



# CENTRE OF ADVANCED FACULTY TRAINING AGRICULTURAL METROLOGY MPKV, Rahuri

## Introduction

This center was established in 1987 with financial support from ICAR. The different advance instruments in the field of Agril. Meteorology such as steady state porometer, spectro radiometer, photosynthesis system, infrared thermometer, neutron moisture meter, data logger & different radiation sensors, BREB apparatus, EC technique, leaf area meter was imported. Further, eight staff members were trained abroad. The world-renowned consultants were invited for establishing the center. Hence, the ICAR offered the CAFT to Department of Agril. Meteorology at Pune. Funded by I.C.A.R., New Delhi.

## Objective of CAFT :

1. Mainly Human Resource Development.
2. Advance training to the Professors & Scientists from SAU & ICAR Institutes.

## Faculty: Name & Designation (as on 20.01.2020) :

Sr. No.	Designation	Name of Staff	Expertise
1	Head, Department of Agril. Meteorology	Dr. J. D. Jadhav	Agril. Meteorology & Agronomy
2	Associate Professor of Hydrometeorology	Dr. V. A. Sthool	Agril. Meteorology Hydrometeorology watershed management
3	Associate Professor of Biophysics	Dr. J. D. Jadhav	Agril. Meteorology Physics, Agronomy
4	Professor of Aerobiometeorology	Vacant	Agril. Meteorology & Aerobiometeorology, Agril. Entomology, IPM
5	Professor of Applied Agril. Climatology	Dr. S. V. Bagade	Agril. Meteorology & Applied Agril. Climatology & Agronomy
6	Steno-typist	Vacant	Vacant

## Human : Resource Development :

### Particulars of Short Courses/Training program for HRD conducted during 2017 to 2020.

Sr No	Name of the Programm	Period	No. of Participants		
			Internal	External	Total
1	National Training Programme on Introductory Crop Micrometeorology	07 <sup>th</sup> to 27 <sup>th</sup> September, 2017	11	14	25

2	Fundamentals of Agricultural Meteorology	01 <sup>st</sup> to 21 <sup>st</sup> November, 2017	17	7	24
3	National Training Programme on Advances in Crop Micrometeorology	26 <sup>th</sup> Sept. to 16 <sup>th</sup> Oct., 2018	10	15	25
4	National Training Programme on Recent Advances in Crop Micrometeorology	17 <sup>th</sup> Sept. to 07 <sup>th</sup> Oct., 2019	12	13	25

**Infrastructure Development (Equipments etc.) :** The following World class instruments are available with this institute.

**Equipment List :**

Sr. No.	Name of Equipment	Sr. No.	Name of Equipment
1	Micro- Logger with Sensors	2	Sap Flow Measurement System
3	Steady State Porometer	4	Sun scan or Digital Plant Canopy
5	Stefan Boltzman law apparatus	6	Searle's conductivity apparatus
7	Lee's Disc apparatus	8	Thermo anemometer with carrying case and battery charger
9	Automated Weather Station (AWS)	10	Portable Photosynthesis System
11	Steady State Parameter	12	Portable Area Meter
13	Area meter LAM 865 Table model	14	Data Logger
15	Spectroradiometer	16	Pyranometer CM 11
17	Albedometer CM 7	18	Pyrheliometer CM 1
19	Sunshine energy sensor 6.0081	20	Ventilated Psychrometer Unit
21	Neutron Soil Moisture Probe	22	Infrared Thermometer
23	Line Quantum sensors	24	Quantum Sensors
25	Pyranometer sensors	26	Aspirated Hygrometer
27	Spare Aspirator	28	Thermograph
29	Barograph – Open scale barograph	30	Breb apparatus
31	Ventilated TC Psychrometers	32	Krypton Hygrometers, KH 20 with carrying case, cable, power supply and cross arm
33	Met.One Wind Direction Sensor 024 A	34	Met One Wind Direction Sensor 024 A
35	Micrologger	36	Sonic Anemometers
37	RH & T Probe – Vaisala Sensor	38	Pressure Plate Apparatus
39	Portable Dew Point Generator DPG 144	40	Digital Pressure Meter
41	Sap Flow System	42	TDR Trase System
43	Bimetallic Thermograph	44	Hair Hygrograph
45	Delta-T Data Logger and sensors	46	Micromet. Weather station

**Renovation of Lecture Room/ Laboratories :**

Particulars	No. of rooms	Area (m2)
Seminar Hall	01	71
Office Room	04	34
Staff Room	05	200
Instrument Cell	01	88
Crop Modeling Laboratory	01	51

Computer Laboratory	01	40
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#### ❖ Works

- New Laboratory Unit constructed on 1<sup>st</sup> floor for equipments  
**Training/Display Hall** : Area : 85 m<sup>2</sup>  
**Agro-advisory Cell** : Area : 51 m<sup>2</sup>  
**Experimental field** : One hectare  
**Library upgraded** : **Total books in library = 1484**

### **Meetings / Achievements / Conferences / Publications / Awards / MOU / Seminar and Visits : 2017-18**

#### **Meetings Attended:**

- Agromet Advisory is being prepared in consultation with University Scientists, Deptt. of Agriculture and IMD scientists on every Tuesday and Friday and submitted to All India Radio to broadcast for the benefit of farming community.
- Dr. S. B. Kharbade, Head, Deptt. of Agril. Meteorology attended the meeting with Secretary & Commissioner of Agri. on 16-01-2017 at Pune.
- Prof. V. A. Sthool, Asso. Prof. of Hydrometeorology attended Research Review Committee Meeting of NRM Group on 16-17<sup>th</sup> January. 2017.
- Mr. S. V. Jadhav, Research Associate visited and participated in KRUSHAK AGRO EXPO at Baramati during 19<sup>th</sup> Jan. to 22<sup>nd</sup> January. 2017.
- Prof. V. A. Sthool, Asso. Prof. of Hydrometeorology attended Research Review Committee Meeting of Agril. Engineering Group on 30-31<sup>st</sup> January 2017.
- Dr. S. B. Kharbade, Head, Deptt. of Agril. Meteorology attended the seminar and presented the paper at Bangalore during 9-11<sup>th</sup> February 2017.
- Dr. S. B. Kharbade, Head, Deptt. of Agril. Meteorology attended the meeting of ICAR monitoring and review team of Education Division on 06-07<sup>th</sup> March, 2017 at MPKV, Rahuri.
- Prof. V. A. Sthool, Asso. Prof. of Hydrometeorology attended the Academic Council Meeting on 18<sup>th</sup> April, 2017 at MPKV, Rahuri.
- Dr. S. B. Kharbade, Head, Deptt. of Agril. Meteorology attended the seminar on consultation on climate adaptation and services for water, food and health security, organized by WOTR, Pune on 21<sup>st</sup> April, 2017.
- Dr. S. B. Kharbade, Head, Deptt. of Agril. Meteorology attended the Research Finding Release Committee Meeting on 24<sup>th</sup> April, 2017 at MPKV, Rahuri.
- Dr. D. S. Pokharkar, Head, Deptt. of Agril. Meteorology and Prof. V. A. Sthool, Asso. Prof. of Hydrometeorology attended the Joint Agresco-2017 at VNMKV, Parbhani (M.S.) during 29-31 May, 2017 and presented the report.
- Dr. D. S. Pokharkar, Head, Deptt. of Agril. Meteorology and Prof. V. A. Sthool, Asso. Prof. of Hydrometeorology attended the meeting with Hon. Vice-Chancellor, MPKV, Rahuri

regarding space to be handed over for AWS installation on second floor of Agril. Meteorology Department to Agricultural Department on 14/07/2017 at A. C. Pune.

- Mr. S. V. Jadhav RA (GKMS) and Dr. (Mrs.) K. V. Kulkarni SRF (FASAL) had attended Workshop at YASHADA, Pune on Agroadvisory organized by WOTR, IMD and AMFUs on 17/08/2017.
- Prof. V. A. Sthool, Asso. Prof. of Hydrometeorology attended Academic Council Meeting on 01/08/2017 at MPKV, Rahuri.
- Mr. S. V. Jadhav RA (GKMS) has attended Annual Review meeting of GKMS and FASAL held at IGKVV, Raipur, Chattisgarh during 14-18, November 2017.
- Dr. D. S. Pokharkar, Head, Deptt. of Agril. Meteorology, Prof. V. A. Sthool, Asso. Prof. of Hydrometeorology, Mr. S. V. Jadhav RA (GKMS) and Dr. (Mrs.) K. V. Kulkarni SRF (FASAL) attended the Research Review meeting (RRC) during 21-22 December 2017 at Mahatma phule Krishi Vidyapeeth, Rahuri, Maharashtra.
- Dr. D. S. Pokharkar, Head, Deptt. of Agril. Meteorology and Mr. S. V. Jadhav RA (GKMS) attended the Brainstorming workshop on preparation of project proposals on 12.01.2018 at Mahatma phule Krishi Vidyapeeth, Rahuri, Maharashtra.
- Dr. V. A. Sthool, Asso. Prof. of Hydrometeorology attended XX ARS Meeting on 13-01-2018 at MPKV, Rahuri.
- Prof. A. A. Shaikh, Asso. Prof. of Agril. Climatology and Dr. (Mrs.) K. V. Kulkarni SRF (FASAL) had attended National Seminar at Solapur on 11-12 January, 2018.
- Prof. A. A. Shaikh, Asso. Prof. of Agril. Climatology attended 44<sup>th</sup> BOS in Agronomy at MPKV, Rahuri on 30-31 January, 2018.
- Dr. D. S. Pokharkar, Head, Deptt. of Agril. Meteorology attended XXI Academic Council meeting on 17-02-2018 at Mahatma phule Krishi Vidyapeeth, Rahuri, Maharashtra.
- Dr. D. S. Pokharkar, Head, Deptt. of Agril. Meteorology, Prof. V. A. Sthool, Asso. Prof. of Hydrometeorology and Mr. S. V. Jadhav RA (GKMS) attended the Research Planning meeting of Agronomy & Agril. Meteorology on 26 February, 2018 at Mahatma phule Krishi Vidyapeeth, Rahuri, Maharashtra.

#### **Achievements / Trainings :**

- ❖ World Meteorological Day Celebrated on 23<sup>rd</sup> March 2017 at Department of Agril. Meteorology (CAFT), College of Agriculture, Pune-5.
- ❖ Organised XXV Board of Studies meeting on 27<sup>th</sup> April. 2017 at Department of Agril. Meteorology (CAFT), College of Agriculture, Pune-5.
- ❖ Organised National Training program on Introductory Crop Micro meteorology during 07-27 Sept. 2017.
- ❖ Organised National Training program on Fundamental of Agricultural Meteorology during 01-21 Nov., 2017.
- ❖ Organised meeting for improving the functioning of CASAM on 26/10/2017 under the chairmanship of Prof. M. C. Varshneya Hon. V.C. Kamdhenu University, Gandhinagar, Gujarat.
- ❖ Organized the State Level Stakeholder's Meeting on Agromet Advisory Services of Maharashtra under Gramin Krishi Mausam Sewa (GKMS) on 14<sup>th</sup> March, 2018 at College of Agriculture, Pune.

- ❖ Organized the Farmers Awareness Programme (FAP) under Gramin Krishi Mausam Sewa (GKMS) on 21<sup>st</sup> March, 2018 at At. Post.: Markal, Tal.: Khed, Dist.: Pune.

### **Publications :**

- Kulkarni, K.V., D.W. Thawal, S. B. Kharbade, A. A. Shaikh and K. B. Jagtap. 2017. Economics of potted gerbera with different growth media under protected cultivation in Pune. *Internat. J. Agril. Econ. & Mngmnt.* 7(1):1-6.
- Bagade, S.V., S. B. Kharbade and A. A. Shaikh. 2017. Impact of sowing windows on different yield components and yield of soybean under changing climatic conditions at Pune. *Trends in Biosci.* 10 (10):1891-1893.
- Tupe, A. D., D. W. Thawal, A. A. Shaikh, S. B. Kharbade and R. Balasubramanian. 2017. Evaluation of DSSAT model ver 4.5 for soybean under varied environmental conditions at Pune. *Int. J. Pure App. Biosci.* 5(2):1-9.
- Shaikh, A. A., S. S. Misal and N.V. Kashid. 2017. Effect of substitution of organic resources on yield in paddy (*Oryza sativa* L.). *Trends in Biosci.* 10 (11) : 2055-2056.
- Shaikh, A. A., S. S. Misal and R. H. Shinde. 2017. Correlations between weather parameters and disease of organic paddy (*Oryza sativa* L.). *Trends in Biosci.* 10 (12) : 2165-2167.
- Shaikh, A. A., S. S. Misal and S. G. Kumbhar. 2017. Correlations between weather parameters and growth, yield contributing characters in organic paddy (*Oryza sativa* L.). *Trends in Biosci.* 10 (12) : 2207-2209.
- Shaikh, A. A., S. S. Misal and N. V. Kashid. 2017. Effect of substitution of organic resources on yield contributing characters in paddy (*Oryza sativa* L.). *Trends in Biosci.* 10 (13) : 2303-2305.
- Shaikh, A. A., S. S. Misal and R. H. Shinde. 2017. Correlations between weather parameters and pests of organic paddy (*Oryza sativa* L.). *Trends in Biosci.* 10 (13) : 2327-2329.
- Shaikh, A. A., S. S. Misal and R. H. Shinde. 2017. Effect of substitution of organic resources on growth contributing characters in paddy (*Oryza sativa* L.). *Trends in Biosci.* 10 (14) : 2496-2498.
- Prasun Santra, A. A. Shaikh and K.V. Kulkarni. 2017. Effect of growing situations on ginger (*Zingiber officinale* Rosc.) production. *Trends in Biosci.* 10 (14): 2531-2533.
- Nimbalkar, R. R., D. D. Pawar and A. A. Shaikh. 2017. Effect of planting techniques and irrigation regimes on photosynthesis rate of plant cane and ratoon cane. *Trends in Biosci.* 10 (14): 2549-2552.
- Nimbalkar, R. R., D. D. Pawar and A. A. Shaikh. 2017. Effect of planting techniques and irrigation regimes on transpiration rate of plant cane and ratoon cane. *Trends in Biosci.* 10 (14) : 2553-2556.
- Shaikh, A. A., K. V. Kulkarni and S. V. Bagade. 2017. Nutrient uptake of ginger crop under different growth media and growing situations. *Trends in Biosci.* 10 (20) : 3790-3794.
- Kharbade, S. B., A. A. Shaikh and K. V. Kulkarni. 2017. Effect of planting geometry and topping management on summer sesamum (*Sesamum indicum* L.) in relation to weather parameters. *Contemporary Research in India.* 7(2) : 131-135.
- Kharbade, S. B., A. A. Shaikh and K. V. Kulkarni. 2017. Economics of planting geometry and topping management on summer sesamum (*Sesamum indicum* L.). *Contemporary Research in India.* 7(2) : 165-168.
- Deshmukh, A. P., S. B. Kharbade, A. A. Shaikh and K. V. Kulkarni. 2017. Incidence of thrips on rose and their correlation with weather parameters under polyhouse condition. *Contemporary Research in India.* 7(2) : 235-237.
- Shaikh, A. A., K. V. Kulkarni and Pandi Alekya. 2017. Effect of different organic manures on growth contributing characters in paddy. *Contemporary Research in India.* 7(3) : 28-32.

- Shaikh, A. A., K. V. Kulkarni, S. V. Bagade and V. A. Sthool. 2017. Correlation between weather parameters and growth characters of ginger under different growing situations. *Advances in life Sciences*. 6(1) : 31-36.
- Shaikh, A. A., K. V. Kulkarni and N. T. Kunjir. 2017. Yield and quality of paddy as influenced by different organic sources. *Trends in Biosci*.10 (32) : 6569-6571.
- Shaikh, A. A., K. V. Kulkarni and N. T. Kunjir. 2017. Correlation between weather parameters and growth, yield characters at different growth stages of paddy. *Trends in Biosci*.10 (32) : 6597-6600.
- Shaikh, A. A., K. V. Kulkarni and N. T. Kunjir. 2017. Economics of paddy under different organic manure sources. *Trends in Biosci*.10 (32) : 6922-6924.
- Shaikh, A. A., A. G. Jadhav, V. A. Sthool and S. B. Kharabade. 2017. Annual rainfall variability analysis in Satara district of Maharashtra state. *Trends in Biosci*.10 (37): 7748-7756.
- Shaikh, A. A., A. G. Jadhav, V. A. Sthool and S. B. Kharabade. 2017. Monthly rainfall variability analysis in Satara district of Maharashtra state. *Trends in Biosci*.10 (37) : 7802-7805.
- Shaikh, A. A., A. G. Jadhav, V. A. Sthool and S. B. Kharabade. 2017. Tahsil wise meteorological drought pattern in Satara district of Maharashtra state. *Trends in Biosci*.10 (38) :7869-7880.
- Shaikh, A. A., A. G. Jadhav, V. A. Sthool and S. B. Kharabade. 2017. Onset and withdrawal pattern of monsoon in Satara district of Maharashtra state. *Trends in Biosci*.10 (38) : 7898-7907.
- Shaikh, A. A., A. G. Jadhav, V. A. Sthool and S. B. Kharabade. 2017. Seasonal rainfall variability analysis in Satara district of Maharashtra state. *Trends in Biosci*.10 (39) : 8120-8122.
- Shaikh, A. A., A. G. Jadhav, V. A. Sthool and S. B. Kharabade. 2017. Weekly rainfall variability analysis in Satara district of Maharashtra state. *Trends in Biosci*.10 (39) : 8137-8144.
- C. S. Chaudhari, D. S. Pokharkar, B. L. Chaudhari and D. M. Firke. 2017. Compatibility of insecticides with entomopathogenic *Nomurea rileyi* against tobacco caterpillar, *Spodoptera litura* (F.) *Indian J. Entomology* 79(1):37-40.
- K. V. Kulkarni and S. B. Kharabade (2017). Photosynthetically Active Radiation (PAR) and Light use efficiency in Gerbera (*Gerbera jamesonii* L.) under Polyhouse. *Contemporary research in India*.7(1) : pp 114-118.
- K. V. Kulkarni, S. B. Kharabade and A. P. Deshmukh. (2017). Correlation of temperature and humidity with yield of Gerbera under protected condition. *Contemporary research in India*.7(2):111-114.
- S. B. Kharabade and K. V. Kulkarni (2017). Correlation between weather parameters and plant growth contributing characters of summer sesamum *Contemporary research in India*. 7(2):33-37.
- S. B. Kharabade and K. V. Kulkarni (2017). Interaction between different spacing and topping management on growth contributing characters in summer sesamum. *Trends in Biosciences*. 10 (24):5138-5141.
- S. B. Kharabade and K.V. Kulkarni (2017). Correlation coefficient between weather parameters and incidence of pests and disease on summer sesamum. *Trends in Biosciences*. 10(24):5177-5179.
- S. B. Kharabade, K. V. Kulkarni and Shinde, G. S. Effect of different topping management on yield contributing characters in summer sesamum. *Trends in Biosciences* 10(27):5856-5858.

- S. B. Kharbade, K. V. Kulkarni and Shinde, G. S. (2017). Effect of different planting geometry (spacings) on growth contributing characters in summer sesamum. *Trends in Biosciences*. 10(27):5899-5902.
- P. A. Shelke, S. B. Kharbade and K. V. Kulkarni. 2017. Sowing Windows and Varieties Effect on Growth and Yield of Sunflower. *Trends in Biosciences* 10(12), Print: 2269-2273.
- P. A. Shelake, S. B. Kharbade, and K. V. Kulkarni (2017). Forewarning model and correlation between weather parameters and thrips of sunflower on different varieties. *Contemporary Research in India*. 7(1): pp 92-96.

#### **Seminar :**

- Bagade, S.V., S. B. Kharbade, K. V. Kulkarni, R. H. Shinde and A. A. Shaikh.2017. Nakshatrawise trend analysis of rainfall at Pune. A paper presented in Seminar on “Confluence of traditional and modern Sciences- A new integral vision for development” held at Bharatiya Vigyan Sammelan and Expo at Fergusson College, Pune, during 11-14<sup>th</sup> May, 2017.

### **Meetings / Achievements / Conferences / Publications / Awards / MOU / Seminar and Visits : 2018-19**

#### **Meetings Attended:**

- Dr. D. S. Pokharkar, Head, Deptt. of Agril. Meteorology and Dr. V. A. Sthool, Asso. Prof. of Hydrometeorology attended the Research Finding Release Committee Meeting on 19 April, 2018 at MPKV, Rahuri.
- Dr. D. S. Pokharkar, Head, Deptt. of Agril. Meteorology and Prof. V. A. Sthool, Asso. Prof. of Hydrometeorology attended the Joint Agresco-2018 at Dr. BSKKV, Dapoli, (M.S.) during 24-26 May, 2018 and presented the report.
- Dr. J.D. Jadhav Head, Department of Agril. Meteorology attended the Faculty of Agriculture Meeting at MPKV, Rahuri on 13/09/2018.
- Dr. J.D. Jadhav, Head, Deptt. of Agril. Meteorology, Shri. S.V. Jadhav, Research Associate, GKMS and Dr. (Ms.) K.V. Kulkarni, SRF, FASAL participated in Annual Review Meeting of GKMS and FASAL held at Regional Agriculture Research Station, Tirupati, Andhra Pradesh, during the period from 03/12/2018 to 06/12/2018.
- Dr. J.D. Jadhav Head, Department of Agril. Meteorology attended the RRC of Ad-hoc Project (GKMS and FASAL) on 19<sup>th</sup> Dec. 2018 at MPKV, Rahuri.
- Dr. J.D. Jadhav Head, Department of Agril. Meteorology, attended the Pre RRC Meeting of NRM group on 28<sup>th</sup> Dec. 2018 at MPKV, Rahuri.
- Prof. A.A. Shaikh, Prof. of Applied Agril. Climatology attended 45<sup>th</sup> Board of studies meeting in Agronomy on 31-12-2018 & 01-01-2019.
- Dr. J. D. Jadhav, Head, Deptt. of Agril. Meteorology & Dr. V. A. Sthool, Asso. Prof. of Hydrometeorology attended and participated in Research Review meeting (NRM group) conducted on 7<sup>th</sup> January, 2019 at MPKV, Rahuri.
- Dr. V. A. Sthool, Asso. Prof. of Hydrometeorology attended and participated in Research Review meeting (SWCE) conducted on 14 & 15<sup>th</sup> January, 2019 at MPKV, Rahuri.
- Dr. V. A. Sthool, Asso. Prof. of Hydrometeorology attended and participated in Research Programme Planning meeting conducted on 12<sup>th</sup> & 13<sup>th</sup> February, 2019 at MPKV, Rahuri.

- Dr. V. A. Sthool, Asso. Prof. of Hydrometeorology attended and participated in Innovative Research Project proposal meeting conducted on 21<sup>st</sup> February, 2019 held at MPKV, Rahuri.
- Dr. V. A. Sthool, Asso. Prof. of Hydrometeorology attended and participated in Research Programme Planning meeting (SWCE) conducted on 7<sup>th</sup> March, 2019 at MPKV, Rahuri.
- Dr. J. D. Jadhav, Head, Deptt. of Agril. Meteorology, Dr. V. A. Sthool, Asso. Prof. of Hydrometeorology & Dr. K.V. Kulkarni attended and participated in workshop on Agro-advisory on Mahavedh project held at College of Agriculture, Pune on 19<sup>th</sup> March, 2019.
- Celebrated “World Meteorological Day” on 23-03-2019 for which Dr. S. C. Bhan, Regional Coordinator, MOES, Mausam Bhavan, IMD, New Delhi was chief guest.

#### **Achievements / Trainings /Meetings:**

- ❖ Organised XXVI<sup>th</sup> Board of Studies meeting on 09<sup>th</sup> May, 2018 at Department of Agril. Meteorology (CAFT), College of Agriculture, Pune-5.
- ❖ Organised National Training program on Advances in Crop Micro-Meteorology from 26<sup>th</sup> September to 16<sup>th</sup> October, 2018.

#### **Folders :**

- 1) Forewarning Model for Predicting Stem Borer (*Phrynetta spinator*) Incidence on Fig (*Ficus carica*) MPKV /EXT.PUB/No.2204/2018.
- 2) Forewarning Model for Predicting Early Shoot Borer (*Chilo infuscatellus*) Incidence in Sugarcane MPKV /EXT.PUB/No.2205/2018.

#### **Publications :**

##### **Research papers**

1. Kharbade, S.B., Kulkarni, K.V. Bhojne, I.R. and Bagade, S.V. 2018. Tahsil wise meteorological drought pattern in Sangli district of Maharashtra State. Multilogic in science. 25(8), April 2018pp154-157
2. Subramanyam, G., Kharbade, S.B., Shaikh, A.A., Balsubramanyan, R. F and, B. B., and Sthool, V. A. 2018. Thermal indices for sustainable sowing window for *rabi* sorghum in Western Maharashtra Agroclimatic Zone. International Journal of Agril. Sciences, 10 (20):7372-7374
3. Subramanyam, G., Kharbade, S.B., Shaikh, A.A., Balsubramanyan, R. F and Sthool, V. A. 2018. Effect of date of sowing on the duration of Phenophases in sorghum in Western Maharashtra Agroclimatic Zone. International Journal of Agril. Sciences, 10 (20):7352-7355
4. Kambale, P.S., Kharbade, S. B., Shaikh, A.A., Sthool, V. A. and Jadhav, J.D. 2018. Effect of weather parameters on growth and yield in Bt Cotton under Pune Region. Contemporary Research in India (ISSN2231-2137), 8(3):168-172
5. Kambale, P.S., Kharbade, S. B., Shaikh, A.A., Sthool, V. A. and Jadhav, J. D. 2018. Growing degree day's requirement for Bt Cotton under different phenophases. Contemporary Research in India (ISSN2231-2137) 2018, 8(3):83-87
6. Shweta Gaikwad, Shraddha Bagade and Krishna Kulkarni. 2018. Annual Rainfall variability Analysis in Nandurbar District of Maharashtra State. Contemporary Research in India (ISSN2231-2137), 8(3):75-82



7. Wankhede, S.Y., Jadhav, J.D. and Shaikh, A.A. 2018. Response of pearl millet varieties to heat unit under different sowing windows in the Scarcity zone of Maharashtra. Contemporary Research in India (ISSN 2231-2137), 8 (3):25-29, 2018.
8. Wankhede, S.Y., Jadhav, J.D. and Kharbade, S.B. 2018. Response of *kharif* pearl millet cultivars to growth attribute under different sowing windows. Contemporary Research in India (ISSN 2231-2137), 8 (3):145-151, 2018.
9. Shinde, P. B., Jadhav, J. D., Sthool, V. A., Shraddha Bagade and Krishna Kulkarni. 2018. Annual Rainfall Variability Analysis in Jalgaon District of Maharashtra State. Contemporary research in India. 8(4):76- 87 December, 2018.
10. Shinde, P. B., Jadhav, J. D., Kulkarni Krishna, Sthool, V.A. and Shraddha Bagade. 2018. Monthly Rainy Days Variability in Jalgaon District of Maharashtra State. Contemporary research in India. 8(4):108-110 December, 2018.

### Technical :

1. Jadhav, J.D., Krishna Kulkarni, Shraddha Bagade and Shinde, V.A. 2018. Food Security and Climate change on Area, Production and Productivity of Major *rabi* cereals in Western Maharashtra. Paper presented in National seminar on Potential, Prospects and Strategies for Doubling Farmers Income, held during 15-16 Dec., 2018 at Dr. PDKV, Akola. pp:29.
2. Krishna Kulkarni, Jadhav, J.D., Shinde, V.A. and Shraddha Bagade 2018. Consequences on Food Security and effect of Climate change on Production of Major *Kharif* cereals in Western Maharashtra. Paper presented in National seminar on Potential, Prospects and Strategies for Doubling Farmers Income, held during 15-16 Dec. 2018 at Dr. PDKV, Akola. pp:25.
3. Bagade, S. V., Kulkarni, K. V. and Jadhav, J.D. 2019. Nakshtra wise Trend analysis of rainfall at Pune station. International Symposium on “Advances in Agrometeorology for Managing Climatic Risks of Farmers” INAGMET 2019 (11-13 February, 2019) Auditorium, JNU, New Delhi. pp :92.
4. Krishna Kulkarni, Shradha Bagade and Jadhav, J.D. 2019. Growth media/ Rootzone Temperature analysis in Gerbera under Poly house condition. International Symposium on “Advances in Agrometeorology for Managing Climatic Risks Of Farmers” INAGMET 2019 (11-13 February, 2019) JNU, New Delhi. pp:238.
5. Jadhav, J.D., Shradha Bagade, Krishna Kulkarni, Sthool, V.A., Shaikh, A.A and Jadhav S.V. 2019. Climate change and food security on production of major *rabi* cereals in western Maharashtra. International Symposium on “Advances in Agrometeorology for Managing Climatic Risks of Farmers” INAGMET 2019 (11-13 February, 2019) Auditorium, JNU, New Delhi. pp.:166.
6. Kulkarni, J. R., Kothawale, D. R., Kulkarni, K. and Jadhav, J. D. 2019. Variability of taluka-wise June rainfall distribution in the Pune district for decision support to farmers for sowing operations. Annual Monsoon Workshop-2018 & Prof D. R. Sikka Memorial National Symposium during 28-30 March, 2019. Bulletin of the Indian Meteorological Society, Pune Chapter 18(3), March, 2019, pp:16.
7. Kulkarni Krishna, Jadhav, J.D. Shraddha Bagade, Shaikh, A.A. and Sthool, V.A. 2019. Block level Meteorological Drought Pattern and Contingency crop planning in Jalgaon District of Maharashtra State. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March, 2019. Bulletin of the Indian Meteorological Society, Pune Chapter 18(3), March, 2019 pp:20.
8. Kulkarni, J. R., Kothawale, D. R., Kulkarni, K. and Jadhav, J. D. 2019. Understanding the characteristics of rainfall events in the months of December- February over Maharashtra for risk assessment and crop damages. Annual Monsoon Workshop-2018 &

- Prof. D. R. Sikka Memorial National Symposium during 28-30 March, 2019. Bulletin of the Indian Meteorological Society, Pune Chapter 18(3), March, 2019 pp:38.
9. Isabella Job, Jadhav, J.D. and Kulkarni, K.V. 2019. Effect of climate change on production and productivity of major *rabi* cereal crops in western Maharashtra. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March, 2019. Bulletin of the Indian Meteorological Society, Pune Chapter. 18(3), March, 2019 pp: 57.
  10. Jadhav, J.D., Shraddha Bagade, Kulkarni Krishna, Shaikh A.A. and Sthool V.A. 2019. Rainfall probability analysis using of statistical equations models and contingency crop planning in Solapur. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March, 2019. Bulletin of the Indian Meteorological Society, Pune Chapter. 18(3), March, 2019 pp: 68.
  11. Sthool, V.A., Shaikh, A.A., Kulkarni Krishna, Jadhav, J.D. and Shraddha Bagade 2019. Studies on Rainfall Erosivity Indices for Solapur of Maharashtra State. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March, 2019. Bulletin of the Indian Meteorological Society, Pune Chapter 18(3), March, 2019 pp: 75.
  12. Shraddha Bagade, Shaikh, A.A., Kulkarni Krishna, Jadhav, J. D. and Sthool, V.A. 2019. Impact of different intercropping systems on micrometeorological conditions of soybean crop at Pune. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March, 2019. Bulletin of the Indian Meteorological Society, Pune Chapter 18(3), March, 2019 pp: 91.
  13. Tayade, P.P., Kamble, A.B., Jadhav, J.D., Sthool, V.A. and Kulkarni, K.V. 2019. Characterization of rainfall of Satara District of Maharashtra. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March, 2019. Bulletin of the Indian Meteorological Society, Pune Chapter 18(3), March, 2019 pp :102.

### **Book Chapters:**

1. Jadhav, J.D., Sthool, V.A. and Bagade, S.V. 2018. Precipitation-rainfall probability analysis. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.,No 2206/2018.pp:32-45.
2. Jadhav, J.D., Shaikh, A.A., Jadhav, S.V. and Kulkarni, K.V. 2018. Agro Advisory - A Boon to Farmer. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp:46-51.
3. Bagade, S. V. and Jadhav, J. D. 2018. Basic Concepts of Agricultural Meteorology. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018..pp:52-62.
4. Gorantiwar, S.D. and Sthool, V. A. 2018. Soil Water Balance Simulation Model. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp:87-97.
5. Amrutsagar, V. M. and Jadhav, J. D. 2018. Combating with Climate Change by Real Time Contingency Implementation Under Dry Land Condition. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology,

- College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.
6. Bansod, R. D., Sthool, V. A. and Upadhye, S. K. 2018. Estimation of Water Requirement for Vegetables and Horticultural Crops. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp: 280-285.
  7. Thawal D. W., Jadhav S. V. and Kulkarni K. V. 2108. FROST: Prediction and Protection Methods. Advances in Crop Micrometeorology. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp: 292-298.
  8. Sthool, V. A., Upadhye, S. K., Bansod, R. D. and Amrutsagar, V. M. 2108. Watershed Development Programme: Key to sustainable Agriculture. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp: 299-305.
  9. Upadhye, S. K., Sthool, V. A., Jadhav, J.D., Bansod, R. D. 2018. Trend Analysis of Rainfall. Advances in Crop Micrometeorology. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp: 306-312.
  10. Jadhav, J.D., Chinchorkar, S. S. and Sthool, V.A. 2018. Time Series Forecasting Using Stochastic Models. Advances in Crop Micrometeorology. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp 351-360.
  11. Jadhav, J.D., Chinchorkar, S. S. and Sthool, V.A. 2018. Conventional Agromet Observatory. Advances in Crop Micrometeorology. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp: 360-376.
  12. Gaikwad, U.S., Jadhav, J.D. and Sthool, V.A. 2018. Global Climate Change its Impacts on Livestock and Strategies for Adaption in India. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp: 401-407.
  13. Salunke, S. S., Jadhav, S. V. and Kulkarni, K. V. 2018. Atmospheric Moisture. Advances in Crop Micrometeorology. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp: 418-427.
  14. Balasubramaniyam, R. and Kulkarni, K. V. 2018. DSSAT- based Crop Yield Forecasting. Advances in Crop Micrometeorology. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp: 432-444.
  15. Jadhav, J. D. and Karande, B. I. 2018. Radiation Measurement by Pyranometer, Point Quantum Sensor and Photometric Sensor. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of

- Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp: 445-453.
16. Jadhav, J. D. and Karande, B. I. 2018. Measurement of Transpiration by Steady State Porometer. Advances in Crop Micrometeorology. National Training Program on Advances in Crop Micrometeorology held at Department of Agricultural Meteorology, College of Agriculture, Pune from 26<sup>th</sup> Sept., to 16<sup>th</sup> Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp: 454-457.
  17. Shaikh, A. A. and Sthool, V. A. 2018. Measurement of air temperature. Advances in Crop Micrometeorology. National Training Program on to be held from 26th Sept., to 16th Oct., 2018. ISBN No. 978-81-937866-1-1. MPKV/EXTN/PUB.No 2206/2018.pp: 458-464.

### **Seminar/ Workshop:**

- 1) Dr. J.D. Jadhav Head, Dept. of Agril. Met. attended the Bi-Annual workshop on AICRP on Agrometeorology at Vijayapura, Karnataka during 15-17 Nov. 2018.
- 2) Dr. J.D. Jadhav Head, Dept. of Agril. Met and Dr. (Ms.) K. V. Kulkarni, SRF, FASAL, attended XVII Shri Vasantrya Naik Memorial National Seminar on “Potential, Prospects & Strategies for Doubling Farmers Income” during December 15-16, 2018 at Dr. PDKV, Akola, Maharashtra.
- 3) Dr. J. D. Jadhav, Head, Deptt. of Agril. Meteorology & Dr. K. V. Kulkarni attended and participated in International symposium on Advances in Agrometeorology for managing climatic risks of farmers (INAGMET-2019) held at New Delhi w.e.f.11 to 13<sup>th</sup> February, 2019.
- 4) Dr. J.D. Jadhav Head, Dept. of Agril. Met. Dr. V.A. Sthool, Assoc. Prof. of Hydrometeorology, Dr. (Ms.) K. V. Kulkarni, SRF, FASAL, and Students attended Annual Monsoon Workshop (AMW-2018)& Prof. D.R. Sikka Memorial National Symposium on “Role of Weather & Climate Observations and Forecasting on Increasing Agricultural Productivity & Risk Management” during 28-30 March, 2019 at IITM, Pashan, Pune.

## **Meetings / Achievements / Conferences / Publications / Awards / MOU / Seminar and Visits : 2019-20**

### **Meetings Attended:**

- Agromet Advisory is being prepared in consultation with University Scientists, Deptt. of Agriculture and IMD scientists on every Tuesday and Friday and submitted to All India Radio to broadcast for the benefit of farming community.

### **Achievements / Trainings /Meetings:**

- ❖ Organised XXVII Board of Studies meeting on 04<sup>th</sup> April, 2019 at Department of Agril. Meteorology (CAFT), College of Agriculture, Pune-5.
- ❖ Organised National Training program on Recent Advances in Crop Micrometeorology from Advances in Crop Micro-Meteorology from 17<sup>th</sup> September to 07<sup>th</sup> October, 2019.

### **Awards**

- ❖ Award of Best Poster Paper presentation in International Symposium on “Advances in Agrometeorology for Managing Climatic Risks of Farmers” INAGMET 2019 (11-

13 February, 2019) Auditorium, JNU, New Delhi.

- ❖ Award of Best Oral Paper presentation in Annual Monsoon Workshop (AMW-2018)& Prof. D.R. Sikka Memorial National Symposium on “Role of Weather & Climate Observations and Forecasting on Increasing Agricultural Productivity & Risk Management” during 28-30 March 2019 at IITM, Pashan, Pune

**Publications :**

SN	Author	Title	Journal Name	NASS Rating
1	Shinde, V. A., Jadhav, J. D., Pawar, P. B., Londhe, V. M., Patil, J. B. and Amrutsagar, V.M.	Climate change impact on production, productivity of major <i>rabi</i> cereals in western Maharashtra.	<i>Contemporary Research in India</i>	3.23
2	Patil, S. V., Shinde, V. A., Jadhav, J. D., Pawar, P. B., Amrutsagar, V. M., Gethe, R. M. and Patil, B. D.	Farming system: a tool for sustainability and livelihood security for farmers in the scarcity zone of Maharashtra.	<i>Contemporary Research in India</i>	3.23
3	Upadhye, S. K., Sanglikar, R. V., Jadhav, J. D., Kadam, B. S., Pawar, P. B. and Amrutsagar, V. M.	Assessment of drought and monthly rainfall variability in Dahiwadi tehsil of Satara district under scarcity zone of western Maharashtra.	<i>Contemporary Research in India</i>	3.23
4	Jadhav, J. D., Shinde, V. A., Pawar, P. B., Patil, J. B. and Amrutsagar, V. M.	Climate change impact on production, productivity of major <i>kharif</i> cereals in western Maharashtra.	<i>Contemporary Research in India</i>	3.23
5	Londhe, V. M., Jadhav, J. D., Pawar, P. B., Shinde, V. A. Kolse, R. H. and Amrutsagar, V. M.	Probability of rainfall in scarcity zone of Maharashtra.	<i>Contemporary Research in India</i>	3.23
6	Pawar, P. B., Surve, U. S., Pawar, A. B., Jadhav, J. D., Londhe, V. M., Amrutsagar, V. M.	Consumptive use, water use efficiency and moisture extraction pattern of summer pearl millet in western Maharashtra.	<i>Contemporary Research in India</i>	3.23
7	Jadhav, B. T., Jadhav, J. D., Shinde, V. A., Pawar, P. B., Londhe, V.M., Amrutsagar, V. M.	Agro Advisories : A boon for crop planning.	<i>Contemporary Research in India</i>	3.23
8	Wankhede, S. Y., Jadhav, J. D., Pawar, P. B., Kharbade, S. B. and Shaikh, A. A.	Response of kharif pearl millet cultivars to different sowing windows.	<i>Contemporary Research in India</i>	3.23
9	Thorve, S. B., Jadhav, J. D., Pawar, P. B., Amrutsagar, V. M., Bhanavase, D. B. & Upadhye, S. K.	Agromet advisories a guide for sustainability : a case study in water scarcity zone of Maharashtra.	<i>Journal of Agrometeorology</i>	6.40
10	Patil, J. B., Jadhav, J. D., Narute, G. P., Kolse, R. H. and Amrutsagar, V. M.	Know the Rainfall Probabilities and Harvest Rainwater in Scarcity Areas of Maharashtra.	<i>Contemporary Research in India</i>	3.23
11	Pawar, S. M., Jadhav, J. D., Mohalkar, S. S., Patil, J. B. Kolse, R. H. and Amrutsagar V. M.	Soil Type and Rainfall Based Suggested Cropping Pattern for the Districts of Western Maharashtra	<i>Contemporary Research in India</i>	3.23
12	Mohalkar, S. S., Shinde, V.	Adaptation Strategies of	<i>Contemporary</i>	3.23

	A., Pawar, S. M., Jadhav J. D. and Amrutsagar V. M.	Livestock on Impacts of Climate Change in Maharashtra.	<i>Research in India</i>	
13	Patil, M. R., Jadhav, J. D., Kolse, R. H., Kadam, D. D., Shinde, V. A. Narute, G. P. and Amrutsagar, V. M.	Statistical Equations Models for Rainfall Prediction.	<i>Contemporary Research in India</i>	3.23
14	Sanglikar, R. V., Upadhye, S. K., Pardhe, D. D., Jadhav, J. D., Amrutsagar, V. M., Chary, G. Ravindra.	Development of Constants in Rainfall Intensity-Frequency-Duration Equation for Pandharpur in Solapur District.	<i>Contemporary Research in India</i>	3.23
15	Choramale Vikas, Kolse, R. H. and Jadhav J. D.	Variability of Rainfall in Solapur District (MS).	<i>Contemporary Research in India</i>	3.23
16	Inamke, N. M., Shinde, V. A., Khadtare, S. V. and Jadhav, J. D.	Comparative Economics of Sunflower and Safflower Cultivation of Western Maharashtra.	<i>Contemporary Research in India</i>	3.23
17	Kadam, D. D., Jadhav, J. D. and Jadhav, Y. R.	Crop Phenology and Thermal Indices in Relation to Seed Yield of Safflower ( <i>Carthamustinctorius</i> L.)	<i>Contemporary Research in India</i>	3.23
18	Chavan K. K., Khobragade A. M., Londhe V. M., Gethe R. M. and Jadhav J. D.	Response of different soybean varieties under different sowing windows under marathwada region.	<i>Contemporary Research in India</i>	3.23
19	Shradha Bagade, Jadhav J.D., Shaikh A.A., Sthool V.A. and Krishna Kulkarni	Weekly Rainfall Variability Analysis in Nandurbar District of Maharashtra State	<i>Trends in Biosciences</i>	3.94
20	Shinde P. B., Jadhav J. D., Sthool V. A., Shraddha Bagade and K.V. Kulkarni	Annual Rainfall Variability Analysis in Jalgaon District of Maharashtra State.	<i>Contemporary Research in India</i>	3.23
21	Shinde P. B., Jadhav J. D., Kulkarni Krishna, Sthool V.A. and Shraddha Bagade	Monthly Rainy Days Variability in Jalgaon District of Maharashtra State	<i>Contemporary Research in India</i>	3.23
22	Kambale ,P.S., Kharbade,S. B., Shaikh, A.A., Sthool ,V. A. and Jadhav,J.D.	Effect of weather parameters on growth and yield in Bt Cotton under Pune Region.	<i>Contemporary Research in India</i>	3.23
23	Kambale ,P.S., Kharbade,S. B., Shaikh, A.A., Sthool ,V. A. and Jadhav,J.D.	Growing degree day's requirement for Bt Cotton under different phenophases.	<i>Contemporary Research in India</i>	3.23
24	Wankhede S.Y., Jadhav J.D. and Shaikh A.A.	Response of pearl millet varieties to heat unit under different sowing windows in the Scarcity zone of Maharashtra.	<i>Contemporary Research in India</i>	3.23
25	Wankhede S.Y., Jadhav J.D. and Kharbade S.B.	Response of <i>kharif</i> pearl millet cultivars to growth attribute under different sowing windows	<i>Contemporary Research in India</i>	3.23

#### Technical:

- 1) S. V. Bagade, K. V. Kulkarni, J.D. Jadhav 2019 Nakshtra wise Trend analysis of rainfall at Pune station. International Symposium on "Advances in Agrometeorology for Managing Climatic Risks Of Farmers" Inagmet 2019 (11-13 February, 2019) Auditorium, JNU, New Delhi. pp 92

- 2) Krishna Kulkarni Shradha Bagade And J.D. Jadhav 2019 Growth media/ Rootzone Temperature analysis in Gerbera under Poly house condition. International Symposium on “Advances in Agrometeorology for Managing Climatic Risks Of Farmers” Inagmet 2019 (11-13 February, 2019) Auditorium, JNU, New Delhi. pp238
- 3) J.D. Jadhav, Shradha Bagade, Krishna Kulkarni, V.A. Sthool, A.A Shaikh, And S.V Jadhav 2019 Climate change and food security on production of major rabi cereals in western Maharashtra. International Symposium on “Advances in Agrometeorology for Managing Climatic Risks Of Farmers” Inagmet 2019 (11-13 February, 2019) Auditorium, JNU, New Delhi. pp.166
- 4) Kulkarni J. R., Kothawale D. R., K. Kulkarni and Jadhav J. D.3 2019 Variability of taluka-wise June rainfall distribution in the Pune district for decision support to farmers for sowing operations. Annual Monsoon Workshop-2018 & Prof D.R. Sikka Memorial National Symposium during 28-30 March 2019. Bulletin of the Indian Meteorological Society, Pune Chapter Vol. 18(3), March 2019 pp16
- 5) Kulkarni Krishna, J.D. Jadhav, Shradha Bagade, A.A.Shaikh And V.A. Sthool 2019 Block level Meteorological Drought Pattern and Contingency crop planning in Jalgon District of Maharashtra State. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March 2019. Bulletin of the Indian Meteorological Society, Pune Chapter Vol. 18(3), March 2019 pp20
- 6) Kulkarni J. R., Kothawale D. R., K. Kulkarni, and Jadhav J. D. 2019. Understanding the characteristics of rainfall events in the months of December-February over Maharashtra for risk assessment and crop damages. Annual Monsoon Workshop-2018 & Prof.D.R. Sikka Memorial National Symposium during 28-30 March 2019. Bulletin of the Indian Meteorological Society, Pune Chapter Vol. 18(3), March 2019 pp 38
- 7) Isabella Job, Jadhav J.D. And Kulkarni K.V. 2019. Effect of climate change on production and productivity of major *rabi* cereal crops in western Maharashtra. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March 2019. Bulletin of the Indian Meteorological Society, Pune Chapter Vol. 18(3), March 2019 pp 57
- 8) J.D. Jadhav, Shradha Bagade, Kulkarni Krishna, A.A.Shaikh and V.A. Sthool 2019 Rainfall probability analysis using of statistical equations models and contingency crop planning in Solapur. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March 2019. Bulletin of the Indian Meteorological Society, Pune Chapter Vol. 18(3), March 2019 pp 68
- 9) V.A.Sthool, A.A. Shaikh, Kulkarni Krishna, J.D. Jadhav, and Shradha Bagade 2019 Studies on Rainfall Erosivity Indices for Solapur of Maharashtra State. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March 2019. Bulletin of the Indian Meteorological Society, Pune Chapter Vol. 18(3), March 2019 pp 75
- 10) Shradha Bagade A.A.Shaikh Kulkarni Krishna J.D. Jadhav and V.A.Sthool 2019 Impact of different intercropping systems on micrometeorological conditions of soybean crop at Pune. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March 2019. Bulletin of the Indian Meteorological Society, Pune Chapter Vol. 18(3), March 2019 pp 91
- 11) Tayade P.P., Kamble A.B., Jadhav J.D., Sthool V.A. and Kulkarni K.V. 2019 Characterization of rainfall of Satara District of Maharashtra. Annual Monsoon Workshop-2018 & Prof. D.R. Sikka Memorial National Symposium during 28-30 March 2019. Bulletin of the Indian Meteorological Society, Pune Chapter Vol. 18(3), March 2019 pp 102

### Book Chapters:

1. S.V. Jadhav, J.D. Jadhav, V.A. Sthool, and K.V. Kulkarni. 2019. Use of Agro Advisory services., National Training programme on Recent Advances in Crop Micro meteorology during 17<sup>th</sup> Sept. to 07<sup>st</sup> Oct. 2019 at Department of Agricultural Meteorology, College of Agriculture Pune. ISBN No. 978-93-89488-06-7. MPKV/EXTN/PUB.No 2281/2019. pp39-44.
2. S. V. Bagade and Dr. J. D. Jadhav, K.V.Kulkarni 2019. Agricultural meteorology and its concepts. 2019. Use of Agro Advisory services., National Training programme on Recent Advances in Crop Micro meteorology during 17<sup>th</sup> Sept. to 07<sup>st</sup> Oct. Oct. 2019 at Department of Agricultural Meteorology, College of Agriculture Pune. ISBN No. 978-93-89488-06-7. MPKV/EXTN/PUB.No 2281/2019.pp45-55.
3. V. B. Vaidya, S.V.Jadhav, K.V.Kulkarni 2019. Micrometeorological methods for estimation of evapo-transpiration National Training programme on Recent Advances in Crop Micro meteorology during 17<sup>th</sup> Sept. to 07<sup>st</sup> Oct. Oct. 2019 at Department of Agricultural Meteorology, College of Agriculture Pune. ISBN No. 978-93-89488-06-7. MPKV/EXTN/PUB.No 2281/2019.pp72-82.
4. V. B. Vaidya, S.V.Bagade, S.V.Jadhav, K.V.Kulkarni. 2019. Heat transfer in atmosphere V. B. Vaidya, S.V.Bagade, S.V.Jadhav, K.V.Kulkarni. National Training programme on Recent Advances in Crop Micro meteorology during 17<sup>th</sup> Sept. to 07<sup>st</sup> Oct. 2019 at Department of Agricultural Meteorology, College of Agriculture Pune. ISBN No. 978-93-89488-06-7. MPKV/EXTN/PUB.No 2281/2019.pp 82-89.
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6. K.V.Kulkarni, S.V.Jadhav. 2019. Forecasting using stochastic models National Training programme on Recent Advances in Crop Micro meteorology during 17<sup>th</sup> Sept. to 07<sup>st</sup> Oct 2019 at Department of Agricultural Meteorology, College of Agriculture Pune. ISBN No. 978-93-89488-06-7. MPKV/EXTN/PUB.No 2281/2019. pp196-204.
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8. Kulkarni Krishna V. , Jadhav J.D. and Sthool V.A. 2019. FASAL - A Case study : AMFU Pune National Training programme on Recent Advances in Crop Micro meteorology during 17<sup>th</sup> Sept. to 07<sup>st</sup> Oct Oct. 2019 at Department of Agricultural Meteorology, College of Agriculture Pune. ISBN No. 978-93-89488-06-7. MPKV/EXTN/PUB.No 2281/2019. pp307-311.
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during 17<sup>th</sup> Sept. to 07<sup>st</sup> Oct 2019 at Department of Agricultural Meteorology, College of Agriculture Pune. ISBN No. 978-93-89488-06-7. MPKV/EXTN/PUB.No 2281/2019. pp327-337.

11. R. Balasubramanian, K. V. Kulkarni 2019. DSSAT-based crop yield forecasting. National Training programme on Recent Advances in Crop Micro meteorology during 17<sup>th</sup> Sept. to 07<sup>st</sup> Oct 2019 at Department of Agricultural Meteorology, College of Agriculture Pune. ISBN No. 978-93-89488-06-7. MPKV/EXTN/PUB.No 2281/2019. pp342-354.
12. B. I. Karande, J. D. Jadhav, K. V. Kulkarni 2019. Measurement of transpiration by steady state porometer National Training programme on Recent Advances in Crop Micro meteorology during 17<sup>th</sup> Sept. to 07<sup>st</sup> Oct 2019 at Department of Agricultural Meteorology, College of Agriculture Pune. ISBN No. 978-93-89488-06-7. MPKV/EXTN/PUB.No 2281/2019. pp364-367.

#### **Seminar/Workshop:**

1. Dr. J.D. Jadhav Head, Dept. of Agril. Met., Dr. Mrs. S.D. Bagade, Assit. Prof. Agrometeorology and Dr. (Ms.) K. V. Kulkarni, SRF, FASAL, International Symposium on “Advances in Agrometeorology for Managing Climatic Risks Of Farmers” INAGMET 2019 (11-13 February, 2019) Auditorium, JNU, New Delhi.
2. Dr. J.D. Jadhav Head, Dept. of Agril. Met., Dr. V.A. Sthool, Hydrometeorologist, Dept. of Agril. Met., Dr. Mrs. S.D. Bagade, Assit. Prof. Agrometeorology and Dr. (Ms.) K. V. Kulkarni, SRF, FASAL, attended the Annual Monsoon Workshop (AMW-2018)& Prof. D.R. Sikka Memorial National Symposium on “Role of Weather & Climate Observations and Forecasting on Increasing Agricultural Productivity & Risk Management” during 28-30 March 2019 at IITM, Pashan, Pune.
3. Dr. J.D. Jadhav Head, Dept. of Agril. Met., Mr. S.V. Jadhav, R.A. GKMS, Dept. of Agril. Met., Dr. Mrs. S.D. Bagade, Assit. Prof. Agrometeorology and Dr. (Ms.) K. V. Kulkarni, SRF, FASAL, attended the National Annual Working Group Meeting on "AICRP on Agrometeorology" at Zonal Agricultural Research Station (ZARS), Solapur during 4<sup>th</sup> to 6<sup>th</sup> December, 2019.

#### **Financial Statement :**

##### **Expenditure under CAFT during 2017 to 2020 :**

<b>Head</b>	<b>2017-18</b>	<b>2018-19</b>	<b>2019-20</b>
<b>Operating cost of Training</b>	486436	522513	Yet to be finalised
<b>Recurring Contingency</b>	196168	417714	
<b>Non-Recurring Contingency T.A.</b>	-	41966	
<b>Library</b>	-	-	
<b>Total</b>	<b>682604</b>	<b>982193</b>	