. As majority of the farmers had medium level of knowledge regarding modern dairy husbandry practices, dairy extension agencies need to put in more efforts on education to reduce the knowledge gap. This may help them to adopt recommended animal husbandry practices quickly and realize the benefits.

Conclusion:

From the above discussion, it can be concluded that majority of dairy farmers were middle age and educated up to primary level. Majority of the dairy farmers had medium dairying experience and social participation. More than one-half dairy farm women possessed 3 to 7 animal and belonged to medium milk production category. The overall distribution of dairy farmers according to knowledge regarding recommended animal husbandry practices, 68.75 per cent had medium knowledge followed by high knowledge regarding recommended animal husbandry practices. Dairy farmers had most knowledge in aspect of animal health care followed by animal nutrition practices and animal breeding practice. The association between characteristics like age, education, annual income, social participation, drying experience, herd size and milk yield was highly significant associated with their knowledge about recommended animal husbandry practices. Knowledge about recommended animal husbandry practices was irrespective with their size of land holding. Major constraints which get in the way of dairy animal owners of Rajkot district in the adoption of improved feeding practices to their dairy animals were lack of knowledge about lack of awareness about treatment of poor quality straw to improve its nutritive value while in breeding practices were belief that PD through rectal palpation is harmful for pregnant animals. In case of general management major constraints were high production cost of milk.