



Department of Agricultural Process Engineering

Dr. A. S. College of Agril. Engineering and Technology

Mahatma Phule Krishi Vidyapeeth, Rahuri

Tal. Rahuri 413 722, Dist. Ahmednagar (MS)



Preamble:

The department is associated with teaching for UG, PG and Ph.D. programmes through its experienced and highly qualified staff members working on its regular establishment. The fundamentals associated with Agricultural Process Engineering are taught in the UG programme leading to B.Tech. degree in Agricultural Engineering. The students are well exposed to theoretical and practical aspects through the lectures and practical's with advanced state of art teaching aids.

The need based applied type of research programmes are carried out through B.Tech, M.Tech and Ph.D students project. Since the inception of the department, the research work has been done on the areas viz., processing of cereals, pulses and oilseeds, processing of fruits and vegetables, processing of milk and milk products and preparation and development of bakery as well as development of various processing equipment. In addition to this, the Department is on forefront in developing different advance technologies in processing and value addition, machinery required for processing, development of cold chain protocol for different fruits and vegetables, waste utilization and to generate scientific manpower and agri-business development in public private sectors. This department has recently filed two patents, released one equipment and about 03 recommendations for the benefit of the stakeholders.

In the past the department has completed two different adhoc projects funded by ICAR on development of mechanical seed extractor for pomegranate and processing of aril for juice extraction and Post harvest management of mango and sapota fruits. The department has developed technologies / machies viz., solar cooker, convective solar dryer, solar cabinet dryer, solar water heater, fruit sorter cum grader, low cost evaporative cooler, mango/sapota grader, chuner, juice boiling pan, sugarcane juice filtration system, batch type mechanical fruit washer, on farm evaopartive cooler, custard apple pulp flakes extractor and aonla pricking machine. The department has stadardised the technologies for optimization of process parameters for extraction of antioxidants compounds from pomegranate and kinnow, standardized process for sprouting ofn pulses, protocol for preparation of fig wine and fig jam, leater and dehydrated fig, priotocol for blending of soy flour amd maida for biscuit making, preparation of RTS, development of protocol for preservation of different pulp prepared from fruits, etc.

The staff members are keen in publication of the research finding through the reputed research journals in the country and abroad. The currently working staff members of this department has published about 19 research papers in International Journals and 167 research papers the national Journals.

The department has entered into MOU with M/s. Sahyadri Farmers Producer Company Ltd., Nashik. These MOU shall bring out new dimensions for collaborative research in the field of Processing and Food Engineering. This department has well equipped post harvest

technology centre, dal mill and bamboo handicrafts and art unit for demonstration and training.

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Academic Programmes:

A) B. Tech. (Agril. Engg.)

Capacity of students: 64

Year of start: 1969

B) M.Tech. (Process and Food Engineering)

Capacity of students: 4

Year of start: 1985

C) Ph. D. (Process and Food Engineering)

Capacity of students: 2+1*

Year of start: 2011-12

* in-service candidate

Course Layout:

1. B. Tech. (Agril. Engg.)

Sr. No.	Course No.	Course Title	Credits
1.	PFE-111	Thermodynamics	1+1=2
2.	PFE-122	Heat and Mass Transfer	1+1=2
3.	PFE-233	Engineering Properties of Agricultural Produce	1+1=2
4.	PFE-244	Post Harvest Engineering of Cereals, Pulses and Oil Seed	2+1=3
5.	PFE-355	Dairy and Food Engineering	2+1=3
6.	PFE-366	Post Harvest Engineering of Horticulture Crop	1+1=2
7.	PFE-367	Refrigeration and Air Conditioning	1+1=2
8.	ELE-PFE-481	Food Quality and Control	2+1=3
9.	ELE-PFE-482	Process Equipment Design	2+1=3
10.	ELE-PFE-483	Food Packaging	2+1=3
11.	GAE-PFE-475-1	Processing of Cereals, Pulses and Oil Seed	0+10=10
12.	GAE-PFE-475-2	Bakery Product	0+10=10
13.	GAE-PFE-475-3	Cashew Nut Processing	0+10=10
14.	GAE-PFE-475-4	Fruits and Vegetable Processing	0+10=10

2. M. Tech. (Process and Food Engineering)

Sr. No.	Subject	Mater's Programme
1	Major Courses	20
2	Minor Courses	09
3	Supporting Courses	05
4	Seminar	01
5	Research	20
	Total	55
	Non-credit compulsory courses	06

A) Major Subjects (Min. 20 credits)

Sr. No.	Course No.	Course Title	Credits
1	PFE 501*	Transport Phenomena in Food Processing	3(2+1)
2	PFE 502*	Engineering Properties of Food Materials	3(2+1)
3	PFE 503*	Advanced Food Process Engineering	3(2+1)
4	PFE 504*	Unit Operations in Food Process Engineering	2(1+1)
5	PFE 506	Processing of Cereals	2(1+1)
6	PFE 508	Fruits and Vegetables Process Engineering	3(2+1)
7	PFE 511	Food Quality and Safety Engineering	3(2+1)
8	PFE 513	Storage Engineering and Handling of Agricultural Products	2(1+1)
9	PFE 519	Processing of Pulses and Oilseeds	2(1+1)
10	PFE 509	Meat Processing	3(2+1)
11	PFE 516	Design of Bins and Silos	2(2+0)
12	PFE 518	Food Plant Design And Layout	2(1+1)
13	PFE 592*	Special Problem	1(0+1)
14	PFE 595#	Industry/Institute Training	NC

* Compulsory for Master's Programme Minimum of Three Weeks Training

B) Minor Subjects (Min. 09 credits)

Sr. No.	Course No.	Course Title	Credits
1	PFE 507	Food Process and Material Handling Equipment Design	3(2+1)
2	PFE 510	Food Packaging	3(2+1)
3	PFE 512	Farm Structures and Environmental Control	2(2+0)
4	PFE 514	Seed Drying, Processing and Storage	3(2+1)
5	PFE 515	Biochemical and Process Engineering	3(2+1)
6	RES 506	Design and Analysis of Renewable Energy Conversion Systems	3(3+0)
7	RES 507	Agricultural Waste and By-Products Utilization	3(2+1)
8	RES 521	Energy Management in Food Processing Industries	3(1+2)
9	FMPE 510	Ergonomics and Safety in Farm Operations	3(2+1)

C) Supporting Subjects (Min. 05 credits)

Sr. No.	Course No.	Course Title	Credits
1	STAT 501	Statistical Methods	3(2+1)
2	MATH 502	Methods of Numerical Analysis	2(1+1)
3	FMPE 505	Instrumentation Stress Analysis	3(2+1)
4	AE 502	Simulation and Modeling	3(3+0)
5	FMPE 521	Computer Aided System Design	2(0+2)
6	PFE 520	Applied Food Chemistry	2(1+1)
7	PFE 521	Applied Food Microbiology	2(1+1)

D) Seminar (01 credit)

Sr. No.	Course No.	Course Title	Credits
1	PFE 591	Masters Seminar	0+1

E) Master's Research (20 credits)

Sr. No.	Course No.	Course Title	Credits
1	PFE 599	Masters Research	20

F) Non Credit Compulsory Courses

Sr. No.	Course No.	Course Title	Credits
1	PGS 501	Library and Information Services	0+1
2	PGS 502	Technical Writing and Communications Skills	0+1
3	PGS 503 (e-Course)	Intellectual Property and Its Management In Agriculture	1+0
4	PGS 504	Basic Concepts in Laboratory Techniques	0+1
5	PGS 505 (e-Course)	Agricultural Research, Research Ethics and Rural Development Programmes	1+0
6	PGS 506 (e-Course)	Disaster Management	1+0

3. Ph. D. (Process and Food Engineering)

Sr. No.	Subject	Doctoral Programme
1	Major Courses	15
2	Minor Courses	08
3	Supporting Courses	05
4	Seminar	02
5	Research	45
	Total	75
	Non-credit compulsory courses*	06

* exempted, if completed in Master's degree

A) Major Subjects (Min. 15 credits)

Sr. No.	Course No.	Course Title	Credits
1	PFE 601*	Textural & Rheological Characteristics of Food Materials	3(2+1)
2	PFE 602 *	Advances in Food Processing	3(3+0)
3	PFE 603	Mathematical Models in Food Processing	2(2+0)
4	PFE 604	Advances in Drying of Food Materials	3(2+1)
5	PFE 605	Waste and By –Products Utilization	3(2+1)
6	PFE 606	Food Quality Systems and Management	3(2+1)
7	PFE 607	Nutraceuticals and Health Foods	3(2+1)
8	PFE 608	Enzymes in Food Processing	3(2+1)
9	PFE 609	Plant Utilities and Plant Safety	3(2+1)
10	PFE 615	Food Supply Chain Management	2(1+1)
11	PFE 693*	Special Problem	1(0+1)
12	PFE 694	Case Study	1(0+1)

* Compulsory

B) Minor Subjects (Min. 8 credits)

Sr. No.	Course No.	Course Title	Credits
1	PFE 610	Techniques in Food Analysis	3(1+2)
2	PFE 611	Bakery and Confectionary Technology	3(2+1)
3	PFE 612	Sensory Evaluation	2(1+1)
4	PFE 613	Automation in Food Processing	3(2+1)
5	PFE 614	Cold Chain Management	2(2+0)
6	PFE 617	Industrial Pollution and Control	3(2+1)
7	PFE 618	Solid-Fluid Operations	2(1+1)
8	RES 605	Fuels and Combustion	3(2+1)
9	RES 623	Energy Management and Planning	3(2+1)

C) Supporting Subjects (Min. 5 credits)

Sr. No.	Course No.	Course Title	Credits
1	PFE 620	Computer Applications in Food Industry	3(1+2)
2	PFE 621	Current Topics in Food Processing	2(2+0)
3	STAT 531	Data Analysis using Statistical Packages	3(2+1)
4	STAT 609	Operations Research	3(2+1)
5	STAT 612	Regression Analysis	3(2+1)

D) Seminars (2 credits)

Sr. No.	Course No.	Course Title	Credits
1.	PFE 691	Doctoral Seminar I	1(0+1)
2.	PFE 692	Doctoral Seminar II	1(0+1)

E) Doctoral Research (45 credits)

Sr. No.	Course No.	Course Title	Credits
1	PFE 699	Doctoral Research	45

F) Non Credit Compulsory Courses*

Sr. No.	Course No.	Course Title	Credits
1	PGS 501	Library and Information Services	1(0+1)
2	PGS 502	Technical Writing and Communications Skills	1(0+1)
3	PGS 503 (e-Course)	Intellectual Property and Its Management In Agriculture	1(1+0)
4	PGS 504	Basic Concepts in Laboratory Techniques	1(0+1)
5	PGS 505 (e-Course)	Agricultural Research, Research Ethics and Rural Development Programmes	1(1+0)
6	PGS 506 (e-Course)	Disaster Management	1(1+0)

* exempted if completed in Masters degree

Laboratories:

A) Instrumentation and Rheological Laboratory

Sr. No.	Instrument / Equipment	Purpose
1	Texture analyser	To measure textural properties of food materials
2	Universal testing machine	To measure textural properties of food materials
3	NIR spectra analyser	To measure chemical properties of food material
4	Seed analyser	To measure moisture and oil content
5	Colour scanning machine	To measure colour (L*, a* and b*) values of food products
6	Viscometer	To measure viscosity of foods
7	Exensiograph	Determination of stretchability of dough
8	Farinograph	Determination of water absorption capacity and dough development properties
9	Amylograph	Determination of gelatinization temperature and pasting characteristics
10	Soxhlet apparatus	Determination of oil content of oil seeds



Instrumentation and Rheological Laboratory

B) Heat and Mass Transfer Laboratory

Sr. No.	Instrument / Equipment	Purpose
1	Heat transfer by conduction apparatus	To study the conduction heat transfer
2	Thermal conductivity of metal rod apparatus	To measure the thermal conductivity
3	Thermal conductivity apparatus	To measure the thermal conductivity
4	Parallel & counter flow heat exchanger	To study the flow of heat transfer
5	Stefen Boltzman's apparatus	To estimate the Stefen Boltzman's constant
6	Emmissivity measurement apparatus	To estimate emissivity

C) Thermodynamics Laboratory

Sr. No.	Instrument / Equipment	Purpose
1	Lanchshior boiler	To study the boilers
2	simple vertical boiler	
3	Babscock' & Wilcock's boiler	
4	Locomotive boiler	
5	Boiler mounting & Accessories	



Thermodynamics Laboratory

C) Crop Processing Laboratory

Sr. No.	Instrument / Equipment	Purpose
1	Tray Dryer	Drying of various fruits and vegetables
2	Freeze Dryer	Drying of various fruit pulps
3	Water Bath	To maintain constant temperature
4	Spray Dryer	Drying liquid foods
5	Mango Cutting Machine	Cutting of raw mangoes for pickles
6	Vacuum Oven	Determination of moisture content
7	Ice-cream Machine	Preparation of ice-cream
8	Mini Pulse Mill	Milling of pulses
9	Mini Rice Mill	Milling of rice

Post Harvest Technology Centre:

The post harvest technology centre has 500 LPH ready to serve line and canning line for fruits and vegetables which have been installed for demonstration and raining to students and entrepreneurs and also to run the experiential module "student ready programme". The facility also includes cold storage unit and fruit ripening chamber.



Post Harvest Technology Centre

Dal Mill:

The department has established dal milling unit of Osaw make havinf capacity 1 tonne per hour which is used for training and demonstration to students and farmers.



Dal Mill

Bamboo Handicraft and Art Unit:

Bamboo Handicraft and Art Unit (BHAU) sanctioned by Ministry of Revenue and Forest, Government of Maharashtra to Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri has been established at MPKV, Rahuri and inaugurated on 5th October 2018. Art unit is having capacity to train 20 students per batch. Objectives of the unit are as follows.

1. Organisation of training for Skill development.
2. Improving the skill of local Bamboo craftsman with the use of new technologies.
3. Value addition and improvement of utilization of bamboo.
4. Generation of self-employment in Bamboo sector at local level.
5. Inspiring the research and development related to bamboo.

6. Development of skilled manpower.



Dept. of APE Bamboo Handicraft and Art Unit

Projects Completed by Students:

M. Tech. (Processing and Food Engineering)

Sr. No.	Name of M. Tech. Student	Name of Guide	Title of the M. Tech. Thesis	Year
1.	Mr. K.P Waghule	Prof. L.R. Kanawade	Influence of pre-milling treatments on dhal recovery	1985
2.	Mr. P.M. Taware	Prof. L.R. Kanawade	Storage studies on sorghum grain	1987
3.	Mr. V.R. Bhalerao	Prof. L.R. Kanawade	Storage of onion bulbs under forced air circulation	1988
4.	Mr. R.N. Kenghe	Prof. L.R. Kanawade	Storage studies on chickpea seed	1989
5.	Mr. G.S. Nevkar	Prof. L.R. Kanawade	Development and performance testing of divergent roller type fruit sorting machine	1990
6.	Mr. S.D. Ghatpande	Prof. L.R. Kanawade	Optimization of transportation cost for wheat and rice distribution system in Maharashtra	1990
7.	Mr. S.S. Anarase	Prof. L.R. Kanawade	Studies on dehydration of green chickpea in conventional tray dryer	1992
8.	Mr. D.S. Nerkar	Prof. L.R. Kanawade	Development and performance testing of pomegranate grain separator	1992
9.	Mr. P.P. Bhole	Prof. N.J. Ingle	Varietal and machine effect on milling quality of rice	1992
10.	Mr. P.N. Bhalerao	Prof. L.R. Kanawade	Storage of onion bulbs under vertical forced air circulation	1992
11.	Mr. S.R. Pabalkar	Dr. H.G. More	Effect of solar disinfections on quality of sorghum and storage insect mortality	1993
12.	Mr. K.S. Gadakh	Dr. H.G. More	Studies on dehydration of ber	1995
13.	Mr. R.V. Jayebhaye	Prof. N.J. Ingle	Energy use and saving considerations in dairy industry	1995
14.	Mr. S.B. Jadhav	Dr. P.A. Unde	Studies on ber candy	1996
15.	Mr. K.B. Shinde	Dr. P.A. Unde	Effect of steaming pretreatment on mechanical deoiling of sunflower	1997

16.	Mr. A.P. Deshmukh	Dr. P.A. Unde	Influence of thermo mechanical pretreatments on mechanical deoiling of niger	1997
17.	Mr. M.D. Sale	Dr. H.G. More	Design, development and testing of pomegranate seed extractor and analysis of the juice	1999
18.	Mr. P.N. Ahirrao	Dr. P.A. Unde	Influence of thermo mechanical and enzymatic hydrolysis pretreatments on deoiling of soybean	1999
19.	Mr. R.S. Chobe	Dr. H.G. More	Studies on extraction, clarification, preservation and storage of pomegranate juice	1999
20.	Mr. N.R. Patil	Dr. H.G. More	Studies on dehydration of pomegranate rind and properties of rind powder	1999
21.	Mr. V.P. Kad	Dr. P.A. Unde	Optimization of osmotic dehydration of potato products	1999
22.	Mr. A.V. Tarale	Dr. H.G. More	Design and development of recirculatory type solar dryer for drying agril. Produce during winter	2000
23.	Miss. M.S. Gopale	Dr. H.G. More	Studies on dehydration of mushroom	2000
24.	Mr. M.M. Jorawar	Dr. P.A. Unde	Studies on dehydrations of Packaging and storage of Spianach beet (<i>Palak</i>)	2000
25.	Mr. Dieldin O.M. Elkhair	Dr. P.A. Unde	Studies on lateral grain pressure in polyethylene (fiexible) containers	2001
26.	Mr. V.N. Gawande	Dr. P.A Unde	Studies on effect of pre-cooling and storage on shelf life of grape	2001
27.	Mr. S.G. Malode	Prof. B.J. Gawade	Studies on raisin making form black grapes	2001
28.	Mr. A.D. Biradar	Dr. H.G. More	Effect of intermittent drying technique on quality of anardana	2001
29.	Mr. H.T. Jadhav	Dr. H.G. More	Studies on dehydration of mushroom by intermittent tray drying method	2001
30.	Miss. A.S. Tanpure	Dr. P.A. Unde	Studies on pre-cooling and storage of sapota fruits	2003
31.	Miss. P.B. Pathan	Dr. H.G. More	Studies on effect of pre-cooling packaging and storage temperature on shelf life on spinach beet	2003
32.	Mr. P.D. Ukey	Dr. P.A. Unde	Design development and performance evaluation of sapota fruit grader	2003
33.	Mr. J.N. Jadhav	Dr. H.G. More	Effect of pre-cooling methods and storage temperatures on self of mango (<i>cv. Kesar</i>)	2003
34.	Mr. R.S. Dahatonde	Dr. H.G. More	Design development and performance evaluation of mango grader	2004
35.	Miss. S.P. Bagade	Dr. P.A. Unde	Response of sapota fruits to pre-cooling and low temperature storage conditions	2004
36.	Miss. A.A. Raut	Dr. H.G. More	Design, development and testing of anola fruit pricking machine	2004
37.	Mr. H.M.A.P.	Dr. P.A. Unde	Studies on mill combinations for quality	2005

	Rathnayake		rice flour and its extruded products	
38.	Mr. S.S. Jadhav	Dr. H.G. More	Studies on Lime(<i>Citrus aurantifolia</i> swingle) Juice Processing	2006
39.	Mr. Gosavi N.D.	Dr. H.G. More	Studies on Grape (<i>Vitis Vinifera</i> L.) Juice Processing	2007
40.	Mr. Patil A .S.	Dr. H.G. More	Design, Devlopment and Testing of Power Operated Aonla (<i>Phyllanthus emblica</i> L.) Fruit Pricking Machine	2007
41.	Miss More K.D	Dr. P.A.Unde	Studies on Preparation and Storage of Dehydrated Tomato Products.	2007
42.	Mr. Kedar A.H.	Dr. H.G.More	Studies on Processing of Pomegranate (<i>punica granatum</i>) Juice.	2007
43.	Miss Adagale P.V.	Dr. P.A.Unde	Effect of Size of Jaggery Powder and Packaging Material on Storability of Jaggery Powder	2007
44.	Miss. Dhawade S.C.	Dr. H.G.More	Study of Laboratory Spray Dryer for Milk Powder Preparation	2008
45.	Mr. Suryavanshi R. D.	Dr. H.G.More	Studies on Tomato puree processing	2008
46.	Mr. Kadri K.S.	Prof. Kanawade V.L.	Studies on Process Development for Onion Dehydration.	2008
47.	Mr. Ghule S.N.	Dr. P.A.Unde	Effect of Drying method and packaging materials on storage stability of green chilli (<i>capsicum annum</i> L) powder.	2009
48.	Mr. Mule S.C.	Prof. B.J. Gawade	Development and testing of on-farm evaporative cooler for storage of Sapota	2009
49.	Miss. Mote A.B.	Dr. H.G. More	Effect of Blending Soy Milk with Skim Milk on Quality of Ice Cream	2009
50.	Miss. Doke R.U.	Dr. H.G. More	Study of Laboratory Spray Dryer for Preparation of Tomato Powder	2009
51.	Mr. Lokare D.K.	Prof. Kanawade V.L.	Studies on Dehydration of Green Bell Pepper (<i>Capsicum annum</i> L.)	2009
52.	Miss. Jadhav S.C.	Prof. B.J. Gawade	Studies on Blending of Soy Flour and Maida for Biscuit Making.	2009
53.	Miss. Pawar A.A.	Prof. Kanawade V.L.	Studies on Standardization on Sprouting Process for Pulses	2010
54.	Mr. Shelar E.T.	Prof V.P. Kad	Studies on Preparation of Fig Wine	2010
55.	Mr. Sayyad Farid G.	Prof. B.J. Gawade	Optimization of Process Parameters for Extraction of Antioxidant Compounds from Pomegranate and Kinow By-Products	2010
56.	Mr. Fule N.B.	Prof. V.P. Kad	Testing of on-farm evaporative cooler for storage of sapota	2011
57.	Miss. Nilkhan J.U	Prof. B.J. Gawade	Studies on modified atmosphere packaging of fresh and fresh-cut coriander.	2011
58.	Mr. Pawar D. A.	Prof. V.P. Kad	Design and development of custard apple pulp-flakes extracting machine	2012
59.	Miss. Shelar S.D.	Dr. H.G. More	Studies on Dehydration of Fig.	2012

60.	Mr. Gadhave N.B.	Prof. B.J. Gawade	Studies on Preparation of Powder From Bottle Gourd.	2012
61.	Mr. Sawant Yogesh	Prof. M.S. Jadhav	Studies on Preparation of Herbal Ice-Cream by Incorporation of Ginger Juice	2012
62.	Miss. Chavan M.S.	Prof. M.S. Jadhav	Studies on mass transfer phenomenon during osmotic dehydration of sapota slices	2013
63.	Mr. Khating K.P.	Dr. R.N. Kenghe	Effect of blending sorghum flour dough rheology of white bread	2013
64.	Miss. Yewale M.V.	Prof. Kanawade V.L.	Studies on dehydration of sprouted moth bean	2013
65.	Mr. Jejurkar S.P.	Prof. B.J. Gawade	Standardization of process parameters for preparation of burfi from guava	2014
66.	Mr. Atkari V.T.	Prof. Kanawade V.L.	Design, development and testing of milk pasteurization system as per the new quality guidelines.	2014
67.	Mr. Yedle V.H.	Prof. Kanawade V.L.	Studies on shelf life extension of guava using different packaging materials.	2015
68.	Mr. Kamble T.M.	Dr. R.N. Kenghe	Studies on Dehydration of Curry Leaves	2015
69.	Miss. Mane S.N.	Dr .V.P.Kad	studies on packing and storage of Capsicum (Capsuimannm L)	2015
70.	Miss. Dudhane D.D	Dr. P.A. Unde	Studies on Packaging and Storage of Strawberry Fruits	2015
71.	Mr. Chaudhari S.K	Dr. R.N. Kenghe	Studies on preparation and storage of whole pricked Aonal (Phyllantusembica G) Candy	2015
72.	Mr. Barbole G.D.	Dr. R.N. Kenghe	Design fabrication and testing of Hybrid dryer (Solar and waste fired)	2015
73.	Mr. Desai Y.V.	Dr. R.N. Kenghe	Mathematical modeling of the thin layer solar tunnel dirying of banana and potato slices	2016
74.	Mr. Dahifale D.B.	Prof. M.S. Jadhav	Studies on Mass transfer phenomenon during osmotic dehydration of Aonla slices	2016
75.	Mr. Kashid A.A.	Prof. Kanawade V.L.	Studies on Effective Supply Chain of Okra	2017
76.	Mr. Mhaske A.P.	Dr .V.P.Kad	Studies on Effective Supply Chain of Coriander	2017
77.	Miss. Bhadane K.S.	Dr. M.S. Jadhav	Studies on Osmotic Dehydration of button Mushroom	2017
78.	Mr. Belhekar R.D.	Prof. Kanawade V.L.	Standardization of Drying method for Sprouted Green Gram	2017
79.	Miss. Dhage S.A.	Dr. K.J. Kamble	weed as a source of food processing and value addition of tarwad leaves	2018
80.	Miss. Kadam S.S.	Dr .V.P.Kad	Studies on storage behavior of pomegranate juice	2018
81.	Mr. Bhadle N.G.	Er. A.P. Patil	Modification, Development and performance evaluation of custard apple pulp-flakes extractor	2019

Ph. D (Processing and Food Engineering)

Sr. No.	Name of the Ph. D. student	Guide	Title of the Ph. D. Thesis	Year
1.	Mr. V.P. Kad	Dr. H.G. More	Design, development and testing of custard apple (<i>Annona squamosa l.</i>) Pulp-flakes extractor	2015
2.	Mr. V.M. Ingale	Dr. H.G. More	Design, development and performance evaluation of power operated aonla pricking machine	2016
3.	Mr. M.S. Jadhav	Dr. H.G. More	Mass transfer kinetics during osmotic dehydration of aonla slices prior to air drying	2016
4.	Mr. G.B. Yenge	Dr. H.G. More	Encapsulation of garden cress seed oil using spray drying technique	2017
5.	Miss. S.D. Shelar	Dr. P.A. Unde	Studies on preparation of pomegranate juice powder and its storage stability	2017
6.	Miss. V.S. Sonone	Dr. P.A. Unde	Studies on spray dried powder prepared from acid lime juice	2018
7.	Mr. D.A. Pawar	Dr. P.A. Unde	Standardization of process technology for jaggery granules and cubes	2018

Research Recommendations:

1. The use of food preservative viz., 1500 mg ascorbic acid and 150 mg potassium metabisulphite per kg of custard apple fruit pulp is recommended for 6 month storage at -20 ± 2 °C temperature.
2. It is recommended to use supply chain with packaging material LDPE 50 micron having 0.5 per cent area of perforation and 10 per cent head space at 10°C for increasing the shelf life of harvested okra up to 12 days
3. It is recommended to use supply chain with packaging material LDPE 50 micron having 0.2 per cent area of perforation and 10 per cent head space at 10°C for increasing the shelf life of coriander up to 8 days.

Extension Activities:

Dept. of APE, Dr. ASCAET, MPKV, Rahuri

State Level Workshop organized for Students, Farmers, Govt. Officers, NGO's and Self help group etc.

Sr. No.	Workshop Title	Date	No. of Participants
1	State Level Workshop on "Career opportunity and R & D in Process and Food Engineering"	19 Oct.2013	350

Skill Development Training Programme "Bamboo Handicraft"

Sr. No.	Training Programme Title	Place of Training	Date	Number of Participants
1	Bamboo Handicraft	BHAU, MPKV, Rahuri	6 th Oct. 2018 to 25 th Dec. 2018	20



Glimpses of skill development training programme "Bamboo Handicraft"

Research Publications:

Books

I) International Books

Agricultural Engineering Question Bank, Jain Brothers (New Delhi), (ISBN 81-86321-75-6)

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VARIED VISTA OF CAREER OPPORTUNITIES AFTER B. Tech. (Agril. Engg.)

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Review Paper

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Ad-hoc Projects (completed):

Sr. No.	Title	Funding Agency
1	Development of mechanical seed extractor for pomegranate and processing of the seed for juice extraction	ICAR
2	Post harvest management of mango and sapota fruits	ICAR

Ad-hoc Projects (Ongoing):

Sr. No.	Title	Funding Agency
1	Bamboo handicraft and art unit	State Govt.

Faculty:

Sr. No.	Name	Designation
1.	Dr. M.S. Jadhav	Professor & Head
2.	Dr. K.J. Kamble	Associate Professor
3.	Dr. V.P. Kad	Associate Professor
4.	Dr. G.B. Yenge	Assistant Professor
