ACHIEVEMENTS

Food Quality Testing Laboratory
N. M. College of Agriculture
Navsari Agricultural University, Navsari (Gujarat)

A. Awards

Sr. No.	Name of award	Year
1	Best poster presentation award (Dr Trupti K Vyas)	2014
2	1st prize for Paper Presentation (Dr Susheel Singh)	2015
3	Young Scientist Award (Dr Susheel Singh)	2018
4	Best poster presentation award (Dr Susheel Singh)	2018
5	Young Scientist Award (Dr Susheel Singh)	2019
6	Best oral presentation award (Dr Susheel Singh)	2019

B. Seminar/training organized:

Sr. No.	**Training**	**Seminar**	**Symposia/Webinar**	**Distinguished Lecture Series**	**Workshop**
2018-19	2	-	-	-	1
2019-20	2	-	-	5	-
2020-21	1	-	9	18	-

C. Post graduate/Ph.D. thesis

Sr. No.	**Year**	**No. of M.Sc.**	**No. of Ph.D.**	**Total**
1.	2014	1	3	4
2.	2015	2	1	3
3.	2016	2	1	3
4.	2017	2	2	4
5.	2018	5	-	5
6.	2019	-	1	1
7.	2020	3	2	5
8.	2021	-	2	2

D. Research recommendations (2016-17 to 2020-21)

Sr. No	Title and Recommendation	Approval Year
1.	**Dissipation of insecticides in tomatoes grown under open field and greenhouse under South Gujarat conditions** The tomato fruits are safer for consumption with respect to residues of chlorantraniprole, flubendiamide, indoxacarb and thiamethoxam applied at the recommended doses [Chlorantraniprole 18.5 SC (30.0g a.i/ha), Flubendiamide 20% WG (48.0 g a.i/ha), Indoxacarb 14.5 SC (60.0 g a.i/ha), Thiamethoxam 25% WG (50.0 g a.i/ha)] either grown in open field or under polyhouse condition when harvested after prescribed waiting periods [Chlorantraniprole 18.5 SC (3days), Flubendiamide 20% WG (5 days), Indoxacarb 14.5 SC (5 days), Thiamethoxam 25% WG (5 days)] as their terminal residues were less than Codex MRL values.	**2021**
2.	**Finger Millet, CFMV 2 (GN-9/GIRA) variety released** Approved in 17th Combined Joint AGRESCO of CISC Meeting held at Navsari during July-August, 2021	**2021**
3.	**Residues of paclobutrazol in mango under South Gujarat conditions** The mango growers of South Gujarat are recommended that application of paclobutrazol 25 SC as growth promoter at the rate of 7.5 g *a.i.*/tree i.e. 30 ml/10 l water in mango tree through drenching method in the month of July under condition do not pose the problem of paclobutrazol residues in mature and ripe mango fruits as its residues were well below the MRL values fixed by National and International regulatory agencies for mango.	**2020**
4.	**Residues of paclobutrazol in Sapota under South Gujarat conditions** The scientific community is informed that sapota fruits exceeded the MRL values fixed by National and International regulatory agencies for Paclobutrazol residues which were collected during 90-120 days from the sapota tree drenched with paclobutrazol 25 SC at the rate of 7.5 g *a.i.*/ha i.e. 30 ml/10 l water in the month of September under South Gujarat conditions.	**2020**
5.	**Surveillance of afla toxin in pasteurized and raw milk** Navsari Agricultural University analyzed 45 milk samples from Navsari for Aflatoxin presence. It was observed that occurrence of Aflatoxin M1 was higher in winter season followed by monsoon season. Aflatoxin M1 was more in buffalo milk in comparison to cow milk samples. Pasteurized buffalo milk samples showed higher Aflatoxin M1 than raw milk whereas it was absent in pasteurized cow milk samples.	**2020**
6.	**Effect of ozonized water washing on pesticide residues and shelf-life of green chilli and okra** The home-makers, consumers and food processors are advised to rinse okra and chilli fruits with ozonized water for 8 minutes with commercially available ozone purifier based on Vortex Ozone Technology having ozone producing capacity of 0.5kg/hour to decontaminate the acetamiprid and ethion residues in the range of 39.18-59.43 and 51.39-59.28 %, respectively and prolongs the shelf-life of the fruits.	**2020**

Sr. No	Title and Recommendation	Approval Year
7.	**Status of pesticide residues in seasonal green leafy vegetables in South Gujarat** The survey of pesticide residues in five leafy vegetables (coriander, colocasia, fenugreek, spinach, amaranthus) different markets of South Gujarat reveals that 48.75 % samples were positive for different pesticides. • More than 50% samples of spinach and colocasia were positive for different pesticides. • Buprofezin was the most frequently detected pesticides from different leafy vegetables. • None of vegetable sample was found exceeding the Maximum permissible limit for different elements.	**2020**
8.	**Status of heavy metals in green leafy vegetables grown under South Gujarat region** It is informed to scientific community that none of vegetable sample was found exceeding the maximum permissible limit for different elements except nickel in spinach and fenugreek. Moreover, the survey of pesticides residues in randomly taken 10 samples of the three leafy vegetables that is fenugreek, spinach and amranthus from different markets of South Gujarat were detected below permissible value for different pesticides.	**2020**
9.	**Effect of different light sources on growth and quality of micro-greens** Scientists are informed that based on the performance of different microgreens for growth parameters like days to first harvest, leaf area (cm2), fresh weight and quality parameters *viz*., ascorbic acid, *β*-carotene, N, P, K, Ca, total antioxidant activity and overall acceptability under different light sources, electroluminescent light is recommended for growing microgreens inside growing chamber/room. • Fenugreek, beet root, red cabbage, displayed significantly maximum ascorbic acid, N, Ca; *β*-carotene, K; antioxidant activity. Based on sensory evaluation, highest score for overall acceptability was obtained by Amaranth microgreens, which was followed by beet root and red cabbage microgreens.	**2020**
10	**Elephant Foot Yam, NEFY-7 (GEFY-1 (SWAGATA)** Elephant foot yam genotype NEFY-7 recorded 44.84 t/ha mean corm yield in Gujarat, where it exhibited overall 26.10 per cent corm yield superiority over national check Gajendra. Its light orange fleshed corm is reported to have appreciable amount of starch, dietary fiber, carbohydrate content, protein, vitamin A, iron, manganese, zinc and calcium in comparison to national check. The acridity feels same like "Gajendra" while consumption. The proposed genotype showed resistant reaction against collar rot disease. Elephant foot yam variety NEFY-7 is recommended for elephant foot yam growing areas of Gujarat as GEFY-1 (Swagata). Approved in 16th Combined Joint AGRESCO of CISC Meeting held at Anand june-July, 2020	**2020**
11.	**Delaying of the browning of sugarcane juice by various treatments** It is informed to scientific community that to retain natural taste and color of sugarcane juice up to three hours should add 0.5 g/litre of citric acid immediately after extraction of juice.	**2019**

<table>
<tr><th>Sr. No</th><th>Title and Recommendation</th><th>Approval Year</th></tr>
<tr><td>12.</td><td>Characterization of bacteriocin produced by isolated lactic acid bacteria
It is informed to scientific community that Enterococcus faecium produces bacteriocin which can be used in vitro to inhibit the growth of Staphylococcus aureus, Enterococcus faecalis, Serratia marcescens, Micrococcus luteus and Listeria monocytogenes</td><td>2019</td></tr>
<tr><td>13.</td><td>Dissipation and persistence of combi-product of chlorantraniliprole 9.26 % + λ cyhalothrin 4.63 % in/on pigeonpea
Pigeonpea growers of South Gujarat are recommended pre-mix formulation of chlorantraniliprole 9.26 ZC + λ-cyhalothrin 4.63 %,twice at 15 days interval starting from 50 per cent flowering stage @ 30 g a.i./ha (4.0 ml/10l water) for the control pod borer. Preharvest interval of nine days should be observed to avoid residue problem.</td><td>2018</td></tr>
<tr><td>14.</td><td>Dissipation and persistence of spiromesifen (22.9 SC) in brinjal under south Gujarat conditions
Brinjal growers of South Gujarat Heavy Rainfall Agro-climatic Zone are recommended to apply spiromesifen 22.9 SC, twice @ 96 g a.i/ha (8.4 ml/10 lit.) at 15 days interval starting from fruit setting stage for the control of red spider mite. Pre-harvest interval of one day should be observed to avoid residue problem.</td><td>2018</td></tr>
<tr><td>15.</td><td>Isolation, identification and exploitation of microbes from composting site for xylanase production for agro waste management
It is informed to scientific community that Xylanase producing Bacillus licheniformis X6 in combination with Aspergillus terrus XF9 degrade 15.5 % rice straw at ambient temperature after 40 days of incubation.</td><td>2018</td></tr>
<tr><td>16.</td><td>Microbial pigment as food additive to replace chemically synthesized colour
Yellow and orange pigments produced by bacteria Micrococcus luteus and Kocuria rosea, respectively having antioxidant activity can be used as natural</td><td>2018</td></tr>
<tr><td>17.</td><td>Isolation and identification of cyanobacteria as source of single cell protein
It is informed to scientific community that Anabaena isolate2 having high protein content (381.12 µg/mg) and antioxidant activity (28 %) has the potential to be used as single cell protein</td><td>2018</td></tr>
<tr><td>18.</td><td>Determination of nutritional composition of minor fruits
Minor fruits (mentioned below) of South Gujarat are found rich in following parameters as compared to banana and sapota.
<table>
<tr><th>Fruits</th><th>Composition better than banana and sapota</th></tr>
<tr><td>Palmyra palm</td><td>K (3902ppm), Ca(739ppm), P (268ppm) and Zn (2.79ppm)</td></tr>
<tr><td>Jamun</td><td>Total phenol (241.6 mg/100g), Antioxidant activity (126.5 mg/100g), Ca (324ppm) and Mg (241ppm)</td></tr>
<tr><td>White wax apple</td><td>Antioxidant activity (16.4 mg/100g)</td></tr>
<tr><td>Carambola</td><td>Vitamin-C (16.1 mg/100g), Total phenol (20.8 mg/100g), Antioxidant activity (28.4 mg/100g), K (4099ppm), Ca (657ppm), Mn (3.01ppm) and Cu (2.75ppm)</td></tr>
<tr><td>Tamarind</td><td>Carbohydrates (62.8%), Protein (2.81%), Vitamin-C (18.9 mg/100g), Total phenol (25.6 mg/100g), Antioxidant activity (30.4 mg/100g), K (12433ppm), Ca (2759ppm), Mg (1286ppm), P</td></tr>
</table></td><td>2018</td></tr>
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<tr><th>Sr. No</th><th>Title and Recommendation</th><th>Approval Year</th></tr>
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<table>
<tr><td></td><td>(1099ppm), Fe (154.3ppm), Mn (6.47ppm), Zn (7.11ppm) and Cu (6.13ppm)</td></tr>
<tr><td>Jackfruit</td><td>Total phenol (31.8 mg/100g), Antioxidant activity (62.9 mg/100g), K (5135ppm), Ca (405ppm), Mg (533ppm) and Mn (5.12ppm)</td></tr>
<tr><td>Star gooseberry</td><td>Protein (4.31%), β carotene (100.7 µg/100g), Vitamin-C (17.1), Total phenol (105.0 mg/100g), Antioxidant activity (83.7 mg/100g), K (4411ppm), Ca (4933ppm), Mg (1518ppm), P (545ppm), Fe (17.2ppm) and Zn (3.94ppm)</td></tr>
<tr><td>Lasoda</td><td>β carotene (62.7 µg/100g), Total phenol (41.8 mg/100g), Antioxidant activity (55.7 mg/100g), K (4644ppm), Ca (656ppm), P (431ppm), Mn (3.51ppm) and Zn (2.06ppm)</td></tr>
<tr><td>Kair</td><td>Protein (2.24%), Total phenol (61.5 mg/100g), Antioxidant activity (77.7 mg/100g), K (7313ppm), Ca (1011ppm), Mg (723ppm), P (999ppm) and Zn (4.71ppm)</td></tr>
<tr><td>Rayan</td><td>β carotene (87.63 µg/100g), total phenol (157.4 mg/100g), Antioxidant activity (92.6 mg/100g), Ca (284ppm) and P (321ppm)</td></tr>
</table>
</td><td></td></tr>
<tr><td>19.</td><td>Waiting period of profenofos and cypermethrin in/on sapota fruits
Observation of 14 days waiting period provides residue free unripe sapota fruits when pre-mix formulation of profenofos 40% and cypermethrin 4 % EC applied twice at 15 days interval on sapota bearing trees at the rate of 0.044 % (1ml/l) to control the sapota bud borer.</td><td>2017</td></tr>
<tr><td>20.</td><td>Distribution pattern of profenofos and cypermethrin in peel and pulp of sapota fruits
The residues of profenos and cypermethrin were arrested in peel of unripe sapota fruits while trans-peel movement of these residues to pulp was observed in ripe sapota fruit when pre-mix formulation of profenofos 40 % and cypermethrin 4% EC sprayed twice at 15 days interval at the rate of 0.044 % (1ml/l) to control the sapota bud borer on sapota bearing trees</td><td>2017</td></tr>
<tr><td>21.</td><td>Waiting period of chlorpyrifos and cypermethrin in/on sapota fruits
Observation of 4 days waiting period provides residue free unripe sapota fruits when pre-mix formulation of chlorpyrifos 50 % and cypermethrin 5 % EC sprayed twice at the rate of 0.055 % (1ml/l) sprayed twice at 15 days interval on sapota fruit bearing trees to control the sapota bud borer.</td><td>2017</td></tr>
<tr><td>22.</td><td>Distribution pattern of chlorpyrifos and cypermethrin in peel and pulp of sapota fruits
The residues of chlorpyrifos and cypermethrin arrested in peel of unripe sapota fruits when pre-mix formulation of chlorpyrifos 50 % and cypermethrin 5% EC sprayed twice at 15 days interval at the rate of 0.055 % (1ml/l) to control the sapota bud borer on sapota bearing trees.</td><td>2017</td></tr>
<tr><td>23.</td><td>Exploring microbes for their siderophore production and their biocontrol potential
It is informed to scientific community that siderophore producing Enterobacter ludwigii TLAB1 and Pseudomonas aeruginosa TPA1 can be used in vitro to inhibit the growth of Colletotrichum sp.</td><td>2017</td></tr>
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E. Publications

Sr. No.	Publications	Total
1	Practical manuals	10
2	Research papers	40
3	Popular articles/ Review articles	08
4	Books/ Book chapter	14