



File No7(5) 2019/Pesticides residues/RCD/FSSAI
Food Safety and Standards Authority of India
(Ministry of Health and Family Welfare)
(Regulatory Compliance Division)
FDA Bhavan, Kotla Road, New Delhi-110 002

Date: 16th October 2019

To,

All the State Food Safety Commissioners

Subject: Monitoring of Pesticide Residues in food products-Reg.

Sir/Madam,

FSSAI has fixed the Maximum Residue Limit (MRL)/ tolerance limits for various pesticides and antibiotic residues in food commodities under Food Safety and Standards (Contaminants, toxins and Residues) Regulations, 2011, which are reviewed from time to time.

The study titled "**Monitoring of Pesticide Residues at National Level**" conducted by Ministry of Agriculture & Farmers Welfare has revealed presence of pesticide residues in food commodities beyond the specified limits in some states. Out of a total of 23,660 samples analyzed, pesticide residues were detected in 4,510 samples (19.10%), out of which the residues in 523 (2.2%) samples were found exceeding maximum residues limit (MRL). The report can be viewed at FSSAI website www.fssai.gov.in.

In order to ensure the availability of good quality foodstuffs to the consumers and for keeping a check on the problem of food adulteration and pesticides in the country, the state authorities are advised to keep a strict vigil by regularly drawing food samples from all sources viz. manufacturers, wholesalers and retailers and to take strict action against the offenders under the provision of FSS Act 2006. In this regard a targeted special enforcement drive may be carried out particularly at the locations where pesticides residues have been found to be more than the MRL. During this drive at least 10 samples of various commodities may be drawn and tested in the state food labs. In case testing facilities are not available, the sample may be sent to FSSAI notified Labs for analysis of pesticide residues, list of labs is enclosed.

This issue with the approval of competent authority.

Encl. As above.

Yours faithfully,

(RK Mittal)

Head (Regulatory Division)

Introduction

The Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare initiated a central sector scheme, "Monitoring of Pesticide Residues at National Level" (MPRNL) during 2005-06 to regularly monitor pesticide residues in food commodities and environmental samples such as soil and water. Various laboratories representing Ministry of Agriculture & Farmer's Welfare, Ministry of Health and Family Welfare, Ministry of Environment and Forest, Ministry of Chemical and Fertilizer, Ministry of Commerce, Indian Council of Agriculture Research, Council of Scientific and Industrial Research, and State Agricultural Universities across the country are participating in the scheme.

The main objectives of the scheme include:

- To identify crops and regions having preponderance of pesticide residues in order to focus extension efforts for Integrated Pest Management (IPM) and Good Agriculture Practices (GAP)
- To test pesticide residues and other contaminants in food commodities and environmental samples like soil and water
- To strengthen infrastructure at Quarantine stations to prevent entry of food and food commodities which have pesticide residues above maximum residue limit (MRL)
- Testing / Certification of pesticide residue in export / import samples

Implementation of the scheme

The central sector scheme is monitored by two committees, namely, Steering Committee and Technical Committee. The policy decisions related to the scheme are under the preview of the Steering Committee headed by the Joint Secretary (Plant Protection), Department of Agriculture, Cooperation & Farmers Welfare and the Technical Committee, headed by the Assistant Director General (Plant Protection), Indian Council of Agriculture Research (ICAR) related to the technical issues. The Project Coordinating Cell of AINP on Pesticide Residues is the nodal center for implementation of the scheme. The Network Coordinator, All India Network Project on Pesticide Residues, IARI, New Delhi is the Member Secretary of the scheme and is the nodal person for the day to day implementation of the scheme related to financial and technical matters and submission of monthly report, annual report and need based information to the Department of Agriculture, Cooperation & Farmers Welfare.

As per the approved technical programme during the annual workshop of the scheme, the participating laboratories are collecting food commodities such as vegetables, fruits, cereals, pulses, spices, curry leaves, red chilli powder, milk, egg, fish/ marine, meat, tea from various Agriculture Produce Marketing Committee (APMC) markets, local markets, farm gate, CIPMC, organic outlets and Public Distribution Systems (PDS) and surface water from intensive agricultural fields from various parts of the country and analyzed for the possible presence of pesticide residues. In order to ensure the uniformity in the methodology like sampling, extraction and clean-up of the samples, the “Pesticide Residue Analysis Manual” reviewed and published by the Indian Council of Agricultural Research, has been provided and followed by all the participating laboratories. In addition to this, need based new analytical methods are developed, validated and adopted by the laboratories.

Participating Laboratories

1. Project Coordinating Cell, All India Network Project on Pesticide Residues, LBS Building, Indian Agricultural Research Institute, New Delhi (Nodal Center)
2. Dept. of Entomology, Punjab Agricultural University, Ludhiana, Punjab
3. ICAR Unit No.-9, BTRS Building, Anand Agricultural University, Anand
4. Dept. of Entomology, Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra
5. Dept. of Entomology, College of Agriculture, Kerala Agricultural University, Vellayani, Kerala
6. Division of Soil Sci. & Agril. Chemistry, Indian Institute of Horticulture Research, Hesaraghatta Lake Post, Bangalore, Karnataka
7. Dept. of Entomology, Rajasthan Agricultural University, Research Station, Durgapura, Jaipur
8. Professor Jayashankar Telangana State Agricultural University, E.E.I. Premises, Rajendranagar, Hyderabad, Andhra Pradesh
9. Dept. of Agricultural Entomology, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu
10. Institute of Pesticide Formulation Technology, Sector-20, Udyog Vihar, Gurgaon, Haryana
11. National Institute of Occupational Health, P. B. No. 2031, Meghani Nagar, Ahmedabad, Gujarat
12. Western Region Referral Laboratory, Department of Veterinary Public Health, Bombay Veterinary College, Parel, Mumbai, Maharashtra
13. MPEDA, MPEDA House, Panampilly Avenue, Kochi, Kerala
14. Pesticide Toxicology Laboratory, Indian Institute of Toxicology Research, Mahatma Gandhi Marg, Lucknow, Uttar Pradesh
15. Trace Organic Laboratory, Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi
16. National Environmental Engineering Research Institute, Nehru Marg, Nagpur, Maharashtra
17. Regional Plant Quarantine Station, Haji Bunder Road, Sewri, Mumbai, Maharashtra

18. Regional Plant Quarantine Station, G.S.T. Road, Meenambakkam, Chennai, Tamil Nadu
19. AINP on Pesticide Residues, Directorate of Research, Research Complex Building, Kalyani, Nadia, West Bengal
20. Dept. of Entomology, Dr. Y.S.P. Univ. of Horticulture & Forestry, Nauni, Solan, Himachal Pradesh
21. National Plant Quarantine Station, New Delhi
22. National Institute of Plant Health Management (NIPHM), Pesticide Management Division, Rajendranagar, Hyderabad
23. Central Agriculture Research Institute (CIARI), Port Blair, Andaman and Nicobar
24. Export Inspection Agency, Kolkata
25. Export Inspection Agency, Mumbai
26. Export Inspection Agency, Kochi
27. Centre for Analysis and Learning in Livestock and Food (CALF), National Dairy Development Board (NDDB), Anand, Gujarat

Locations of participating centers in India



Executive Summary

During 2017-18, under the Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare sponsored central sector scheme, “Monitoring of Pesticide Residues at National Level”, 27 NABL accredited participating laboratories located in different parts of India collected and analysed the samples of vegetables, fruits, spices, curry leaves, red chilli powder, rice, wheat, pulses, milk, fish/marine, tea, meat, egg and water from retail outlets, APMC markets, mother dairy, organic outlets and farm gate for the possible presence of pesticide residues.

A total of 23,660 samples were collected and analysed. The pesticide residues were detected in 4,510 samples (19.1%), out of which the residues in 523 (2.2%) samples were found exceeding FSSAI MRL.

A total of 12,821 vegetable samples mainly comprising of brinjal, okra, tomato, cabbage, cauliflower, green chilli, capsicum, cucumber, green pea, bitter gourd and coriander leaves were collected from local retail outlets, APMC markets, farmer’s field (farm gate) and organic outlets from all over the country. The vegetable samples from farmer’s field were also provided by CIPMC to the participating laboratories for the pesticide residue analysis. The pesticide residues were detected in 2,399 (18.7 %) vegetable samples and only 246 (1.9 %) samples exceeded the MRL prescribed by FSSAI. Out of all the sample analysed, 1708 (13.3 %) samples were found having residues of non-approved pesticides.

Out of 2,274 samples of various fruits such as apple, banana, pear, grapes, orange, pomegranate, guava, sapota and mango collected and analysed, residues were detected in 494 (21.7 %) samples and only 25 (1.1 %) samples were found exceeding FSSAI MRL. No pesticide residues were detected in 1780 (78.3 %) fruit samples. 277 (12.8%) samples were detected with the non-approved pesticides.

The various spice samples such as cardamom, black pepper, cumin, fennel seed, fenugreek seed, dry ginger, coriander seed and red chilli powder were collected and analysed. Out of 1,242 samples analysed, 45.2% (561) samples showed no detection of pesticide residues and 54.8 % (681) samples were detected with pesticides

residues. 150 (12.1 %) spice samples were found above FSSAI MRL and 667 (53.7%) samples were detected with the residues of non-approved pesticides. A total of 616 samples of curry leaves were analysed, the pesticide residues were detected in 438 samples and all the detected pesticides were non-approved as there is no label claim on any pesticide on curry leaves.

A total of 1,177 rice samples were analysed, out of which the residues were detected in 256 (21.7 %) samples and 85 (7.2 %) rice samples were found exceeding FSSAI MRL. 65 (5.5 %) rice samples were detected with non-approved pesticides. Out of 783 wheat samples analysed, residues were detected in 74 (9.5 %) wheat samples and 8 (1 %) samples were found exceeding MRL. 42 (5.4 %) wheat samples were detected with the residues of non-approved pesticides. Of the 771 pulse samples analysed, 91 (11.8 %) samples were detected with pesticide residues and 9 (1.2 %) samples were exceeding FSSAI MRL. 82 (10.6 %) pulse samples were detected with non-approved pesticides.

The samples of tea (180 samples), packaged milk (453 samples), meat/eggs (374 samples), fish/marine (902 samples) and water (2031) were also monitored by various laboratories and none of the samples were detected above MRL in any of these samples.

The 12th annual workshop of the central sector scheme “Monitoring of Pesticide Residues at National Level” (MPRNL) was held on July 12, 2018 at National Institute of Plant Health Management (NIPHM), Hyderabad, Telangana in which the progress and issues of the MPRNL participating centres was reviewed and discussed and the technical programme for the year 2018-19 was finalized.

All the 26 participating test laboratories under the monitoring scheme viz. Project Coordinating Cell, IARI, New Delhi; AAU, Anand; PJTSAU, Hyderabad; BCKV, Kalyani; BVC, Mumbai; CPCB, Delhi; Dr. YSPUH&F, Solan; IIHR Bangalore; IITR, Lucknow; IPFT, Gurgaon; KAU, Vellayani; MPEDA, Kochi; MPKV, Rahuri; NPQS, New Delhi; NIOH, Ahmedabad; NEERI, Nagpur; NIPHM, Hyderabad; NDDB, Anand; PAU, Ludhiana; RPQS Mumbai; RPQS Chennai; SKNAU, Jaipur; TNAU, Coimbatore; EIA, Kolkata; EIA, Kochi and EIA, Mumbai are continuing accreditation by National

Accreditation Board for Testing and Calibration of Laboratories (NABL) in the field of pesticide residue analysis as per ISO/IEC 17025.

The Project Coordinating Cell, IARI, New Delhi conducted two “Refresher Group Training Programme on Pesticide Residue Analysis” during February 14-18, 2017 and November 6-10, 2017 which was attended by 31 participants from different coordinated centres of DAC sponsored central sector scheme, Monitoring of Pesticide Residues at National level and AINP on Pesticide Residues.

The participating laboratories of MPRNL Scheme, AAU, Anand; BVC, Mumbai; BCKV, Kalyani; IIHR, Bangalore; PJTSAU, Hyderabad; MPKV, Rahuri; PAU, Ludhiana; SKNAU, Jaipur; Dr. YSPUH&F, Solan; KAU, Vellayani; NDDB, Anand; EIA, Kolkata PC Cell, New Delhi, and TNAU, Coimbatore, MPEDA, Kochi, RPQS, New Delhi, NEERI, Nagpur, NIPHM, Hyderabad, IITR, Lucknow, NIOH, Ahmedabad and RPQS, Mumbai participated in national and international PT/ ILC programme. The Z-score of these programmes were found to be satisfactory. The results are provided in annexure I.

Survey Report

Status of Pesticide Residues in India

Survey Report

Under MPRNL scheme, 27 NABL accredited participating laboratories collected the samples of vegetables, fruits, spices, curry leaves, red chilli powder, rice, wheat, pulses, milk, fish/marine, tea, meat, egg and water from retail outlets, APMC markets, mother dairy, organic outlets, farm gate and farmgate samples provided by CIPMC located in different parts of India.

A total of 23,660 samples were collected and analysed for the possible presence of various groups of pesticides such as organo-chlorine, organo-phosphorus, synthetic pyrethroids, carbamates, neonicotinoids, herbicides, fungicides, etc. The pesticide residues were detected in 4,510 samples (19.1%). The maximum number of residues were detected in the samples of vegetables, fruits and spices. Out of 4,510 samples with detection, the residues in 523 (2.2 %) samples were found exceeding FSSAI MRL (Figure 1). The samples of vegetables, rice and spices were frequently found beyond FSSAI MRL. The center-wise and commodity-wise monitoring results is given in table 1 and table 2, respectively.

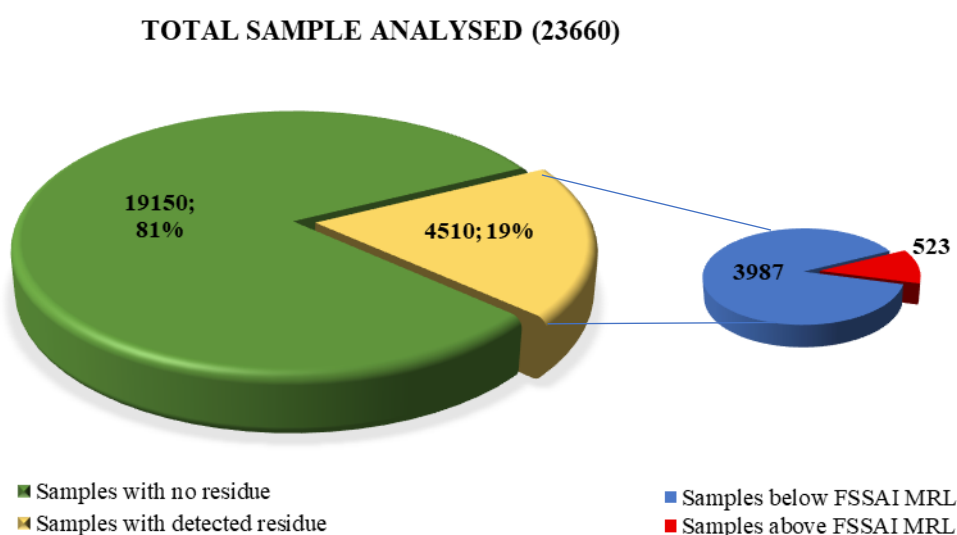


Figure 1: Graphical representation showing total number of samples analysed and samples with detected residue

Table 1: Centers-wise monitoring data (April, 2017 - March, 2018)

Centers	Target	Sample analysed	Samples with no detected residues	Samples with detected residues	No. of samples with detection of non-approved pesticides	Samples above FSSAI MRL
AAU, Anand	1121	1539	1158	381	285	91
BCKV, Kalyani	887	1062	1019	43	13	10
BVC, Mumbai	370	370	370	0	0	0
CIARI, Port Blair	161	195	133	62	47	5
CPCB, Delhi	840	835	821	14	14	0
Dr. YSPUH&F, Solan	843	874	658	216	97	3
EIA, Kolkata	575	1111	936	175	134	0
EIA, Mumbai	627	873	499	374	184	79
EIC, Kochi	60	60	38	22	20	4
IIHR, Bangalore	913	960	619	341	272	20
IITR, Lucknow	655	999	972	27	20	3
IPFT, Gurgaon	739	725	671	54	32	9
KAU, Vellayani	1357	1318	969	349	282	80
MPEDA, Kochi	650	660	660	0	0	0
MPKV, Rahuri	904	806	724	82	54	14
NDDB, Anand	210	193	178	15	14	0
NEERI, Nagpur	840	844	834	10	9	0
NIOH, Ahmedabad	774	888	846	42	33	2
NIPHM, Hyderabad	1171	1411	980	431	339	14
NPQS, Delhi	1083	1205	1167	38	15	12
PAU, Ludhiana	828	897	775	122	70	19
PC Cell, Delhi	596	568	353	215	171	13
PJTSAU, Hyderabad	1125	1297	645	652	504	51
RPQS, Chennai	727	967	559	408	334	25
RPQS, Mumbai	646	802	744	58	49	4
SKNAU, Jaipur	885	907	836	71	52	3
TNAU, Coimbatore	1300	1294	986	308	280	62
Grand Total	20887	23660	19150 (81.0 %)	4510 (19.1 %)	3324 (14.0%)	523 (2.2%)

Table 2: Commodity wise monitoring data (April, 2017 - March, 2018)

Commodity	Target of Commodity	Sample analysed	Samples with no detected residues	Samples with detected residues	No. of samples with detection of non-approved pesticides	Samples above FSSAI MRL
Curry Leaves	610	616	178	438	438	0
Fish/Marine	892	902	900	2	2	0
Fruits	2201	2274	1780	494	277	25
Meat/Egg	375	374	374	0	0	0
Milk	454	453	453	0	0	0
Oilseeds	36	36	25	11	11	0
Pulses	686	771	680	91	82	9
Red Chilli Powder	486	481	186	295	290	17
Rice	1217	1177	921	256	65	85
Spices	788	761	375	386	377	133
Surface Water	2028	2031	2004	27	27	0
Tea	180	180	143	37	5	0
Vegetable (Market)	6814	6670	5297	1373	985	140
Vegetables (Farmgate)	3023	5527	4643	884	627	96
Vegetables (Organic)	293	624	482	142	96	10
Wheat	804	783	709	74	42	8
Grand Total	20887	23660	19150 (81.0 %)	4510 (19.1 %)	3324 (14.0%)	523 (2.2%)

Vegetables

Under the MPRNL scheme, 22 participating laboratories collected vegetable samples such as brinjal, okra, tomato, cabbage, cauliflower, green chilli, capsicum, cucumber, green pea, bitter gourd and coriander leaves from local retail outlets, mother dairy/safal, APMC markets, farmer's field (farm gate) and organic outlets from all over the country. The vegetable samples from farmer's field were also provided by CIPMC to the participating laboratories for the pesticide residue analysis.

Overall, 12,821 vegetable samples were collected and analysed for the possible presence of various groups of pesticide residues. There were no residues detected in 81.3 % (10,422) samples. The pesticide residues were detected in 18.7 % (2,399) vegetable samples and only 1.9 % (246) samples exceeded the MRL prescribed by FSSAI (Figure 2). Out of all the sample analysed, 13.3 % samples were found having residues of non-approved pesticides. The center-wise monitoring results is given in table 3.

Table 3: Center-wise monitoring results of vegetable samples

Centers	Target	Sample analysed	Samples with no detected residues	Samples with detected residues	No of samples with detection of non-approved pesticides	Samples Above FSSAI MRL
AAU, Anand	455	817	622	195	130	43
BCKV, Kalyani	454	626	605	21	7	4
CIARI, Port Blair	141	184	124	60	47	5
Dr. YSPUH&F, Solan	471	498	366	132	64	3
EIA, Kolkata	635	1111	936	175	134	0
EIA, Mumbai	510	795	494	301	179	44
IIHR, Bangalore	445	497	381	116	90	5
IITR, Lucknow	399	730	706	24	18	2
IPFT, Gurgaon	427	413	369	44	29	7
KAU, Vellayani	506	549	413	136	101	16
MPKV, Rahuri	537	499	438	61	38	11
NDDB, Anand	200	187	172	15	14	0
NIOH, Ahmedabad	620	735	694	41	32	2
NIPHM, Hyderabad	535	732	575	157	118	10
NPQS, Delhi	599	721	687	34	14	12
PAU, Ludhiana	516	585	510	75	43	10
PC Cell, Delhi	320	367	229	138	112	9
PJTSAU, Hyderabad	506	664	365	299	232	18
RPQS, Chennai	465	591	341	250	205	22
RPQS, Mumbai	382	493	474	19	31	3

Centers	Target	Sample analysed	Samples with no detected residues	Samples with detected residues	No of samples with detection of non-approved pesticides	Samples Above FSSAI MRL
SKNAU, Jaipur	477	501	470	31	12	3
TNAU, Coimbatore	530	526	451	75	58	17
Grand Total	10130	12821	10422 (81.3 %)	2399 (18.7 %)	1708 (13.3 %)	246 (1.9 %)

TOTAL SAMPLE ANALYSED (12821)

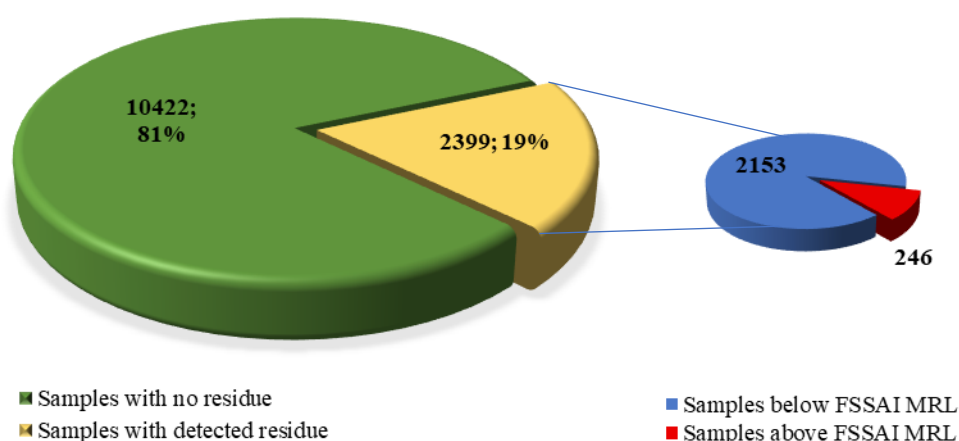


Figure 2: Graphical representation depicting number of vegetable samples analysed and samples with detected residue

Monitoring result of vegetable samples based on collection source:

Retail outlets and APMC (Market samples): A total of 6,670 vegetable samples were collected from retail outlets and agricultural produce marketing committee (APMC) markets located at various part of country. No pesticide residues were detected in the 79.4% samples. The pesticide residues were detected in 20.6% samples, from which the residues in 14.8 % samples were of non-approved pesticides. The residues of 2.1 % samples were found above FSSAI MRL. The centre-wise monitoring results of vegetable samples collected from market are given in table 4.

The samples of brinjal showed the maximum number of pesticide residue detection; followed by the samples of tomato, okra, cabbage, cauliflower, cucumber, etc. the residues of acephate, chlorpyrifos, imidacloprid, carbendazim, acetamiprid, profenophos, methamidophos and thiamethoxam were most commonly detected in

the vegetable samples. Residues of chlorpyrifos were commonly found exceeding FSSAI MRL. The most commonly non-approved pesticides detected in retail samples of vegetable were acephate, acetamiprid, profenofos, methamidophos, imidacloprid, triazophos, cypermethrin, thiamethoxam, fenpropathrin and metalaxyl. Center-wise monitoring results of market samples is given in table 4.

Table 4: Center-wise monitoring results of market vegetable samples

Centers	Sample analysed	Samples with no detected residues	Samples with detected residues	Samples detected with non-approved pesticides	Samples Above FSSAI MRL
AAU, Anand	396	290	106	66	15
BCKV, Kalyani	132	121	11	1	1
CIARI, Port Blair	156	106	50	38	5
Dr. YSPUH&F, Solan	162	109	53	30	2
EIA, Kolkata	1111	936	175	134	0
EIA, Mumbai	795	494	301	179	44
IIHR, Bangalore	88	68	20	14	3
IITR, Lucknow	271	260	11	5	2
IPFT, Gurgaon	206	193	13	10	3
KAU, Vellayani	147	115	32	26	4
MPKV, Rahuri	196	163	33	20	7
NDDDB, Anand	87	76	11	10	0
NIOH, Ahmedabad	600	567	33	28	1
NIPHM, Hyderabad	161	118	43	34	5
NPQS, Delhi	386	366	20	10	9
PAU, Ludhiana	265	222	43	29	6
PC Cell, Delhi	362	225	137	112	9
PJTSAU, Hyderabad	250	122	128	103	6
RPQS, Chennai	238	140	98	84	10
RPQS, Mumbai	200	184	16	27	3
SKNAU, Jaipur	221	213	8	2	2
TNAU, Coimbatore	240	209	31	23	3
Grand Total	6670	5297 (79.4 %)	1373 (20.6 %)	985 (14.8 %)	140 (2.1 %)

Farmer's Field and CIPMC (Farmgate sample): A total of 5,527 farm gate vegetable samples from were analysed for the presence of pesticide residues, from which no residues were detected in 84.0 % (4643) samples. 16.0% (884) samples showed the presence of pesticide residues. The residues detected in 11.3% (627) samples were

of non-approved pesticides. 1.7% (96) samples were found above FSSAI MRL. The centre-wise monitoring results are given in table 5. Imidacloprid, carbendazim, profenofos, quinalphos, chlorpyrifos, acephate and ethion were the frequently detected pesticide in farmgate samples.

Table 5: Center-wise monitoring results of farmgate vegetable samples

Centers	Sample analysed	Samples with no detected residues	Samples with detected residues	Samples detected with non-approved pesticides	Samples Above FSSAI MRL
AAU, Anand	362	274	88	63	28
BCKV, Kalyani	416	412	4	3	1
CIARI, Port Blair	28	18	10	9	0
Dr. YSPUH&F, Solan	336	257	79	34	1
IIHR, Bangalore	349	266	83	67	2
IITR, Lucknow	459	446	13	13	0
IPFT, Gurgaon	207	176	31	19	4
KAU, Vellayani	320	245	75	55	11
MPKV, Rahuri	303	275	28	18	4
NDDB, Anand	86	82	4	4	0
NIOH, Ahmedabad	135	127	8	4	1
NIPHM, Hyderabad	452	360	92	70	3
NPQS, Delhi	335	321	14	4	3
PAU, Ludhiana	320	288	32	14	4
PJTSAU, Hyderabad	328	188	140	112	10
RPQS, Chennai	256	143	113	89	9
RPQS, Mumbai	269	266	3	4	0
SKNAU, Jaipur	280	257	23	10	1
TNAU, Coimbatore	286	242	44	35	14
Grand Total	5527	4643 (84.0 %)	884 (16.0%)	627 (11.3%)	96 (1.7%)

Organic samples: A total of 624 vegetable samples were collected from organic outlets were analysed for the presence of pesticide residue. There was no residue detected in 77.2% (482) samples. The residues were found in 22.8 % (142) vegetable samples and 1.6 % (10) samples was found above FSSAI MRL. 15.4 % (96) were detected with the residues of non-approved pesticides. The most commonly detected pesticides were imidacloprid, acephate, methamidophos, ethion, acetamiprid, carbendazim and chlorpyrifos. The residues of chlorpyrifos, dimethoate, buprofezin and chlorantraniliprole detected in samples were exceeding FSSAI MRL. Acephate and acetamiprid were the frequently detected non-approved pesticides in the organic samples.

Table 6: Center-wise monitoring data of organic vegetable samples

Centers	Sample analysed	Samples with no detected residues	Samples with detected residues	Samples detected with non-approved pesticides	Samples Above FSSAI MRL
AAU, Anand	59	58	1	1	0
BCKV, Kalyani	78	72	6	3	2
IIHR, Bangalore	60	47	13	9	0
KAU, Vellayani	82	53	29	20	1
NDDDB, Anand	14	14	0	0	0
NIPHM, Hyderabad	119	97	22	14	2
PC Cell, Delhi	5	4	1	0	0
PJTSAU, Hyderabad	86	55	31	17	2
RPQS, Chennai	97	58	39	32	3
RPQS, Mumbai	24	24	0	0	0
Grand Total	624	482 (77.2%)	142 (22.8 %)	96 (15.4 %)	10 (1.6 %)

FRUITS

A total of 2,274 fruit samples were collected by 17 participating laboratories and analysed for the possible presence of pesticide residues. The fruit samples mainly included apple, banana, pear, grapes, orange, pomegranate, guava, sapota and mango. There was no pesticide residue were detected in 1780 (78.3 %) fruit samples. The residues were detected in 494 (21.7 %) samples and only 25 (1.1 %) samples were found exceeding FSSAI MRL. 277 (12.8%) samples were detected with the non-approved pesticides. The details of monitoring data are given in the table 7. Chlorpyrifos, carbendazim and imidacloprid were commonly detected pesticides in apple, orange, grapes and pomegranate samples. Among the non-approved pesticides, imidacloprid, acephate, acetamiprid, cypermethrin and fenpropathrin were mostly detected in fruit samples.

Center-wise monitoring result of fruit samples is given in table 7.

Table 7: Center-wise monitoring data of fruit samples

Centers	Sample analysed	Samples with no detected residues	Samples with detected residues	No of samples with detection of non-approved pesticides	Samples Above FSSAI MRL
AAU, Anand	149	113	36	17	3
BCKV, Kalyani	120	112	8	0	0
CIARI, Port Blair	6	6	0	0	0
Dr. YSPUH&F, Solan	220	192	28	7	0
IIHR, Bangalore	104	47	57	35	4
IITR, Lucknow	82	81	1	0	0
IPFT, Gurgaon	108	101	7	2	0
KAU, Vellayani	117	92	25	17	9
MPKV, Rahuri	60	58	2	1	0
NIOH, Ahmedabad	98	97	1	1	0
NIPHM, Hyderabad	202	127	75	49	1
NPQS, Delhi	275	271	4	1	0
PC Cell, Delhi	199	123	76	58	4
PJTSAU, Hyderabad	128	55	73	42	2
RPQS, Chennai	156	99	57	33	1
RPQS, Mumbai	138	114	24	3	1
TNAU, Coimbatore	112	92	20	11	0
Grand Total	2274	1780 (78.3%)	494 (21.7%)	277 (12.8%)	25 (1.1%)

TOTAL SAMPLE ANALYSED (2274)

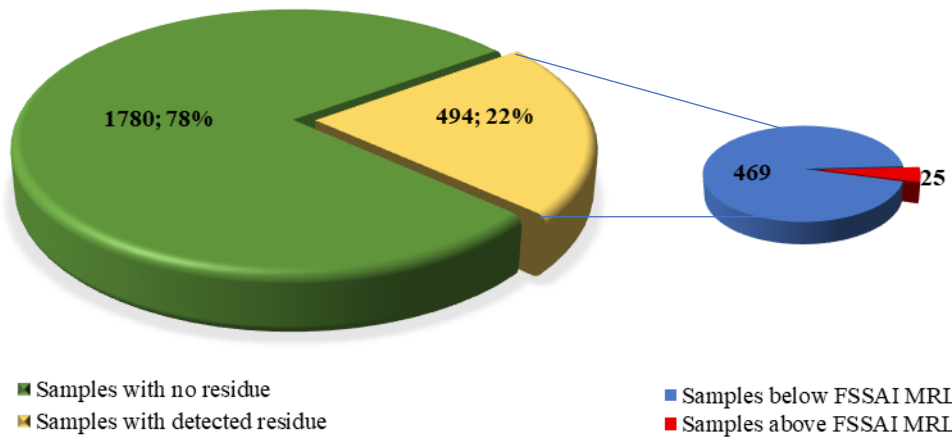


Figure 3: Graphical representation of number of fruit samples analysed and samples with detected residue

SPICES AND RED CHILLI POWDER

A total of 1,242 samples of spices namely, cardamom, black pepper, cumin, fennel seed, fenugreek, dry ginger, coriander seed and red chilli powder were collected from retail outlets located in different parts of India. 45.2% (561) samples showed no pesticide detection and 54.8 % (681) samples detected with pesticides residues. The residues of ethion, carbendazim, quinalphos, acetamiprid, triazophos, bifenthrin, imidacloprid, cypermethrin, chlorpyrifos and tebuconazole were among the commonly detected pesticides. 150 (12.1 %) spice samples were found above FSSAI MRL. Maximum number of MRL exceedance was found in cardamom samples followed by the cumin samples. 667 (53.7%) samples were detected with the residues of non-approved pesticides, mainly of, ethion, carbendazim, acetamiprid, triazophos, bifenthrin, imidacloprid, cypermethrin, chlorpyrifos, profenofos, hexaconazole and profenofos. Center-wise monitoring results of spices, red chilli powder and curry leaves samples are provided in table 8.

Table 8: Center-wise monitoring data of spices and red chilli powder samples

Centers	Sample analysed	Samples with no detected residues	Samples with detected residues	No. of samples with detection of non-approved pesticides	Samples Above FSSAI MRL
AAU, Anand	253	129	124	121	43
BCKV, Kalyani	37	32	5	4	3
Dr. YSPUH&F, Solan	36	15	21	21	0
EIC, Kochi	60	38	22	20	4
KAU, Vellayani	184	80	104	103	40
MPKV, Rahuri	27	18	9	9	0
NIPHM, Hyderabad	116	20	96	91	1
PAU, Ludhiana	36	14	22	23	0
PJTSAU, Hyderabad	157	26	131	129	15
RPQS, Mumbai	10	5	5	5	0
SKNAU, Jaipur	130	91	39	39	0
TNAU, Coimbatore	196	93	103	102	44
Grand Total	1242	561 (45.2%)	681 (54.8%)	667 (53.7%)	150 (12.1%)

CEREALS

A total of 1960 cereal samples (1,177 rice samples and 783 wheat samples) were collected and analysed by 16 laboratories for the possible presence of pesticide residues.

Rice samples: A total of 1,177 rice samples were analysed, out of which the residues were detected in 256 (21.7 %) samples. The most commonly detected pesticides in rice samples were tricyclazole, isoprothiolane, carbendazim and buprofezin. 85 (7.2 %) rice samples were found exceeding FSSAI MRL, mainly due to presence of tricyclazole and isoprothiolane. 65 (5.5 %) rice samples were detected with non-approved pesticides. The commonly detected non-approved pesticide in rice samples were tebuconazole, bifenthrin and methamidophos. The center-wise monitoring details of rice sample is provided in Table 12.

Table 12: Center-wise monitoring results of rice samples

Center	Sample Analysed	Samples with no detected residues	Samples with detected residues	No. of samples with detection of non-approved pesticides	Samples above FSSAI MRL
AAU, Anand	72	69	3	0	1
BCKV, Kalyani	69	66	3	0	3
CIARI, Port Blair	2	0	2	0	0
EIA, Mumbai	78	5	73	5	35
IIHR, Bangalore	72	43	29	20	5
IITR, Lucknow	51	49	2	2	1
IPFT, Gurgaon	72	69	3	1	2
KAU, Vellayani	68	44	24	3	12
MPKV, Rahuri	58	56	2	0	2
NIPHM, Hyderabad	72	49	23	5	2
NPQS, Delhi	66	66	0	0	0
PAU, Ludhiana	217	191	26	5	9
PJTSAU, Hyderabad	72	10	62	24	13
RPQS, Chennai	4	0	4	0	0
RPQS, Mumbai	60	60	0	0	0
SKNAU, Jaipur	72	72	0	0	0
TNAU, Coimbatore	72	72	0	0	0
Grand Total	1177	921 (78.2 %)	256 (21.7 %)	65 (5.5 %)	85 (7.2 %)

TOTAL SAMPLE ANALYSED (1177)

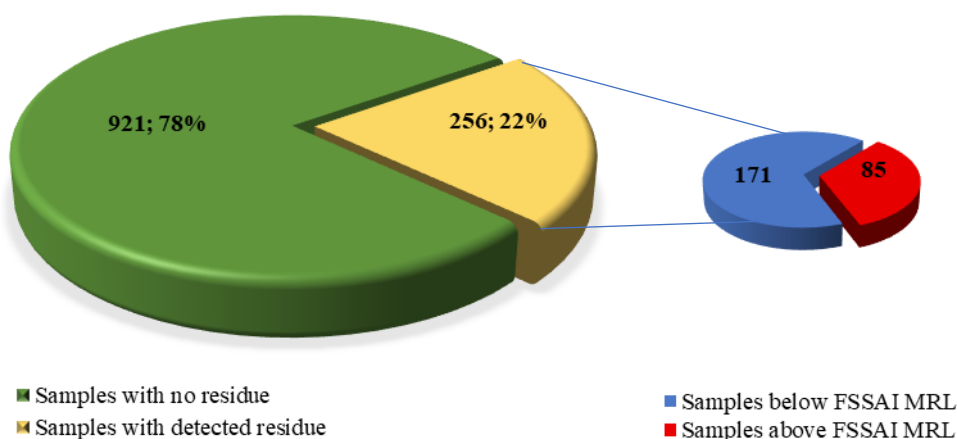


Figure 4: Graphical representation of rice samples analysed and samples with detected residue

Wheat samples: A total of 783 wheat samples were collected and analysed. The pesticide residues were detected in 74 (9.5 %) wheat samples. The detected residues were mainly of chlorpyrifos, bifenthrin, and dimethoate. Out of all the wheat sample analysed, 8 samples detected with the residue of chlorpyrifos, malathion and carbendazim were found exceeding MRL. 42 (5.4 %) wheat samples were detected with the residues of non-approved pesticides. The center-wise monitoring details of wheat sample is provided in Table 13.

Table 13: Center-wise monitoring results of wheat samples

Center	Sample Analysed	Samples with no detected residues	Samples with detected residues	No. of samples with detection of non-approved pesticides	Samples above FSSAI MRL
AAU, Anand	75	68	7	0	0
BCKV, Kalyani	66	66	0	0	0
IIHR, Bangalore	72	38	34	24	3
IITR, Lucknow	48	48	0	0	0
IPFT, Gurgaon	72	72	0	0	0
KAU, Vellayani	72	65	7	4	3
MPKV, Rahuri	58	56	2	2	0
NIPHM, Hyderabad	72	65	7	4	0
NPQS, Delhi	66	66	0	0	0
PJTSAU, Hyderabad	72	55	17	8	2
RPQS, Mumbai	38	38	0	0	0
SKNAU, Jaipur	72	72	0	0	0
Grand Total	783	709 (90.5 %)	74 (9.5 %)	42 (5.4 %)	8 (1.0 %)

TOTAL SAMPLE ANALYSED (783)

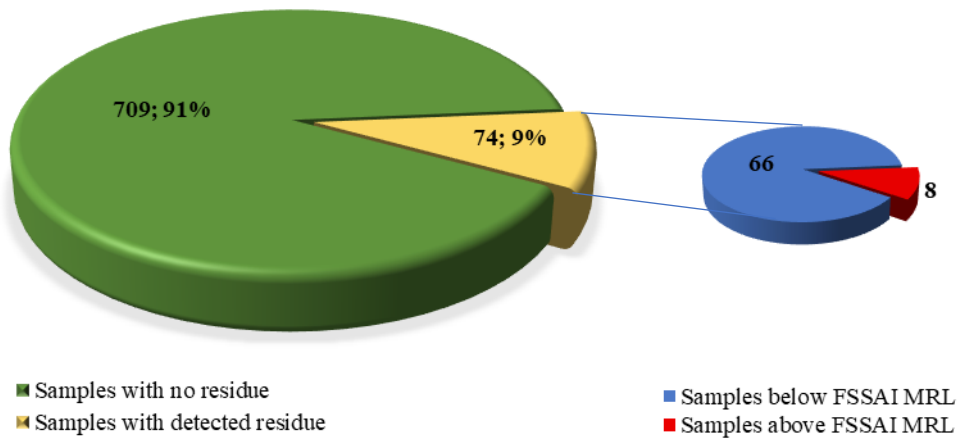


Figure 5: Graphical representation of wheat samples analysed and samples with detected residue

PULSES

Overall, 771 pulse samples were collected and analysed. 91 (11.8 %) samples were found having pesticide residue detection, mainly of, chlorpyrifos, bifenthrin, and malathion. 9 (1.2 %) pulse samples were exceeding FSSAI MRL with the residues of chlorpyrifos. 82 (10.6 %) samples were detected with non-approved pesticides. Center-wise monitoring result of pulse samples is given in table 14.

Table 14: Center-wise monitoring results of pulse samples

Center	Sample Analysed	Samples with no detected residues	Samples with detected residues	No. of samples with detection of non-approved pesticides	Samples above FSSAI MRL
AAU, Anand	79	74	5	4	1
CIARI, Port Blair	3	3	0	0	0
IIHR, Bangalore	72	37	35	33	3
IITR, Lucknow	48	48	0	0	0
KAU, Vellayani	72	69	3	3	0
MPKV, Rahuri	66	60	6	4	1
NIPHM, Hyderabad	77	63	14	13	0
PC Cell, Delhi	1	1	0	0	0
PJTSAU, Hyderabad	71	64	7	6	1
RPQS, Chennai	112	97	15	14	2
RPQS, Mumbai	24	24	0	0	0
SKNAU, Jaipur	72	71	1	1	0
TNAU, Coimbatore	74	69	5	4	1
Grand Total	771	680 (88.2 %)	91 (11.8 %)	82 (10.6 %)	9 (1.2 %)

TOTAL SAMPLE ANALYSED (771)

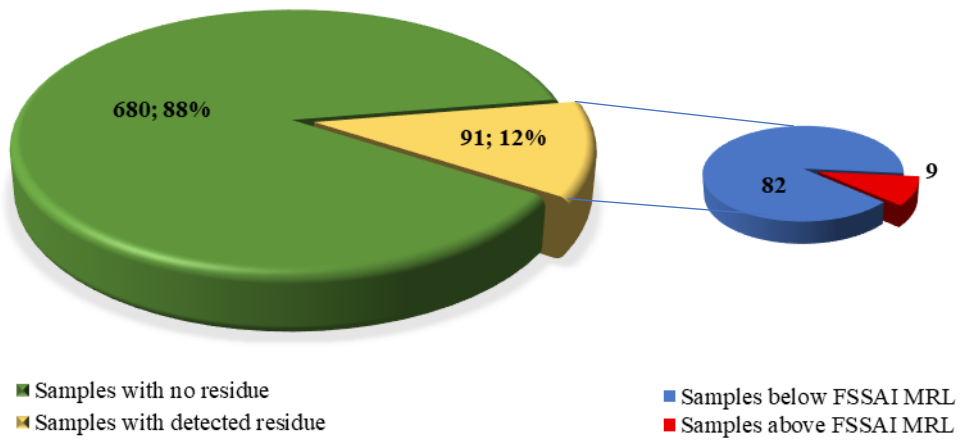


Figure 6: Graphical representation of pulse samples analysed and samples with detected residue

Center-wise Report

The participating laboratory at AAU, Anand collected and analyzed 1,539 samples of vegetables, fruits, rice, wheat, pulses, spices, red chilli powder, milk and surface water. The samples were collected from Ahmedabad, Ambav, Dabhoi, Khambhat, Padra, Ankleshwar, Anand, Vadodara, Kunjrao, Sankheda etc. The pesticide residues were detected in 381 (24.8 %) samples. The residues in 91 (5.9 %) samples exceeded the FSSAI MRL. Commodity-wise monitoring results is given in table 15. Figure 7 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

A total of 817 vegetable samples were collected and analysed; from which 396 samples were collected from markets, retail outlets and APMCs; 59 samples from organic outlets and 362 samples from farmer's field. The pesticide residues were detected in 24.3 % of farmgate samples; 26.8 % of market samples and 1.7 % of organic samples. Most commonly detected pesticides were carbendazim, chlorpyrifos, acephate, azoxystrobin, bifenthrin, cyhalothrin lambda, ethion, fenvalerate, hexaconazole, imidacloprid, mancozeb, methamidophos, profenofos, quinalphos, tebuconazole, thiamethoxam, triazophos and acetamiprid. The 7.7 % of farmgate samples and 3.8 % of market samples were found exceeding FSSAI MRL. Other than vegetables, the residues were above FSSAI MRL in fruits, pulses, spices, red chilli powder and rice.

In the fruit samples, the residues of tebuconazole, difenoconazole and hexaconazole were found exceeding MRL. In pulse samples, chlorpyrifos residues were found above MRL in green gram. The residues of cyhalothrin lambda were found to exceed MRL in red chilli powder. In spice samples, the residues exceeded MRL in cardamom and cumin samples; the residues of quinalphos in cardamom and azoxystrobin, mancozeb and thiamethoxam in cumin were found above MRL. In case of rice samples, only one sample having the residues of deltamethrin exceeded the MRL.

The most commonly detected non-approved pesticides were acephate, acetamiprid, azoxystrobin, carbendazim, chlorpyrifos, cyhalothrin lambda, ethion, fenvalerate, imidacloprid, mancozeb, methamidophos, myclobutanil, profenofos, propiconazole,

pyraclostrobin, tebuconazole, thiamethoxam, triazophos etc. The details of market and farm gate sample found above FSSAI MRL are provided in table 16 & 17, respectively.

Table 15: Commodity-wise monitoring results of AAU, Anand

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Fruits	179	132	47	28	3
Milk	36	36	0	0	0
Pulses	79	74	5	4	1
Red Chilli Powder	34	4	30	31	2
Rice	72	69	3	0	1
Spices	219	125	94	90	41
Surface Water	28	28	0	2	0
Vegetable (Market)	396	290	106	66	15
Vegetables (Farmgate)	362	274	88	63	28
Vegetables (Organic)	59	58	1	1	0
Wheat	75	68	7	0	0
Grand Total	1539	1158 (75.2 %)	381 (24.8 %)	285 (18.5 %)	91 (5.9 %)

TOTAL SAMPLE ANALYSED (1539)

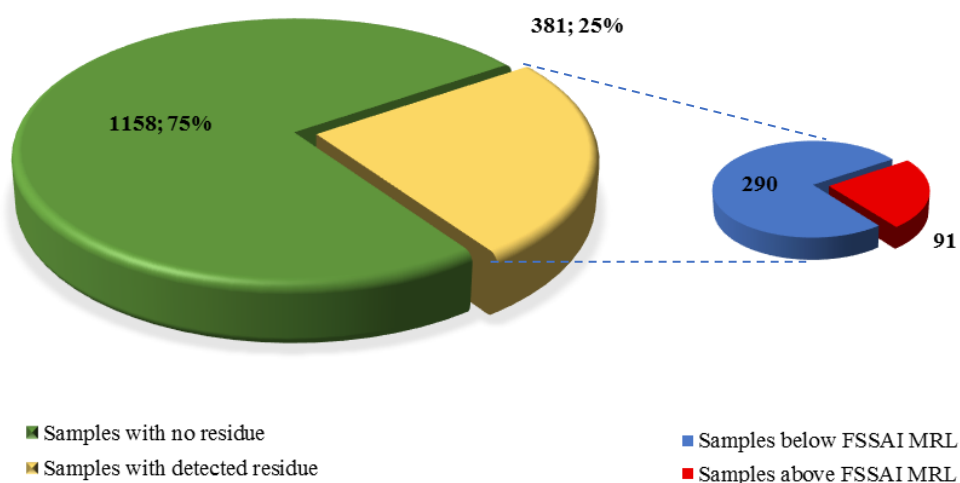


Figure 7: Graph presenting the number of samples analysed and samples with detection

Table 16: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Fruits	Apple	Aug, 17	Anand	Hexaconazole	0.26	0.1
	Pomegranate	Sept,17	Anand	Difenoconazole	0.09	0.01
	Grapes	Oct, 17	Anand	Tebuconazole	0.21	0.01
Pulses	Green Gram	Feb, 18	Dabhoi	Chlorpyrifos	0.04	0.01
Red chilli powder	Red chilli powder	Nov, 17	Anand	Cyhalothrin lambda	0.11	0.01
	Red chilli Powder	Mar, 18	Padra	Cyhalothrin lambda	0.18	0.01
Rice	Rice	Jul, 17	Vadodara	Deltamethrin	0.08	0.05
Spices	Cardamom	Apr, 17	Anand	Quinalphos	0.40	0.01
	Cardamom	Apr, 17	Padra	Quinalphos	0.18	0.01
	Cardamom	May, 17	Anand	Quinalphos	0.83	0.01
	Cumin	May, 17	Padra	Thiamethoxam	0.10	0.01
	Cardamom	May, 17	Padra	Quinalphos	0.34	0.01
	Cardamom	Jun, 17	Anand	Quinalphos	0.83	0.01
	Cumin	Jun, 17	Dabhoi	Azoxystrobin	0.10	0.03
	Cumin	Jul, 17	Anand	Thiamethoxam	0.16	0.01
	Cumin	Aug, 17	Anand	Thiamethoxam	0.16	0.01
	Cardamom	Aug, 17	Anand	Quinalphos	0.10	0.01
	Cumin	Aug, 17	Dabhoi	Thiamethoxam	0.12	0.01
	Cumin	Aug, 17	Padra	Thiamethoxam	0.27	0.01
	Cardamom	Aug, 17	Padra	Quinalphos	1.00	0.01
	Cumin	Sept,17	Anand	Thiamethoxam	0.16	0.01
	Cardamom	Sept,17	Anand	Quinalphos	0.26	0.01
	Cardamom	Sept,17	Padra	Quinalphos	0.74	0.01
	Cumin	Oct, 17	Anand	Thiamethoxam	0.16	0.01
	Cardamom	Oct, 17	Anand	Quinalphos	0.82	0.01
	Cardamom	Oct, 17	Padra	Quinalphos	0.66	0.01
	Cardamom	Nov, 17	Anand	Quinalphos	0.22	0.01
	Cardamom	Nov, 17	Padra	Quinalphos	0.61	0.01
	Cumin	Dec, 17	Anand	Mancozeb	1.25	0.5
	Cardamom	Dec, 17	Anand	Quinalphos	0.65	0.01
	Cumin	Dec, 17	Dabhoi	Mancozeb	0.95	0.5
	Cumin	Dec, 17	Padra	Mancozeb	1.63	0.5
	Cardamom	Dec, 17	Padra	Quinalphos	0.78	0.01
	Cumin	Jan, 18	Anand	Mancozeb	0.54	0.5
	Cardamom	Jan, 18	Anand	Quinalphos	1.10	0.01
	Cumin	Jan, 18	Dabhoi	Thiamethoxam	0.18	0.01
				Mancozeb	6.65	0.5
	Cumin	Jan, 18	Padra	Mancozeb	1.9	0.5
	Cardamom	Jan, 18	Padra	Quinalphos	0.87	0.01
Cumin	Feb, 18	Dabhoi	Mancozeb	1.56	0.5	
			Thiamethoxam	0.15	0.01	
Cumin	Feb, 18	Padra	Mancozeb	0.98	0.5	

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
	Cardamom	Feb, 18	Padra	Quinalphos	1.11	0.01
	Cumin	Feb, 18	Anand	Mancozeb	1.87	0.5
				Azoxystrobin	0.14	0.03
				Thiamethoxam	0.17	0.01
	Cardamom	Feb, 18	Anand	Quinalphos	0.36	0.01
	Cumin	Mar, 18	Dabhoi	Mancozeb	2.58	0.5
				Thiamethoxam	0.15	0.01
	Cumin	Mar, 18	Padra	Mancozeb	0.54	0.5
	Cumin	Mar, 18	Padra	Thiamethoxam	0.10	0.01
	Cumin	Mar, 18	Anand	Mancozeb	1.21	0.5
				Azoxystrobin	0.10	0.03
Cardamom	Mar, 18	Anand	Quinalphos	0.23	0.01	
Vegetables	Green chilli	Jun, 17	Anand	Carbendazim	0.51	0.5
	Cauliflower	Aug, 17	Dabhoi	Chlorpyrifos	0.04	0.01
	Cauliflower	Sept, 17	Dabhoi	Chlorpyrifos	0.04	0.01
	Coriander leaves	Oct, 17	Dabhoi	Chlorpyrifos	1.80	0.2
	Cowpea	Oct, 17	Dabhoi	Carbendazim	1.29	0.50
	Green Chilli	Oct, 17	Padra	Tebuconazole	0.41	0.4
				Imidacloprid	0.44	0.3
	Green Chilli	Dec, 17	Dabhoi	Difenoconazole	0.05	0.01
	Green Chilli	Jan, 18	Anand	Spiromesifen	0.44	0.1
				Fipronil	0.12	0.01
	Green Chilli	Jan, 18	Padra	Monocrotophos	0.55	0.2
				Difenoconazole	0.08	0.01
	Cabbage	Feb, 18	Dabhoi	Triazophos	0.12	0.02
	Green Chilli	Feb, 18	Dabhoi	Pyriproxyfen	0.32	0.02
				Tebuconazole	0.60	0.4
	Cabbage	Feb, 18	Padra	Thiodicarb	0.46	0.02
	Green Chilli	Feb, 18	Padra	Triazophos	0.05	0.01
	Green Peas	Mar, 18	Dabhoi	Chlorpyrifos	0.30	0.2
	Green Chilli	Mar, 18	Anand	Carbendazim	1.21	0.5

Table 17: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Apr, 17	Green chilli	Ashwin M Patel	Simarda/Petlad/ Anand	Dimethoate, Ethion	NA	Imidacloprid	0.35	0.3
Sep,17	Pointed gourd	Dahyabhai Lavjibhai Gurasiya	Dahewan/Borsad/ Anand	NA	Monocrotophos, Biogum, Humic Plus	Chlorpyrifos	0.26	0.2
Nov, 17	Green chilli	Rameshbhai Trikambhai Patel	Pipaliya/ Sankheda/ Vadodara	Temper (Chinis), Tebuconazole	NA	Fipronil	0.48	0.01
						Myclobutanil	0.29	0.2
						Tebuconazole	1.52	0.4
						Imidacloprid	0.96	0.3
Nov, 17	Green chilli	Mr. Manubhai K. Patel	Ode/ Anand/ Anand	Velguard(Bio-product)	NA	Cyhalothrin Lambda	0.12	0.05
Dec, 17	Green Chilli	Kalpesh A Patel	Ode/ Anand/ Anand	Pegasus, Karate, Green Tango (Biopesticide)	NA	Difenoconazole	0.11	0.01
						Ethion	1.48	1
Dec, 17	Green Chilli	Tejash H. Patel	Kunjrav/ Anand/ Anand	Ethion, Acetamiprid	NA	Carbendazim	0.82	0.5
Dec, 17	Green Chilli	Kiran N. Trivedi	Kunjrav/ Anand/ Anand	Ethion, Green Tango (Biopesticide)	NA	Difenoconazole	0.08	0.01
Dec, 17	Green Chilli	Manubhai M. Thakor	Kunjrav/Anand /Anand	Ethion, Imidacloprid	NA	Triazophos	0.59	0.2
						Thiodicarb	0.09	0.01
Dec, 17	Green Chilli	Parimal R. Patel	Pipaliya/ Sankheda/ Vadodara	NA	NA	Fipronil	0.25	0.01
						Chlorpyrifos	0.56	0.2
						Ethion	1.17	1
						Carbendazim	3.27	0.5
Dec, 17	Green Chilli	Nanji N. Patel	Ode/Anand/ Anand	Profenofos, Ethion, Cypermethrin	NA	Triazophos	1.18	0.2
Dec, 17	Green Chilli	Vanu B. Patel	Ode/Anand/ Anand	Ethion, Cypermethrin	NA	Triazophos	0.44	0.2
Dec, 17	Pigeon Pea	Ramesh M. Patel	Ode/Anand/ Anand	Imidacloprid, Profenofos	NA	Chlorpyrifos	0.48	0.2
Jan, 18	Cabbage	Vijay V. Thakor	Kunjrav/ Anand/ Anand	Koragen	Chlorantraniliprole	Tebuconazole	1.00	0.05
						Fipronil	0.19	0.02
Jan, 18	Green chilli	Maganbhai K. Patel	Ode/Anand/Anand	Bio-pesticide/ Karate	Cyhalothrin Lambda	Spiromesifen	0.61	0.1
						Tebuconazole	0.58	0.4
						Difenoconazole	0.08	0.01
						Fipronil	0.11	0.01
Jan, 18	Green chilli	Niranjanbhai R. patel	Ode/Anand/ Anand	Karate, Ethion+ Cypermethrin	Cyhalothrin Lambda	Spiromesifen	0.17	0.1
						Difenoconazole	0.05	0.01
Jan, 18	Green chilli	Raj Rajdeepsingh K.	Mogar/Anand/ Anand	NA	NA	Spiromesifen	0.20	0.1
						Fipronil	0.05	0.01
Feb, 18	Green Chilli	Pruthvirajsinh H. Solanki	Mogar/Anand/ Anand	NA	NA	Tebuconazole	0.52	0.4

Bidhan Chandra Krishi Viswavidyalaya, Kalyani

BCKV, Kalyani collected a total of 1,062 samples of vegetables, fruits, rice, wheat, fish/marine, red chilli powder, tea and surface water from locations such as Kolkata, Bainchi, Burdwan, Haringhata, Kalyani, Pandua and PDS shops. The samples were analysed for the possible presence of pesticide residues. Out of all the samples analysed, the residues were detected in 43 (4 %) samples and the residues in 10 (0.9 %) samples exceeded the FSSAI MRL. The commodity-wise details of samples analysed by the center is provided in table 18. Figure 8 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

A total of 626 vegetable samples were collected and analysed, from which 132 samples were collected from the markets, retail outlets and APMC; 78 samples from organic outlets and 416 samples from the farmer's field. The residues were detected in 4 (1 %) farmgate samples; 11 (8.3 %) market samples and 6 (7.7 %) organic samples. Most commonly detected pesticides were chlorpyrifos, profenofos and quinalphos. The 0.2 % of farmgate samples, 0.8 % of market samples and 2.6 % of organic samples were found exceeding FSSAI MRL. The residues of chlorpyrifos in one market sample and of quinalphos in one farmgate sample exceeded the FSSAI MRL.

Other than vegetables, the residues were above FSSAI MRL in red chilli powder and rice. The residues of cyhalothrin lambda were found to exceed MRL in three red chilli powder samples. In case of rice samples, three samples having the residues of chlorpyrifos exceeded the MRL.

The most commonly detected non-approved pesticides were chlorpyrifos and cyhalothrin lambda. The details of residues above MRL in market, farm gate and organic samples are provided in table 19, 20 & 21, respectively.

Table 18: Commodity-wise monitoring results of BCKV, Kalyani

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Fish/Marine	60	58	2	2	0
Fruits	120	112	8	0	0
Red Chilli Powder	37	32	5	4	3
Rice	69	66	3	0	3
Surface Water	24	22	2	0	0
Tea	60	58	2	0	0
Vegetable (Market)	132	121	11	1	1
Vegetables (Farmgate)	416	412	4	3	1
Vegetables (Organic)	78	72	6	3	2
Wheat	66	66	0	0	0
Grand Total	1062	1019 (96.0 %)	43 (4.0 %)	13 (1.2 %)	10 (0.9 %)

TOTAL SAMPLE ANALYSED (1062)

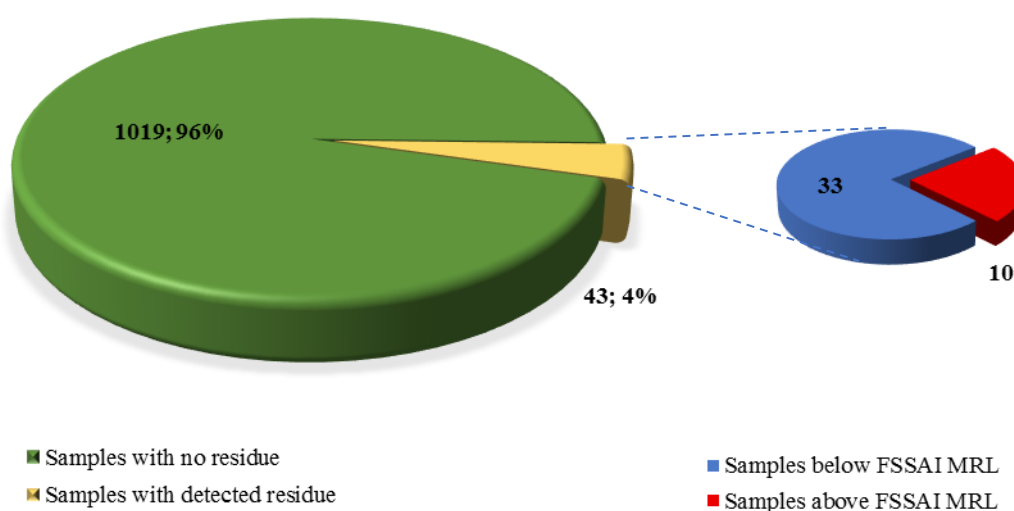


Figure 8: Graph presenting the number of samples analysed and samples with detection

Table 19: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Red chilli powder	Red chilli powder	Nov, 17	Pandua	Cyhalothrin Lambda	0.31	0.01
	Red chilli powder	Jan, 18	Kolkata	Cyhalothrin Lambda	0.49	0.01
	Red chilli powder	Mar, 18	Pandua	Cyhalothrin Lambda	0.46	0.01
Rice	Rice	Nov, 17	Pandua	Chlorpyrifos	0.34	0.01
	Rice	Nov, 17	Pandua	Chlorpyrifos	0.39	0.01
	Rice	Nov, 17	Kolkata	Chlorpyrifos	0.49	0.01
Vegetables	Capsicum	Nov, 17	Burdwan	Chlorpyrifos	0.26	0.2

Table 20: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Feb, 18	Cauliflower	Babulal Hagra	Vill-Biharipally, Block-Amna, Dist-Hoogly	NA	NA	Quinalphos	0.30	0.1

Table 21: Details of organic samples above FSSAI MRL

Month	Sample	Collection Point	Sample origin/Growing area	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Nov, 17	Okra	Kolkata	Retail outlet	Chlorpyrifos	0.27	0.2
Nov, 17	Bitter gourd	Kolkata	Retail outlet	Chlorpyrifos	0.22	0.2

Bombay Veterinary College, Mumbai

BVC, Mumbai analyzed, a total 370 samples of egg, meat and fish/ marine samples. The samples were collected from various poultry farm and retail outlet located at Andheri, Ghatkopar, Kurla, Chambur, Colaba, CST, Dahisar, Thane, Malad, Versova, Wasi, Airoli. The pesticide residues were not detected in any sample. Commodity-wise monitoring results is given in Table 22.

Table 22: Commodity-wise monitoring results of BVC, Mumbai

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	samples with detection of non-approved pesticides	Samples above FSSAI MRL
Fish/Marine	50	50	0	0	0
Meat/Egg	320	320	0	0	0
Grand Total	370	370	0	0	0

Central Pollution Control Board, Delhi

A total of 835 water samples were collected from various lakes, rivers, drains, ponds and other water sources located in Delhi and other nearby cities such as Ghaziabad, Noida, Greater Noida, Baghpat, Sonipat, Hapur, Bulandshar, Aligarh, Meerut, Panipat etc. The 14 (1.7 %) samples were found having residues of alachlor. The details of water samples having residues above 0.5 ppb are provided in Table 24.

Table 23: Commodity-wise monitoring results of CPCB, Delhi

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Surface Water	835	821	14	14	-
Grand Total	835	821 (98.3 %)	14 (1.7 %)	14 (1.7 %)	-

Table 24: Details of samples with residues exceeding 0.5 ppb

Sample	Month	Collection Point	Pesticides Detected	Residues (ppb)
Water	Apr, 17	UGC, Ghaziabad	Alachlor	0.84
	Apr, 17	UGC at Jauna	Alachlor	1.04
	Apr, 17	UGC at Pilawai	Alachlor	1.15
	Apr, 17	Drain, Rasulpur	Alachlor	0.96
	Apr, 17	Western Canal at Harewali	Alachlor	0.77
	May, 17	Hindon River	Alachlor	0.52
	May, 17	Yamuna River	Alachlor	0.64
	May, 17	Yamuna River	Alachlor	0.62
	Jun, 17	Okhla Barrage-5	Alachlor	1.81
	Jun, 17	Okhla Barrage-6	Alachlor	2.04
	Jun, 17	Yamuna River, Raipur	Alachlor	2.22
	Jun, 17	Ashgarpur	Alachlor	1.98

Dr. Y. S. Parmar University of Horticulture and Forestry, Solan

A total of 874 samples of samples of vegetables, fruits, red chilli powder, milk, tea and surface water were collected from Shimla, Hamirpur, Ghumarwin, Kandaghat and other nearby areas. The pesticides residues were detected in 216 (24.7 %) samples and residues in 3 (0.3 %) samples gone beyond the prescribed FSSAI MRL. The commodity-wise details are provided in Table 25. Figure 9 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

The center collected 162 vegetable samples from market and retail outlets and 336 vegetable samples from farmer's field. The pesticide residues were detected in 53 (32.7 %) market samples and 79 (23.5 %) farmgate samples. Most commonly detected pesticides were chlorpyrifos, ethion, malathion, profenofos and quinalphos. The residues of chlorpyrifos detected in 2 (1.2 %) market samples and 1 (0.3 %) farmgate sample exceeded the FSSAI MRL.

The most commonly detected non-approved pesticides were chlorpyrifos, cyhalothrin lambda, cypermethrin, ethion, profenofos, quinalphos etc. The details of market samples and farm gate vegetable sample exceeding FSSAI MRL are provided in Table 26 & 27, respectively.

Table 25: Commodity-wise monitoring results of Dr. YSPUH&F, Solan

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Fruits	220	192	28	7	0
Milk	36	36	0	0	0
Red Chilli Powder	36	15	21	21	0
Surface Water	24	24	0	0	0
Tea	60	25	35	5	0
Vegetable (Market)	162	109	53	30	2
Vegetables (Farmgate)	336	257	79	34	1
Grand Total	874	658 (75.3 %)	216 (24.7 %)	97 (11.1 %)	3 (0.3 %)

TOTAL SAMPLE ANALYSED (874)

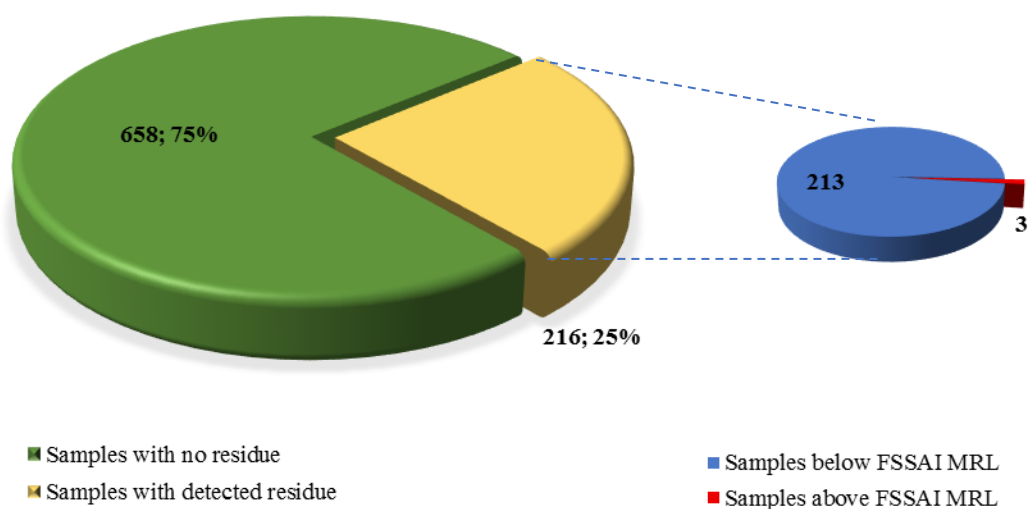


Figure 9: Graph presenting the number of samples analysed and samples with detection

Table 26: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Vegetables	Cauliflower	Apr, 17	Hamirpur	Chlorpyrifos	0.09	0.01
	Cabbage	Jul, 17	Hamirpur	Chlorpyrifos	0.08	0.01

Table 27: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Sep,17	Cauliflower	Sh. Rakesh Verma	Shoghi/Shimla/Shimla	NA	NA	Chlorpyrifos	0.06	0.01

Indian Institute of Horticultural Research, Bangalore

A total of 960 samples of vegetable, fruits, curry leaves, milk, wheat, pulses, rice and surface water were collected from locations such as K. R. Market, Chikkabanuvara, Yeshwanthapura, Malleshwaram, Dasarahalli, Hesaraghatta, Basavanagudi, Chamarajpet, Jalahalli, Jayanagara, Peenya etc. Out of all the samples analysed, the pesticide residues were detected in 341 (35.5 %) samples and residues in 20 (2.1 %) samples exceeded the FSSAI MRL. Commodity-wise details are provided in table 28. Figure 10 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

Out of 497 vegetable samples collected and analysed, 349 samples were collected from the farmer's field; 88 samples from markets and retail outlets and 60 samples from organic outlets. 83 (23.8 %) farmgate vegetable samples showed the presence pesticide residues, from which 2 (0.6 %) samples having residues of carbendazim and monocrotophos exceeded the FSSAI MRL. The residues were detected in 20 (22.7 %) market samples, from which residues of chlorpyrifos and carbendazim in 3 (3.4 %) samples exceeded FSSAI MRL. The 13 (21.7 %) organic samples showed the presence of residues, from which no residue was found above MRL.

Other than vegetables, the residues detected in fruits, pulses, rice and wheat were found exceeding FSSAI MRL. The residues of carbendazim, chlorpyrifos, and cyhalothrin lambda exceeded the MRL found in 4 fruits samples. The residues of chlorpyrifos detected in 3 pulse samples were found above MRL. The residues of chlorpyrifos, dimethoate and bifenthrin detected in 5 rice samples were found above MRL.

The most commonly detected non-approved pesticides were acephate, bifenthrin, chlorpyrifos, cyfluthrin beta, cyhalothrin lambda, cypermethrin, dimethoate, ethion, fenpropathrin, malathion, methamidophos, profenofos, propiconazole, triazophos etc. The details of market samples and vegetable samples collected from farmer's field exceeding FSSAI MRL are provided in table 29 & 30, respectively.

Table 28: Commodity-wise monitoring results of IIHR, Bangalore

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Curry Leaves	83	13	70	76	0
Fruits	104	47	57	35	4
Milk	36	36	0	0	0
Pulses	72	37	35	33	3
Rice	72	43	29	20	5
Surface Water	24	24	0	1	0
Vegetable (Market)	88	68	20	14	3
Vegetables (Farmgate)	349	266	83	67	2
Vegetables (Organic)	60	47	13	9	0
Wheat	72	38	34	24	3
Grand Total	960	619 (64.5 %)	341 (35.5 %)	279 (29.1 %)	20 (2.1 %)

TOTAL SAMPLE ANALYSED (960)

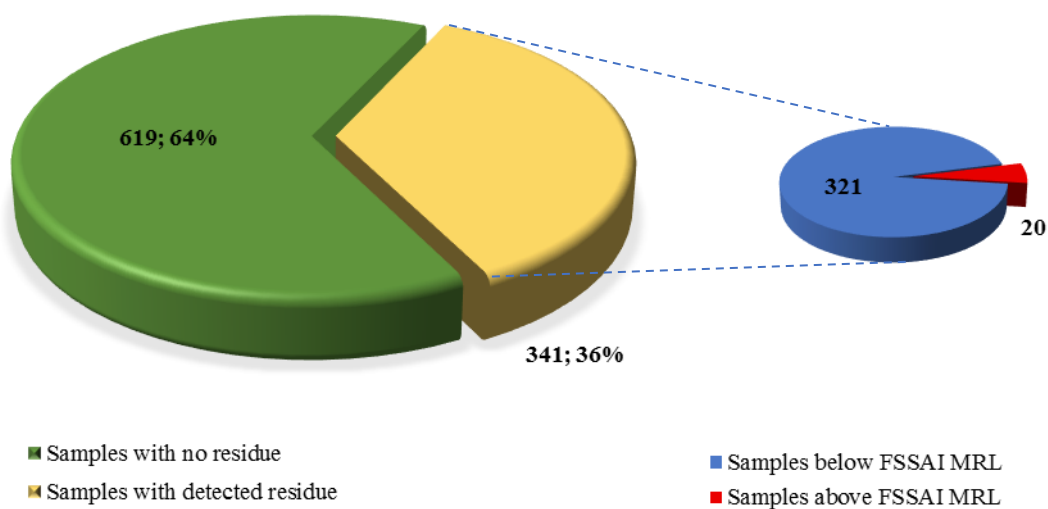


Figure 10: Graph presenting the number of samples analysed and samples with detection

Table 29: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Fruits	Grapes	Jun, 17	K R Market	Carbendazim	1.74	0.1
	Apple	Oct, 17	Attibele	Chlorpyrifos	0.54	0.5
	Grapes	Oct, 17	Attibele	Carbendazim	2.21	0.1
	Grapes	Nov, 17	Hebbal	Cyhalothrin Lambda	0.16	0.05
Pulses	Chana dal	Nov, 17	Basavana gudi	Chlorpyrifos	0.04	0.01

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
	Moong dal	Nov, 17	Basavana gudi	Chlorpyrifos	0.15	0.01
	Moong dal	Dec, 17	Yelahanka	Chlorpyrifos	0.05	0.01
Rice	Rice	Jul, 17	Peenya	Chlorpyrifos	0.03	0.01
	Rice	Oct, 17	Chikabana navara	Chlorpyrifos	0.03	0.01
	Rice	Dec, 17	Yelahanka	Dimethoate	0.51	0.01
	Rice	Dec, 17	Dibbur	Dimethoate	0.03	0.01
	Rice	Jan, 18	Malleswaram	Bifenthrin	0.10	0.05
Vegetables	Cabbage	Aug, 17	Banashankari	Chlorpyrifos	0.04	0.01
	Green Chilli	Sept, 17	K.R. Market	Chlorpyrifos	0.28	0.2
	Capsicum	Oct, 17	Anekal	Carbendazim	0.64	0.5
Wheat	Wheat	Sept, 17	JP. Nagar	Chlorpyrifos	0.06	0.05
	Wheat	Sept, 17	Hesarghatta	Chlorpyrifos	0.10	0.05
	Wheat	Nov, 17	Kodugalligate	Chlorpyrifos	3.71	0.5

Table 30: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Oct, 17	Tomato	Mr Narayanappa s/o Muniyappa 903585369	Davanapura Bengaluru urban	Indofil M-45 Dupont	Mancozeb 75% WP Acetamiprid 20% SP	Carbendazim	1.31	0.5
Dec, 17	Green Chilli	Mr Ranjith Kumar S N 9108691173	Sabbenahalli Chikkaballapura Tq	Custodia Soloman	Azoxystrobin + Tebuconazole (11% + 18.3%) Beta Cyfluthrin	Monocrotophos	3.77	0.2

Indian Institute of Toxicology Research, Lucknow

A total of 999 samples of vegetables, fruits, milk, rice, wheat, pulses and surface water were collected and analysed by IITR, Lucknow. The samples were mainly collected from Barabanki, Kannauj, Ramganaga, Faizabad and Moradabad. Out of all the samples analysed, 27 (2.7 %) samples showed the presence of residues. The residues in 3 (0.3 %) samples found exceeding FSSAI MRL (figure 11). Commodity-wise details are provided in table 31.

A total of 730 vegetable were collected and analysed, from which 271 samples were collected from market and retail outlets and 459 samples from farmer's field. The residues were detected in 11 (4.1 %) market samples and 13 (2.8 %) farmgate samples. Two (0.7 %) market samples having residue of chlorpyrifos and were found exceeding MRL. One rice sample detected with residue of d-HCH was found above MRL. The details of market vegetable samples and rice sample exceeding FSSAI MRL are provided in table 32.

Table 31: Commodity-wise monitoring results of IITR, Lucknow

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Fruits	82	81	1	0	0
Milk	24	24	0	0	0
Pulses	48	48	0	0	0
Rice	51	49	2	2	1
Surface Water	16	16	0	0	0
Vegetable (Market)	271	260	11	5	2
Vegetables (Farmgate)	459	446	13	13	0
Wheat	48	48	0	0	0
Grand Total	999	972 (97.3 %)	27 (2.7 %)	20 (2.0 %)	3 (0.3 %)

TOTAL SAMPLE ANALYSED (999)

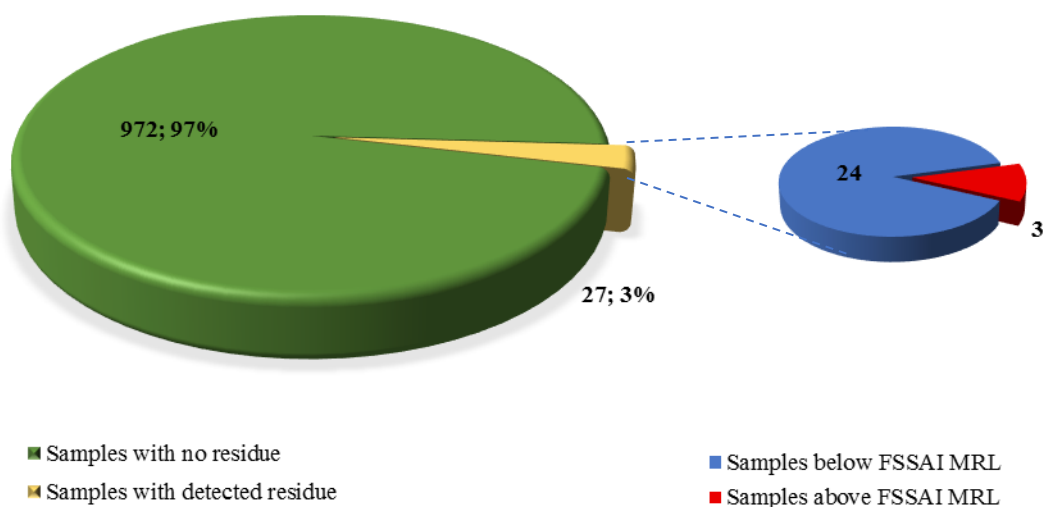


Figure 11: Graph presenting the number of samples analysed and samples with detection

Table 32: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Rice	Rice	Jul, 17	Retail Outlet Kannauj	d-HCH	0.12	0.1
Vegetables	Coriander leaves	Apr, 17	Retail Outlet Muradabad	Chlorpyrifos	0.50	0.2
	Green Chilli	May, 17	Retail Outlet Moradabad	Chlorpyrifos	0.35	0.2

Institute of Pesticide Formulation Technology, Gurgaon

IPFT, Gurgaon collected and analysed a total of 725 samples of vegetables, fruits, rice, wheat, milk and surface water. The samples were collected mainly from Bahadurgarh, Faridabad, Palwal and Gurgaon. The pesticide residues in measurable concentration were detected in 54 (7.4 %) samples and residues found in 9 (1.2 %) samples gone beyond the MRL prescribed by FSSAI. The commodity-wise details of the sample analysed by IPFT, Gurgaon is provided in Table 33. Figure 12 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

Overall 413 samples of vegetables were collected and analysed, from which 206 samples were collected from markets, retail outlets, APMC, etc. and 207 samples were collected from farmers field. The residues were detected in 13 (6.3 %) market samples and 3 (1.5 %) samples having residues of chlorpyrifos found above FSSAI MRL. In case of farmgate samples, residues were detected in 31 (15 %) samples and 4 (1.9 %) samples having the residues of chlorpyrifos and cypermethrin exceeded the FSSAI MRL. Most commonly detected pesticides were chlorpyrifos, bifenthrin, profenofos, triazophos and cypermethrin.

The samples of rice which exceeded FSSAI MRL were detected with residue of monocrotophos. The most commonly detected non-approved pesticides were cypermethrin, profenofos, triazophos etc. The details of market samples and farm gate vegetable sample exceeding FSSAI MRL are provided in table 34 & 35, respectively.

Table 33: Commodity-wise monitoring results of IPFT, Gurgaon

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Fruits	108	101	7	2	0
Milk	36	36	0	0	0
Rice	72	69	3	1	2
Surface Water	24	24	0	0	0
Vegetable (Market)	206	193	13	10	3
Vegetables (Farmgate)	207	176	31	19	4
Wheat	72	72	0	0	0
Grand Total	725	671 (92.6 %)	54 (7.4 %)	32 (4.4 %)	9 (1.2 %)

TOTAL SAMPLE ANALYSED (725)

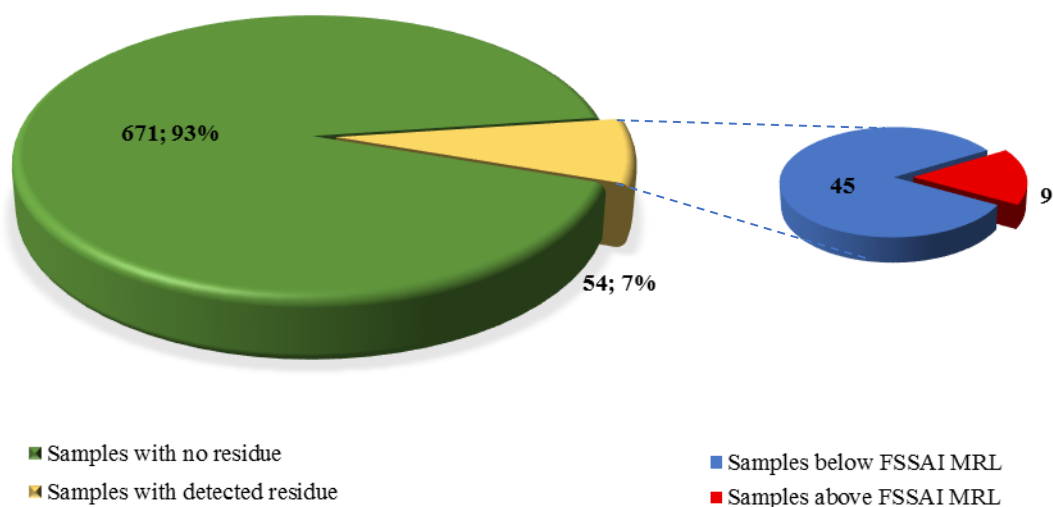


Figure 12: Graph presenting the number of samples analysed and samples with detection

Table 34: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Rice	Rice	Nov, 17	Retail Outlet Faridabad	Monocrotophos	0.36	0.01
	Rice	Nov, 17	Retail Outlet Palwal	Monocrotophos	0.23	0.01
Vegetables	Tomato	Aug, 17	Bahadurgarh Mandi	Chlorpyrifos	0.60	0.2
	Capsicum	Aug, 17	Palwal Mandi	Chlorpyrifos	0.23	0.2
	Cauliflower	Sept,17	Palwal Mandi	Chlorpyrifos	0.10	0.01

Table 35: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Nov, 17	Spinach	Mukesh Kumar	Wazirpur, Faridabad	NA	NA	Chlorpyrifos	1.78	0.2
Dec, 17	Coriander Leaves	Mukesh Kumar	Bhupani, Faridabad	NA	NA	Chlorpyrifos	0.26	0.2
Feb, 18	Coriander Leaves	Anek Pal	Mavai, Faridabad	NA	NA	Chlorpyrifos	0.41	0.2
Mar, 18	Brinjal	Mr. Anek Pal	Mavai	NA	NA	Cypermethrin	0.28	0.2

A total of 1,318 samples of vegetables, fruits, curry leaves, fish/marine, meat/egg, milk, rice, wheat, pulses, spices, red chilli powder and surface water were collected by KAU, Vellayani from the locations such as Trivandrum, Kottayam, Pathanamthitta, Kannur, Idukki, etc. and were analysed for the possible presence of pesticide residues. The residues were detected in the 349 (26.5 %) samples and 80 (6.1 %) samples were found above FSSAI MRL. Figure 13 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL. The commodity-wise details of the sample analysed by KAU, Vellayani is provided in Table 36.

The Vellayani center collected the vegetable samples from market (147 samples), farmer's field (320) and organic outlets (82 samples). The pesticide residues were found in 32 (21.8 %) market samples, 75 (23.4 %) farmgate sample and 29 (35.4 %) organic samples. Most commonly detected pesticides were acephate, acetamiprid, bifenthrin, carbendazim, chlorpyrifos, difenoconazole, ethion, imidacloprid, profenofos, quinalphos, tebuconazole, thiamethoxam, triazophos, etc. The residues detected in 4 (2.7 %) market samples, 11 (3.4 %) farmer's field samples and 1 (1.2 %) samples were having residues above FSSAI MRL.

The other samples which exceeded the MRL such as grapes samples were found having carbendazim, tebuconazole, monocrotophos; wheat samples had the residues of chlorpyrifos; red chilli powder samples had residues of cyhalothrin lambda; rice samples had residues of thiamethoxam, hexaconazole, imidacloprid; cardamom samples had residues of quinalphos and cummin were detected with the residues of thiamethoxam and azoxystrobin.

The most commonly detected non-approved pesticides were acephate, acetamiprid, bifenthrin, carbendazim, chlorpyrifos, clothianidin, cyfluthrin beta, cyhalothrin lambda, cypermethrin, difenoconazole, dimethoate, ethion, fenpropathrin, fenvalerate, imidacloprid, profenofos, quinalphos, tebuconazole, thiamethoxam, triazophos etc. The details of market samples, farm gate and organic vegetable samples exceeding FSSAI MRL are provided in table 37, 38 & 39, respectively.

Table 36: Commodity-wise monitoring results of KAU, Vellayani

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Curry Leaves	75	25	50	50	0
Fish/Marine	72	72	0	0	0
Fruits	117	92	25	17	9
Meat/Egg	54	54	0	0	0
Milk	33	33	0	0	0
Pulses	72	69	3	3	0
Red Chilli Powder	54	10	44	43	11
Rice	68	44	24	3	12
Spices	130	70	60	60	29
Surface Water	22	22	0	0	0
Vegetable (Market)	147	115	32	26	4
Vegetables (Farmgate)	320	245	75	55	11
Vegetables (Organic)	82	53	29	20	1
Wheat	72	65	7	4	3
Grand Total	1318	969 (73.5 %)	349 (26.5 %)	281 (21.3 %)	80 (6.1 %)

TOTAL SAMPLE ANALYSED (1318)

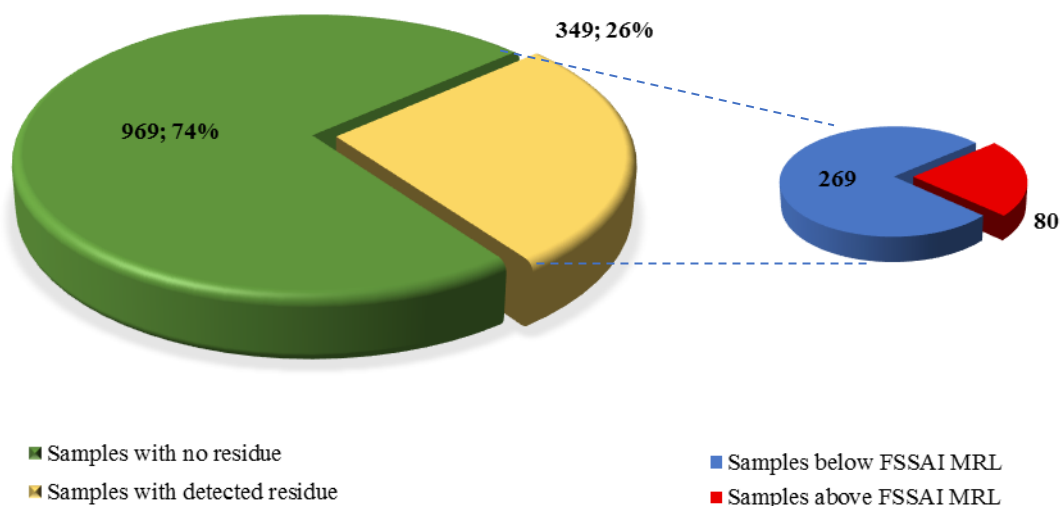


Figure 13: Graph presenting the number of samples analysed and samples with detection

Table 37: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Fruits	Grapes	May, 17	Market, Pathanamthitta	Carbendazim	1.31	0.1
	Grapes	Jun, 17	Market, Pathanamthitta	Carbendazim	0.56	0.1
	Grapes	Jul,17	Market, Idukki	Carbendazim	0.45	0.1
	Grapes	Jul,17	Market, Pathanamthitta	Carbendazim	0.15	0.1
	Grapes	Aug, 07	Market, Pathanamthitta	Carbendazim	3.46	0.1
				Tebuconazole	0.14	0.01
	Grapes	Sept,17	Market, Pathanamthitta	Carbendazim	1.44	0.1
				Tebuconazole	0.27	0.01
	Grapes	Sept,17	Market, Idukki	Monocrotophos	1.34	1.0
				Carbendazim	1.53	0.1
				Tebuconazole	0.80	0.01
	Grapes	Oct, 17	Market, Kottayam	Carbendazim	0.60	0.1
				Tebuconazole	0.26	0.01
Grapes	Oct, 17	Market, Kottayam	Carbendazim	1.61	0.1	
			Tebuconazole	0.21	0.01	
Red chilli powder	Red chilli powder	Jan, 18	Retail outlet, Kottayam	Cyhalothrin Lambda	0.27	0.01
	Red chilli powder	Jan, 18	Retail outlet, Kottayam	Cyhalothrin Lambda	0.26	0.01
	Red chilli powder	Jan, 18	Retail outlet, Kottayam	Cyhalothrin Lambda	0.13	0.01
	Red chilli powder	Feb, 18	Retail outlet, Kottayam	Cyhalothrin lambda	0.13	0.01
	Red chilli powder	Feb, 18	Retail outlet, Kottayam	Cyhalothrin lambda	0.36	0.01
	Red chilli powder	Feb, 18	Retail outlet, Kottayam	Cyhalothrin lambda	0.05	0.01
	Red chilli powder	Feb, 18	Retail outlet, Kottayam	Cyhalothrin lambda	0.39	0.01
	Red chilli powder	Feb, 18	Retail outlet, Kottayam	Cyhalothrin lambda	0.18	0.01
	Red chilli powder	Mar, 18	Retail outlet, Kottayam	Cyhalothrin lambda	0.06	0.01
	Red chilli powder	Mar, 18	Retail outlet, Kottayam	Cyhalothrin lambda	0.18	0.01
	Red chilli powder	Mar, 18	Retail outlet, Kottayam	Cyhalothrin lambda	0.25	0.01
	Rice	Rice	May, 17	Retail Outlet, Pathanamthitta	Thiamethoxam	0.12
Rice		May, 17	Retail Outlet, Pathanamthitta	Thiamethoxam	0.13	0.02
Rice		Jun, 17	Retail Outlet, Pathanamthitta	Thiamethoxam	0.12	0.02
Rice		Jun, 17	Retail Outlet, Pathanamthitta	Thiamethoxam	0.08	0.02
Rice		Jul,17	Retail Outlet, Pathanamthitta	Thiamethoxam	0.09	0.02
Rice		Sept,17	Retail Outlet, Pathanamthitta	Thiamethoxam	0.06	0.02
Rice		Sept,17	Retail Outlet, Pathanamthitta	Thiamethoxam	0.13	0.02
Rice		Oct, 17	Retail Outlet, Kottayam	Thiamethoxam	0.07	0.02

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
	Rice	Oct, 17	Retail Outlet, Kottayam	Thiamethoxam	0.10	0.02
	Rice	Nov, 17	Retail Outlet, Kottayam	Thiamethoxam	0.08	0.02
	Rice	Jan, 18	Retail Outlet, Kottayam	Hexaconazole	0.05	0.02
				Imidacloprid	0.12	0.05
Rice	Mar, 18	Retail Outlet, Kottayam	Thiamethoxam	0.06	0.02	
Spices	Cardamom	Apr, 17	Retail outlet, Thiruvananthapuram	Quinalphos	1.54	0.01
	Cardamom	Apr, 17	Retail outlet, Thiruvananthapuram	Quinalphos	0.84	0.01
	Cardamom	May, 17	Retail outlet, Thiruvananthapuram	Quinalphos	1.96	0.01
	Cardamom	May, 17	Retail outlet, Thiruvananthapuram	Quinalphos	3.43	0.01
	Cardamom	Jun, 17	Retail outlet, Thiruvananthapuram	Quinalphos	0.36	0.01
	Cardamom	Jun, 17	Retail outlet, Thiruvananthapuram	Quinalphos	1.13	0.01
	Cardamom	Jul, 17	Retail outlet, Thiruvananthapuram	Quinalphos	0.23	0.01
	Cardamom	Jul, 17	Retail outlet, Thiruvananthapuram	Quinalphos	0.82	0.01
	Cardamom	Aug, 17	Retail outlet, Thiruvananthapuram	Quinalphos	0.23	0.01
	Cardamom	Aug, 17	Retail outlet, Thiruvananthapuram	Quinalphos	0.90	0.01
	Cardamom	Sept, 17	Retail outlet, Thiruvananthapuram	Quinalphos	0.76	0.01
	Cardamom	Sept, 17	Retail outlet, Thiruvananthapuram	Quinalphos	2.00	0.01
	Cardamom	Oct, 17	Retail outlet, Kottayam	Quinalphos	1.08	0.01
	Cardamom	Oct, 17	Retail outlet, Kottayam	Quinalphos	0.66	0.01
	Cumin	Oct, 17	Retail outlet, Kottayam	Thiamethoxam	0.30	0.01
	Cardamom	Nov, 17	Retail outlet, Kottayam	Quinalphos	1.13	0.01
	Cardamom	Nov, 17	Retail outlet, Kottayam	Quinalphos	1.14	0.01
	Cumin	Dec, 17	Retail outlet, Kottayam	Thiamethoxam	0.19	0.01
	Cumin	Dec, 17	Retail outlet, Kottayam	Azoxystrobin	0.08	0.03
				Thiamethoxam	0.07	0.01
Cardamom	Dec, 17	Retail outlet, Kottayam	Quinalphos	2.15	0.01	
Cardamom	Dec, 17	Retail outlet, Kottayam	Quinalphos	0.91	0.01	

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
	Cardamom	Jan, 18	Retail outlet, Kottayam	Quinalphos	0.20	0.01
	Cardamom	Jan, 18	Retail outlet, Kottayam	Quinalphos	1.90	0.01
	Cardamom	Feb, 18	Retail outlet, Kottayam	Quinalphos	2.22	0.01
	Cardamom	Feb, 18	Retail outlet, Kottayam	Quinalphos	0.36	0.01
	Cumin	Feb, 18	Retail outlet, Kottayam	Azoxystrobin	0.16	0.03
				Thiamethoxam	0.55	0.01
	Cardamom	Mar, 18	Retail outlet, Kottayam	Quinalphos	1.10	0.01
	Cardamom	Mar, 18	Retail outlet, Kottayam	Quinalphos	0.80	0.01
Cumin	Mar, 18	Retail outlet, Kottayam	Thiamethoxam	0.06	0.01	
Vegetables	Cauliflower	Jun, 17	Market, Kannur	Chlorpyrifos	0.30	0.01
	Beans	Nov, 17	Market, Kollam	Chlorpyrifos	0.12	0.01
	Cauliflower	Mar, 18	Market, Kollam	Quinalphos	0.27	0.1
	Green Chilli	Mar, 18	Market, Kollam	Triazophos	1.70	0.2
Wheat	Wheat	Apr, 17	Retail Outlet, Pathanamthitta	Chlorpyrifos	0.12	0.05
	Wheat	May, 17	Retail Outlet, Pathanamthitta	Chlorpyrifos	0.06	0.05
	Wheat	Jun, 17	Retail Outlet, Pathanamthitta	Chlorpyrifos	0.24	0.05

Table 38: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Oct, 17	Bitter gourd	Mr. Reggi	Varuvila Veedu, Kalliyoor Village/Nemom Block/Trivandrum Tehsil/Trivandrum District	Coragen	Chlorantra niliprole	Chlorantra niliprole	0.06	0.03
Oct, 17	Cowpea	Mr. Reggi	Varuvila Veedu, Kalliyoor Village/Nemom Block/Trivandrum Tehsil/Trivandrum District	Radar	Chlorpyrifos	Chlorpyrifos	0.46	0.2
Oct, 17	Green Chilli	Mr. Jayavijayan	Chlolarathala Veedu, Kalliyoor Village/Nemom Block/Trivandrum Tehsil/Trivandrum District	Confidor	Imidacloprid	Imidacloprid	0.34	0.3
Oct, 17	Green Chilli	Mr. Vijayan	Binu Bhavan, Kalliyoor Village/Nemom Block/Trivandrum Tehsil/Trivandrum District	Confidor	Imidacloprid	Imidacloprid	0.54	0.3
Nov, 17	Cowpea	Mr. Jayavijayan	Kalliyoor Village/Nemom Block/Trivandrum Tehsil/Trivandrum District	Bavistin	Carbendazim	Carbendazim	0.94	0.5
Nov, 17	Green chilli	Mr. Vijayan	Kalliyoor Village/Nemom Block/Trivandrum Tehsil/Trivandrum District	Confidor	Imidacloprid	Imidacloprid	0.32	0.3
Nov, 17	Cucumber	Mr. Vijayan	Kalliyoor Village/Nemom Block/Trivandrum Tehsil/Trivandrum District	Radar	Chlorpyrifos	Chlorpyrifos	0.40	0.2
Nov, 17	Amarant hus Red	Mr. Pradeep G	Vadaman, Anchal Village/ Anchal Block/ Punalur Tehsil/Kollam District	Bavistin	Carbendazim	Carbendazim	1.46	0.5

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
JAN, 18	Green chilli	Mr. Rejikumar	Kalliyoor Village/Nemom Block/Trivandrum Tehsil/Trivandrum District	Confidor	Imidacloprid	Imidacloprid	0.33	0.3
Feb, 18	Green Chilli	Nithyanandan	Kalliyoor Village/Nemom Block/Trivandrum Tehsil/Trivandrum District	Hostothion	Triazaphos	Triazophos	1.64	0.2
Mar, 18	Brinjal	Mr. Krishnakutty	Kalliyoor Village/Nemom Block/Trivandrum Tehsil/Trivandrum District	Solomon	Cyfluthrin Beta	Cyfluthrin Beta	0.40	0.2

Table 39: Details of organic samples above FSSAI MRL

Month	Sample	Collection Point	Sample origin/Growing area	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Apr, 17	Cowpea	Organic shop, Trivandrum	Trivandrum	Chlorpyrifos	0.38	0.2

Marine Products Export Development Authority, Kochi

A total of 660 fish/marine samples were collected from Bhubaneswar, Kochi, Nagappattinam, Panvel, Valsad, Vijayawada, Chennai, Kolkata, Mumbai, Vizag, Nellore, Bhimavaram, Contai, Kannur, Karwar, Goa, Kollam, Mangalore, Porbandar, etc. and analysed for the possible presence of pesticides residues. None of the sample were detected with pesticide residues (Table 40).

Table 40: Commodity-wise monitoring results of MPEDA, Kochi

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Fish/Marine	660	660	0	0	0

Mahatma Phule Krishi Vidyapeeth, Rahuri

MPKV, Rahuri collected a total of 806 samples from the areas such as Ahmednagar, Manchar, Phaltan, Pune, Rahuri, Sonai, Yeola, etc. and analysed for the possible presence of pesticide residues. The pesticide residues were detected in 82 (10.2 %) samples and 14 (1.7 %) samples exceeded FSSAI MRL. The commodity-wise details of samples analysed by MPKV, Rahuri is given in Table 41. Figure 14 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

A total of 499 vegetable samples were collected and analysed, from which 196 samples were collected from market, retail outlets and APMC and 303 samples were collected from farmer's field. The residues were detected in 33 (16.8 %) market sample and 28 (9.2 %) farmgate samples. Most commonly detected pesticides were chlorpyrifos, fenpropathrin, profenofos and triazophos. The 7 (3.6 %) market samples and 4 (1.3 %) farmgate samples which exceeded FSSAI MRL were found having residues of chlorpyrifos and fenpropathrin. Only one pulse sample and 2 rice samples having residues of monocrotophos were found exceeding MRL.

The most commonly detected non-approved pesticides were fenpropathrin, monocrotophos, profenofos, triazophos etc. The details of market samples and farm gate vegetable sample exceeding FSSAI MRL are provided in table 42 & 43, respectively.

Table 41: Commodity-wise monitoring results of MPKV, Rahuri

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Fruits	60	58	2	1	0
Milk	24	24	0	0	0
Pulses	66	60	6	4	1
Red Chilli Powder	27	18	9	9	0
Rice	58	56	2	0	2
Surface Water	14	14	0	0	0
Vegetable (Market)	196	163	33	20	7
Vegetables (Farmgate)	303	275	28	18	4
Wheat	58	56	2	2	0
Grand Total	806	724 (89.8 %)	82 (10.2 %)	54 (6.7 %)	14 (1.7 %)

TOTAL SAMPLE ANALYSED (806)

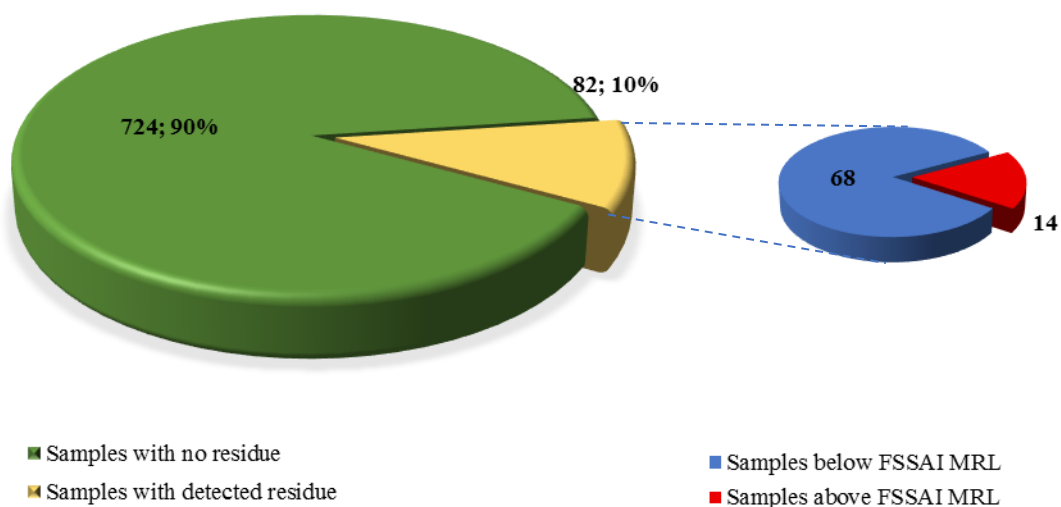


Figure 14: Graph presenting the number of samples analysed and samples with detection

Table 42: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Pulses	Green gram	Aug, 17	Yeola	Monocrotophos	0.15	0.05
Rice	Rice	Sept, 17	Ahmednagar	Monocrotophos	0.35	0.006
	Rice	Sept, 17	Manchar	Monocrotophos	0.16	0.006
Vegetables	Green Chilli	Apr, 17	Kolhapur	Monocrotophos	0.56	0.2
	Green Chilli	Apr, 17	Gadhinglaj	Monocrotophos	0.43	0.2
	Green Chilli	Apr, 17	Gadhinglaj	Monocrotophos	0.43	0.2
	Cabbage	Jun, 17	Manchar	Chlorpyrifos	0.10	0.01
	Cauliflower	Jun, 17	Manchar	Chlorpyrifos	0.11	0.01
	Tomato	Jun, 17	Manchar	Chlorpyrifos	0.24	0.2
	Green chilli	Nov, 17	Yeola	Monocrotophos	1.07	0.2

Table 43: Details of farm gate samples above FSSAI MRL

Date of Collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (ppm)	FSSAI MRL VALUE
Apr, 17	Green chilli	Mr. Prakash Sable	Kolhapur	Devimono	Monocrotophos	Monocrotophos	0.62	0.2
Apr, 17	Green chilli	Mr. Bhimrao Khot	Gadhinglaj	Devimono	Monocrotophos	Monocrotophos	0.53	0.2
Apr, 17	Green chilli	Mr. Ananda Mohite	Gadhinglaj	Devimono	Monocrotophos	Monocrotophos	0.49	0.2
Nov, 17	Green chilli	Mr. Dilip Patil	Jambhali, Shirol, Kolhapur	Danitol	Fenprothrin	Fenprothrin	0.29	0.2

National Environmental Engineering Research Institute, Nagpur

NEERI, Nagpur analysed a total of 844 water samples from which 10 (1.2 %) samples were found having residues of HCH, dicofol, chlorpyrifos, cyhalothrin lambda and pp'-DDE. The samples were collected from Jam lake, Savanga river, Ambazari lake, Bela river, Bhandara, Bhivapur lake, Borgao Sand river, Butibori river, Chandrabhaga lake, Chhakrvarti lake, Datta lake, Dham river, Dhurug lake, Gandhisagar lake, Ghoti dam, Hingna river, Javli Lake, Jhambada, , hindsi lake, Linga lake, Makardhokda lake, Morshi Wardha river, Nag river, Pandhrabodi lake, Paradgaon lake, Pench river, Ramtek Kanhan river, Rawanwadi Lake, Saiki lake, Satkund river, Savanga river, Shekdari lake, Sillee lake, Sur river, Thana lake, Ukkerwahi lake, Umred, Undari lake, Vadgao dam, Wanganga river, Wakeshwar lake, Wardha river, Wena river, Zilpi lake, etc. The details of water samples exceeding 0.5 ppb residues are provided in table 45.

Table 44: Commodity-wise monitoring results of NEERI, Nagpur

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	samples with detection of non-approved pesticides	Samples above FSSAI MRL
Surface Water	844	834	10	9	-
Grand Total	844	834 (98.8 %)	10 (1.2 %)	9 (1.1 %)	-

Table 45: Details of samples with residues exceeding 0.5 ppb

Sample	Month	Collection Point	Pesticides Detected	Residues (ppb)
Water	Jun, 17	Chandrabhaga lake	Beta-HCH	0.72
	Jul, 17	Pandhrabodi lake	Dicofol	0.57
	Jul, 17	Saiki lake	Dicofol	0.73
	Jul, 17	Umred G.W.1	Chlorpyrifos	1.93
	Jul, 17	Saiki lake replicate	Dicofol	0.55

National Institute of Occupational Health (ICMR), Ahmedabad

A total of 888 samples of vegetables, fruits, milk and surface water were collected and analysed by NIOH, Ahmedabad. The samples were mainly collected from Surendra Nagar, Ahmedabad and Kadi. Out of all the samples analysed, the pesticide residues were detected in 42 (4.7 %) samples and 2 (0.2 %) samples were found above FSSAI MRL. Commodity-wise details are provided in the table 46. Figure 15 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

A total of 735 vegetable samples were collected from market and farmer's field (farmgate). The pesticide residues were detected in 33 (5.5 %) market samples and 8 (5.9 %) farm gate samples. Most commonly detected pesticides were acephate, cyhalothrin lambda, thiamethoxam, triazophos and acetamiprid. The residues of monocrotophos and fenpropathrin were found respectively in each of the market and farmgate sample.

The most commonly detected non-approved pesticides were acephate, cyhalothrin lambda, cypermethrin, fenpropathrin etc. Details of market samples and farmgate vegetable samples found above FSSAI MRL are given in table 47 & 48, respectively.

Table 46: Commodity-wise monitoring results of NIOH, Ahmedabad

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Fruits	98	97	1	1	0
Milk	33	33	0	0	0
Surface Water	22	22	0	0	0
Vegetable (Market)	600	567	33	28	1
Vegetables (Farmgate)	135	127	8	4	1
Grand Total	888	846 (95.3 %)	42 (4.7 %)	33 (3.7 %)	2 (0.2 %)

TOTAL SAMPLE ANALYSED (888)

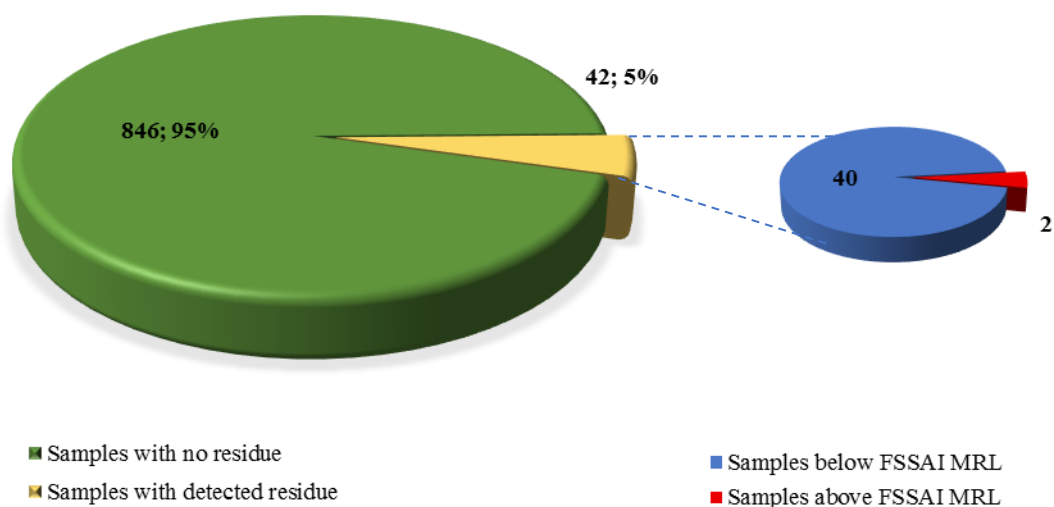


Figure 15: Graph presenting the number of samples analysed and samples with detection

Table 47: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Vegetables	Green Chilli	Oct, 17	Ahmedabad	Monocrotophos	0.32	0.2

Table 48: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Mar, 18	Green chilli	Shivbhai	Ode (Anand)	-	-	Fenpropathrin	0.43	0.2

National Institute of Plant Health Management, Hyderabad

A total of 1,411 samples of vegetables, fruits, milk, pulses, rice, wheat, red chilli powder, curry leaves and surface water were collected from the areas such as Rajahmundry, Hyderabad, Sangareddy, Shadnagar, Tirupathi, Vijaywada, Vizag and Kurnool and analysed for the possible presence of the pesticide residues. It was found that the pesticide residues were detected in 431 (30.5 %) samples and residues in 14 (1 %) samples exceeded the FSSAI MRL. The commodity-wise breakdown of the sample analysed by NIPHM, Hyderabad is provided in Table 49. Figure 16 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

A total of 732 vegetable samples were collected from markets, farmers field and organic outlets. The pesticide residues were found in 92 (20.4 %) farmgate samples, 43 (26.7 %) market samples and 22 (18.5 %) organic samples. Most commonly detected pesticides were acephate, acetamiprid, azoxystrobin, carbendazim, imidacloprid and tebuconazole. The 3 (0.7 %) farmgate samples, 5 (3.1 %) market sample and 2 (1.7 %) organic samples were found exceeding FSSAI MRL. The samples which exceeded MRL were found having residues of carbendazim, imidacloprid, triazophos and flubendiamide.

The residues of difenoconazole in fruit sample; carbendazim and imidacloprid in rice samples and pyriproxyfen in red chilli powder sample exceeded the FSSAI MRL.

The most commonly detected non-approved pesticides were acephate, acetamiprid, azoxystrobin, beflubutamid, bifenthrin, buprofezin, butachlor, carbendazim, chlorantraniliprole, chlorpyrifos, clothianidin, difenoconazole, ethion, etofenprox, fenpropathrin, imidacloprid, kresoxim-methyl, myclobutanil, novaluron, profenofos, propargite, propiconazole, pyraclostrobin, pyriproxyfen, quinalphos, tebuconazole, thiamethoxam, triazophos, tricyclazole etc. The details of market samples, farm gate & organic vegetable sample exceeding FSSAI MRL are provided in table 50, 51 & 52, respectively.

Table 49: Commodity-wise monitoring results of NIPHM, Hyderabad

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Curry Leaves	67	9	58	58	0
Fruits	202	127	75	49	1
Milk	48	48	0	0	0
Pulses	77	63	14	13	0
Red Chilli Powder	116	20	96	91	1
Rice	72	49	23	5	2
Surface Water	25	24	1	1	0
Vegetable (Market)	161	118	43	34	5
Vegetables (Farmgate)	452	360	92	70	3
Vegetables (Organic)	119	97	22	14	2
Wheat	72	65	7	4	0
Grand Total	1411	980 (69.5 %)	431 (30.5 %)	339 (24.0 %)	14 (1.0 %)

TOTAL SAMPLE ANALYSED (1411)

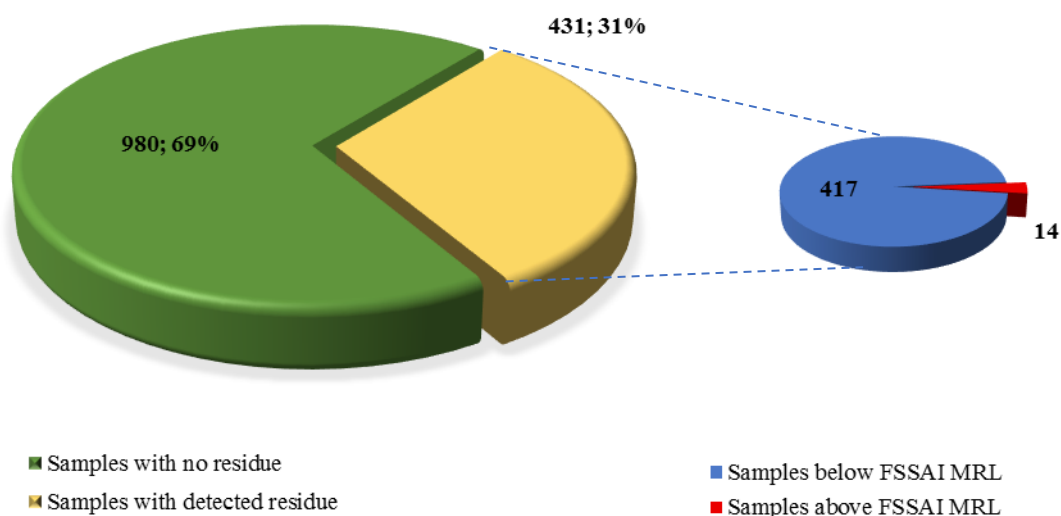


Figure 16: Graph presenting the number of samples analysed and samples with detection

Table 50: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Fruits	Pomegranate	Sept, 17	Kurnool	Difenoconazole	0.02	0.01
Red chilli powder	Red chilli powder	Dec, 17	PJTSAU, Jagitial	Pyriproxyfen	0.25	0.02
	Rice	Jul, 17	Rajahmundry	Carbendazim	0.13	0.12

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Rice	Rice	Jan, 18	Hyderabad	Imidacloprid	0.06	0.05
Vegetables	Capsicum	Jul, 17	Hyderabad	Carbendazim	0.62	0.5
	Green Chilli	Jul, 17	Shadnagar	Monocrotophos	0.39	0.2
	Green Chilli	Sept, 17	Kurnool	Imidacloprid	0.38	0.3
	Green chilli	Jan, 18	Hyderabad	Triazophos	0.53	0.2
	Green Chilli	Feb, 18	Vijayawada	Flubendiamide	0.03	0.02

Table 51: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Nov, 17	Cauliflower	K.Yesubabu	Penakadimi, Pedavegi, West Godavari	Token, Bioclai m	Dinotefuran, Emmamectin Benzoate	Lufenuron	0.14	0.1
Jan, 18	Green chilli	Smt. Balamma	CIPMC, Hyderabad, Toopran	NA	NA	Chlorantraniliprole	0.05	0.03
						Triazophos	1.56	0.2
Jan, 18	Green chilli	Smt. Ramulamma	CIPMC, Hyderabad, Mirzaguda, Chevella	NA	NA	Carbendazim	2.26	0.5
						Imidacloprid	1.51	0.3

Table 52: Details of organic samples above FSSAI MRL

Month	Sample	Collection Point	Sample origin/Growing area	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
May, 17	Capsicum	Banjara Hills, Hyd	NA	Chlorpyrifos	0.27	0.2
Nov, 17	Okra	Banjara Hills, Hyd	NA	Buprofezin	0.12	0.01

Regional Plant Quarantine Station, New Delhi

A total of 1,205 samples of vegetables, fruits, milk, pulses, rice, wheat, curry leaves and surface water were collected by the center from various nearby areas such as Gautam budha Nagar, Aligarh, Meerut, Hapur, Agra, Bulandshahr and analysed for the possible presence of pesticide residues. The monitoring result showed that the residues were detected in 38 (3.2 %) samples and 12 (1 %) samples exceeded the FSSAI MRL. Commodity-wise details are given in table 53. Figure 17 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

721 vegetable samples were collected from market and farmer's field. The residues were detected in 20 (5.2 %) market samples and 14 (4.2 %) farmgate samples. Most commonly detected pesticides were chlorpyrifos and profenofos. The 9 (2.3 %) samples of market having residues of chlorpyrifos and ethion and 3 (0.9 %) samples of farmgate having residues of chlorpyrifos were found above FSSAI MRL.

The most commonly detected non-approved pesticides were cypermethrin, bifenthrin and profenofos. Details of market samples and farm gate vegetable samples found above FSSAI MRL is provided in the table 54 & 55, respectively.

Table 53: Commodity-wise monitoring results of RPQS, New Delhi

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Curry Leaves	22	22	0	0	0
Fruits	275	271	4	1	0
Milk	33	33	0	0	0
Rice	66	66	0	0	0
Surface Water	22	22	0	0	0
Vegetable (Market)	386	366	20	10	9
Vegetables (Farmgate)	335	321	14	4	3
Wheat	66	66	0	0	0
Grand Total	1205	1167 (96.8 %)	38 (3.2 %)	15 (1.2 %)	12 (1.0 %)

TOTAL SAMPLE ANALYSED (1205)

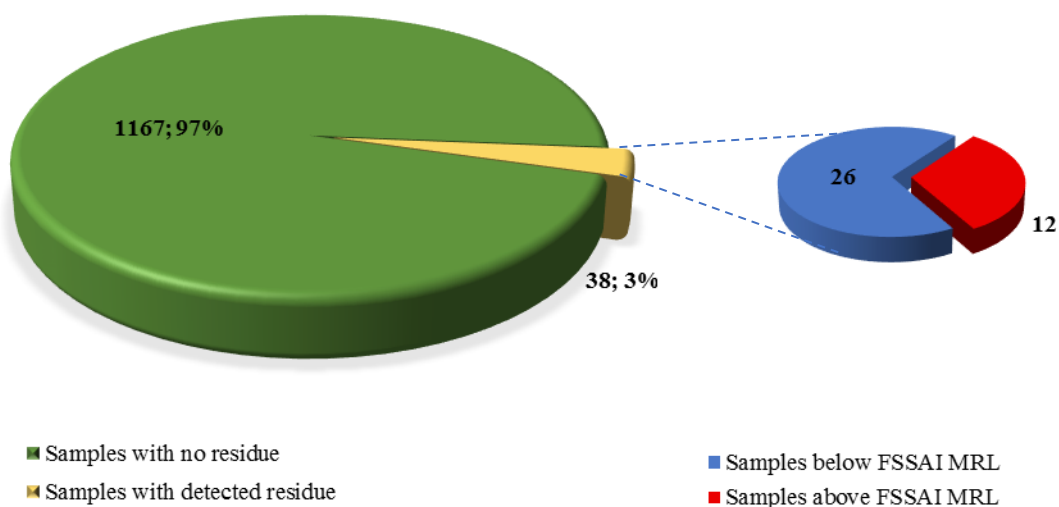


Figure 17: Graph presenting the number of samples analysed and samples with detection

Table 54: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Vegetables	Beet Root	Apr, 17	Village-Nagla Laldas, Block- Achnera, Distt. Agra	Chlorpyrifos	0.33	0.2
	Cauliflower	Apr, 17	APMC-Gautam Buddha Nagar	Chlorpyrifos	0.96	0.01
	Cauliflower	Apr, 17	APMC-Aligarh	Chlorpyrifos	0.05	0.01
	Spinach	Jun, 17	Village Partapur, Hapur	Chlorpyrifos	0.83	0.2
	Cabbage	Aug, 17	APMC-Hapur	Chlorpyrifos	0.19	0.01
	Coriander leaves	Sept, 17	APMC-Aligarh	Chlorpyrifos	0.69	0.2
	Mustard leaves	Nov, 17	Village- Mkoda, Gautam Buddha Nagar	Chlorpyrifos	0.71	0.2
	Coriander leaves	Nov, 17	Village- Mkoda, Gautam Buddha Nagar	Chlorpyrifos	0.71	0.2
	Green Chilli	Feb, 18	APMC-Aligarh	Ethion	1.10	1

Table 55: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Jul, 17	Cabbage	Sh. Dharam Pal s/o Sukhdev	Village-Sohana & Distt.Faridabad	NA	NA	Chlorpyrifos	0.40	0.01
Sep, 17	Cabbage	Sh. Karan Pal	V: Shajadpur B: Farha Distt: Mathura	NA	NA	Chlorpyrifos	0.13	0.01
Mar, 18	Radish	Sh. Roop Ram s/o Sh. Kalyan	V-Faridpur, D-Faridabad	NA	NA	Chlorpyrifos	7.82	0.2

Overall 1,297 samples of various food commodities and surface water were collected and analysed by PJTSAU, Hyderabad. The samples were mainly collected from Hyderabad, Kurnool, Kothapet, Mahadipatnam, Vijayawada, Karimnagar, Rajendranagar, Warangal and Tirupati. Out all the sample analysed, the residues were detected in 652 (50.3 %) samples and 51 (3.9 %) samples of vegetables, fruits, rice, wheat, pulses and spices were found exceeding FSSAI MRL. Commodity-wise monitoring results is given in table 56. Figure 18 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

A total of 664 vegetable samples were collected from market, farmer's field and organic outlets and analysed. The pesticides residues were found in 128 (51.2 %) market samples, 140 (42.7 %) farmgate samples and 31 (36 %) organic samples. Most commonly detected pesticides were acephate, acetamiprid, bifenthrin, carbendazim, chlorpyrifos, ethion, fenpropathrin, imidacloprid, methamidophos, profenofos, spinosad, tebuconazole and trifloxystrobin. The residues of carbendazim, indoxacarb and spinosad were found exceeding FSSAI MRL in 6 (2.4 %) market vegetable samples; the residues of carbendazim, chlorantraniliprole, ethion, indoxacarb and thiodicarb in 10 (3 %) farmgate samples and residues of carbendazim and spiromesifen in 2 (2.3 %) organic samples exceeded FSSAI MRL.

The samples of fruits, pulses, rice, spices and wheat also found above MRL. The fruit samples were found having the residues of carbendazim. The residues of chlorpyrifos, carbendazim, malathion, propiconazole and quinalphos detected in pulse, rice and wheat samples were found exceeding FSSAI MRL. In spice samples, cardamom samples were found to have residues of quinalphos and cumin samples residues azoxystrobin and thiamethoxam which exceeded FSSAI MRL.

The most commonly detected non-approved pesticides were acephate, acetamiprid, bifenthrin, carbendazim, chlorpyrifos, cypermethrin, dichlorvos, dimethoate, ethion, fenpropathrin, hexaconazole, imidacloprid, indoxacarb, metalaxyl, methamidophos, profenofos, quinalphos, tebuconazole, triazophos, tricyclazole, trifloxystrobin etc. The

details of market samples, farm gate & organic vegetable samples found above FSSAI MRL are provided in table 57, 58 & 59, respectively.

Table 56: Commodity-wise monitoring results of PJTSAU, Hyderabad

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Curry Leaves	73	10	63	63	0
Fruits	128	55	73	42	2
Milk	36	36	0	0	0
Pulses	71	64	7	6	1
Rice	72	10	62	24	13
Spices	157	26	131	129	15
Surface Water	24	24	0	0	0
Vegetable (Market)	250	122	128	103	6
Vegetables (Farmgate)	328	188	140	112	10
Vegetables (Organic)	86	55	31	17	2
Wheat	72	55	17	8	2
Grand Total	1297	645 (49.7 %)	652 (50.3 %)	504 (38.9 %)	51 (3.9 %)

TOTAL SAMPLE ANALYSED (1297)

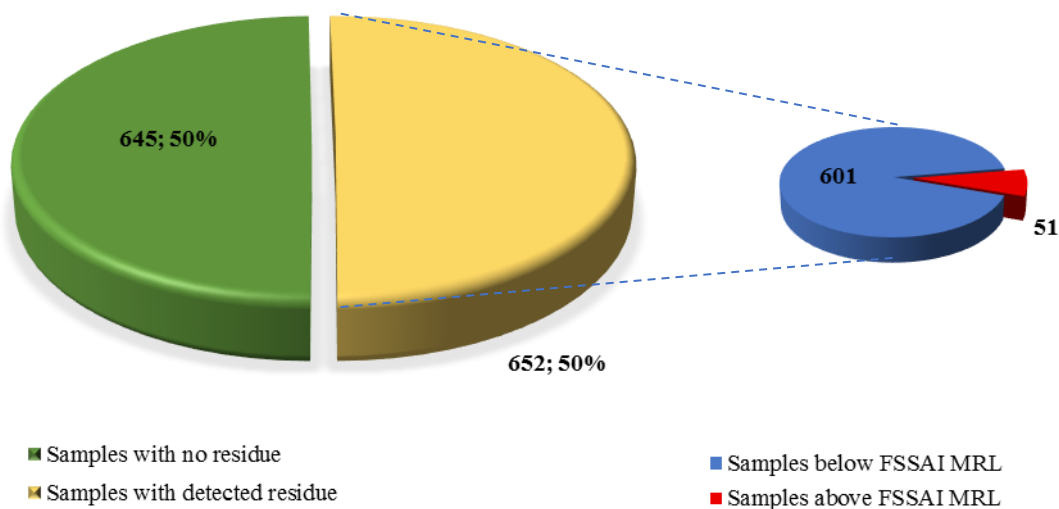


Figure 18: Graph presenting the number of samples analysed and samples with detection

Table 57: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Fruits	Grapes	Apr, 17	Tirupathi Fruit Market	Carbendazim	0.26	0.1
	Grapes	Oct, 17	Kothapet Fruit Market	Carbendazim	0.26	0.1
Pulses	Red Gram	Nov, 17	Kothapet Retail Outlet	Chlorpyrifos	0.02	0.01
Rice	Rice	Apr, 17	Retail Outlet	Carbendazim	0.16	0.12
	Rice	Apr, 17	Kothapet Retail Outlet	Chlorpyrifos	0.09	0.01
	Rice	May, 17	Retail Outlet	Chlorpyrifos	0.02	0.01
	Rice	May, 17	Retail Outlet	Chlorpyrifos	0.03	0.01
	Rice	Oct, 17	Kothapet Retail Outlet	Quinalphos	0.07	0.01
	Rice	Oct, 17	Malakpet Retail Outlet	Quinalphos	0.02	0.01
	Rice	Dec, 17	Warangal Retail Outlet	Quinalphos	0.03	0.01
	Rice	Jan, 18	Rajendranagar Retail Outlet	Quinalphos	0.02	0.01
	Rice	Jan, 18	Mehedipatnam Retail Outlet	Quinalphos	0.02	0.01
	Rice	Mar, 18	Kothapet Retail Outlet, Hyderabad, Telangana	Propiconazole	0.09	0.05
	Rice	Mar, 18	Malakpet Retail Outlet, Hyderabad, Telangana	Propiconazole	0.07	0.05
	Rice	Mar, 18	Rajendranagar Retail Outlet, Hyderabad, Telangana	Propiconazole	0.07	0.05
	Rice	Mar, 18	Hyderguda Retail Outlet, Hyderabad, Telangana	Propiconazole	0.06	0.05
	Spices	Cardamom	Apr, 17	Kothapet Retail Outlet	Quinalphos	0.42
Cardamom		Apr, 17	Kothapet Retail Outlet	Quinalphos	0.89	0.01
Cardamom		Jun, 17	Kothapet Retail Outlet	Quinalphos	0.20	0.01
Cardamom		Jun, 17	Mehedipatnam Retail Outlet	Quinalphos	0.37	0.01
Cardamom		Jul, 17	Kothapet Retail Outlet	Quinalphos	0.33	0.01
Cardamom		Aug, 17	Kothapet Retail Outlet	Quinalphos	0.19	0.01
Cardamom		Sept, 17	Mehedipatnam Retail Outlet	Quinalphos	0.21	0.01
Cardamom		Dec, 17	Malakpet Retail Outlet	Quinalphos	1.64	0.01
Cardamom		Jan, 18	Malakpet Retail Outlet	Quinalphos	1.11	0.01
Cardamom		Jan, 18	Mehedipatnam Retail Outlet	Quinalphos	0.89	0.01
Cardamom		Feb, 18	Malakpet Retail Outlet	Quinalphos	0.84	0.01
Cardamom		Feb, 18	Mehedipatnam Retail Outlet	Quinalphos	0.70	0.01
Cardamom		Mar, 18	Malakpet Retail Outlet, Hyderabad, Telangana	Quinalphos	0.55	0.01

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
	Cumin	Mar, 18	Malakpet Retail Outlet, Hyderabad, Telangana	Azoxystrobin	0.82	0.03
				Thiamethoxam	0.44	0.01
	Cardamom	Mar, 18	Mehedipatnam Retail Outlet, Hyderabad, Telangana	Quinalphos	0.79	0.01
Vegetables	Green Chilli	Jul, 17	Vijayawada Rythu Bazar	Carbendazim	1.61	0.5
	Capsicum	Aug, 17	Rajendranagar Rythu Bazar	Carbendazim	0.78	0.5
	Green Chilli	Aug, 17	Rajendranagar Rythu Bazar	Monocrotophos	0.79	0.2
	Capsicum	Aug, 17	Vijayawada Rythu Bazar	Carbendazim	0.82	0.5
	Green Chilli	Dec, 17	Rajendranagar Rythu Bazar	Indoxacarb	0.05	0.01
	Green Chilli	Feb, 18	Rajendranagar Rythu Bazar	Spinosad-A	0.08	0.01
				Spinosad-D	0.05	0.01
Wheat	Wheat	Nov, 17	Kothapet Retail Outlet	Malathion	1.30	0.05
	Wheat	Mar, 18	Hyderguda Retail Outlet, Hyderabad, Telangana	Carbendazim	0.24	0.05

Table 58: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/ tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Nov, 17	Bitter gourd	P Jagan	Devannapeta village, Hasanparthi mandal, Warangal District	NA	Dimethoate	Carbendazim	0.80	0.5
Nov, 17	Brinjal	Kumar	Kasimbawli village, Moinabad mandal, Rangareddy District	Torpid	NA	NA	0.07	0.03
Nov, 17	Spinach	Srinivas Reddy	Kasimbawli village, Moinabad mandal, Rangareddy District	NA	NA	Carbendazim	0.54	0.5
Dec, 17	Green chilli	Ch Sundar	Devannapeta village, Hasanparthi mandal, Warangal District	NA	NA	Ethion	1.70	1
						Indoxacarb	0.28	0.01
Dec, 17	Sorrel leaves	Jangama	Sriramnagar village, Moinabad mandal, Rangareddy District	NA	NA	Carbendazim	0.79	0.5
Jan, 18	Spinach	Mahendar Goud	Amdapur Village, Moinabad mandal, Rangareddy District	Goldstin	NA	NA	2.93	0.5
Jan, 18	Tomato	NA	Student farm, Rajendranagar mandal, Rangareddy District	NA	NA	Carbendazim	0.52	0.5
Jan, 18	Brinjal	NA	Student farm, Rajendranagar mandal, Rangareddy District	NA	NA	Carbendazim	0.53	0.5
Mar, 18	Brinjal	Paramesh	Sriramnagar Village, Moinabad mandal, Rangareddy District	Coragen	Chlorantraniliprole	Chlorantraniliprole	0.04	0.03
Mar, 18	Brinjal-3	Venkat Reddy	Bahadurguda village, Shamshabad mandal, Rangareddy District	Larvin	NA	NA	0.15	0.05

Table 59: Details of organic samples above FSSAI MRL

Month	Sample	Collection Point	Sample origin/Growing area	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Dec, 17	Green chilli	24 Manthra organic store, Banjarahills, Hyderabad	Surrounding areas of Hyderabad	Spiromesifen	0.21	0.1
Feb, 18	Green chilli	24 Manthra organic store, Banjarahills, Hyderabad	Surrounding areas of Hyderabad	Carbendazim	0.77	0.5

Project Coordinating Cell, New Delhi

The nodal laboratory at PC Cell, ICAR-IARI, New Delhi collected and analysed 568 samples of vegetables and fruits. The samples were collected from APMC located at Azadpur & Okhla, Mother dairy outlets, vendors from Yamuna Pusta and various other retail outlets of East, West, South, North and Central zones of Delhi. The pesticide residues were detected in 215 (37.9 %) samples and 13 (2.3 %) samples were found to be exceeding the FSSAI maximum residue limit. The commodity-wise details are provided in table 60. Figure 19 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

Overall, 369 vegetables samples were collected and analysed; from which 364 samples were collected from markets, retail outlets, food marts, mother dairy and APMC and 5 samples were collected from organic retail outlets. The pesticide residues in market samples were detected in 139 (37.7 %) samples and 9 (2.4 %) samples were found exceeding MRL. In case of organic samples, the residues were detected in only 1 (20 %) sample. Most commonly detected pesticides were acephate, acetamiprid, chlorpropham, chlorpyrifos, imidacloprid, metalaxyl, profenofos, tebuconazole and thiamethoxam. The vegetable samples which exceeded the MRL were detected with the residues of cyfluthrin beta, chlorpyrifos, triazophos, acetamiprid, diafenthiuron and thiamethoxam. The fruit samples detected with the residues of difenoconazole, quinalphos, fipronil and cyhalothrin lambda were also found above MRL.

The most commonly detected non-approved pesticides were acephate, acetamiprid, azoxystrobin, chlorothalonil, chlorpropham, imidacloprid, metalaxyl, profenofos, tebuconazole, thiamethoxam etc. Details of market samples found above FSSAI MRL are provided in table 61.

Table 60: Commodity-wise monitoring results of PC Cell, New Delhi

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Fruits	199	123	76	58	4
Vegetable (Market)	364	226	138	113	9
Vegetables (Organic)	5	4	1	0	0
Grand Total	568	353 (62.1 %)	215 (37.9 %)	171 (30.1 %)	13 (2.3 %)

TOTAL SAMPLE ANALYSED (568)

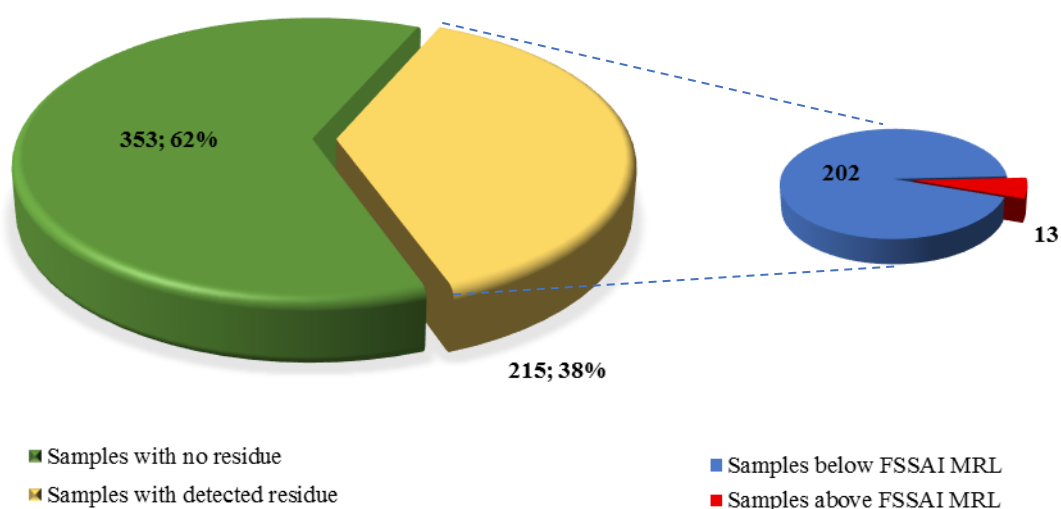


Figure 19: Graph presenting the number of samples analysed and samples with detection

Table 61: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Fruits	Pomegranate	Jun, 17	Retail Outlet (Organic)	Difenoconazole	0.03	0.01
	Orange	Nov, 17	NA	Quinalphos	0.10	0.05
	Grapes	Jan, 18	Retail outlet (Central zone)	Fipronil	0.08	0.01
	Grapes	Feb, 18	Retail outlet (East Zone)	Cyhalothrin lambda	0.18	0.05
Vegetables	Brinjal	Jun, 17	Retail outlet (South zone)	Cyfluthrin beta	0.02	0.01
	Cauliflower	Jun, 17	APMC Mandi	Chlorpyrifos	0.04	0.01
	Cauliflower	Jun, 17	Retail Outlet (Central Zone)	Chlorpyrifos	0.02	0.01
	Tomato	Jul, 17	Solan	Chlorpyrifos	0.69	0.2
	Cauliflower	Sept, 17	NA	Chlorpyrifos	0.09	0.01
	Green Chilli	Oct, 17	APMC Mandi	Chlorpyrifos	0.52	0.2

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
				Triazophos	0.42	0.2
	Okra	Dec, 17	Mother Dairy (Mangolpuri)	Acetamiprid	0.14	0.1
	Green Chilli	Jan, 18	APMC mandi (Azadpur)	Diafenthiuron	0.28	0.05
	Tomato	Jan, 18	APMC mandi (Azadpur)	Thiamethoxam	0.06	0.01

Punjab Agricultural University, Ludhiana

The center collected a total of 897 samples of vegetable, milk, rice, red chilli powder and surface water from the locations such as Hoshiarpur, Moga, Malerkotla, Ludhiana, Samrala and Sangrur. Out of total number of samples analysed, the residues were detected in 123 (13.7 %) samples and residues in 19 (2.1 %) samples exceeded the FSSAI permissible limit. The commodity-wise breakdown of the sample analysed by PAU, Ludhiana is provided in Table 62. Figure 20 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

A total of 585 vegetable samples, 265 market sample and 320 farmgate samples, were collected and analysed. The pesticide residues were detected in 43 (16.2 %) market sample and 32 (10 %) farmgate samples from which 6 (2.3 %) market sample and 4 (1.3 %) farmgate sample exceeded the FSSAI MRL. Most commonly detected pesticides were acephate, chlorpyrifos and profenofos. All the vegetable sample which exceeded MRL were detected with the residues of chlorpyrifos. The rice samples which were found above MRL were detected with the residues of chlorpyrifos and ethion.

The most commonly detected non-approved pesticides were acephate, chlorpyrifos, ethion, profenofos, triazophos etc. The details of market samples and farm gate vegetable samples found above FSSAI MRL is given in table 63 & 64, respectively.

Table 62: Commodity-wise monitoring results of PAU, Ludhiana

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	samples with detection of non-approved pesticides	Samples above FSSAI MRL
Milk	36	36	0	0	0
Red Chilli Powder	36	13	23	23	0
Rice	216	191	25	4	9
Surface Water	24	24	0	0	0
Vegetable (Market)	265	222	43	29	6
Vegetables (Farmgate)	320	288	32	14	4
Grand Total	897	774 (86.3 %)	123 (13.7 %)	70 (7.8 %)	19 (2.1 %)

TOTAL SAMPLE ANALYSED (897)

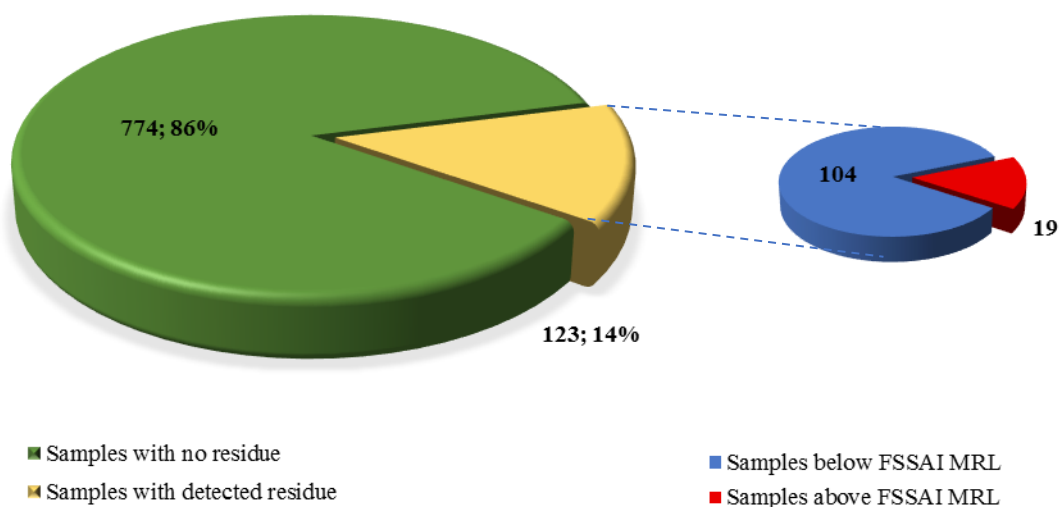


Figure 20: Graph presenting the number of samples analysed and samples with detection

Table 63: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Rice	Rice	Jul, 17	Malerkotla	Chlorpyrifos	0.14	0.01
	Basmati rice	Aug, 17	Hoshiarpur	Chlorpyrifos	0.08	0.01
	Basmati rice	Aug, 17	Malerkotla	Chlorpyrifos	0.17	0.01
	Basmati rice	Sept,17	Hoshiarpur	Chlorpyrifos	0.08	0.01
	Basmati rice	Sept,17	Malerkotla	Chlorpyrifos	0.17	0.01
	Rice	Oct, 17	Moga	Chlorpyrifos	0.02	0.01
	Rice	Oct, 17	Moga	Chlorpyrifos	0.10	0.01
	Rice	Nov, 17	Malerkotla	Chlorpyrifos	0.03	0.01
	Basmati rice	Feb, 18	Shakti Provision Store, Malerkotla	Ethion	0.44	0.01
Vegetables	Coriander	Apr, 17	Hoshiarpur	Chlorpyrifos	1.46	0.2
	Coriander	May, 17	Malerkotla	Chlorpyrifos	0.82	0.2
	Cauliflower	May, 17	Patiala	Chlorpyrifos	0.25	0.01
	Cabbage	Jun, 17	Hoshiarpur	Chlorpyrifos	0.04	0.01
	Capsicum	Aug, 17	Hoshiarpur	Chlorpyrifos	0.90	0.2
	Capsicum	Sept,17	Hoshiarpur	Chlorpyrifos	0.90	0.2

Table 64: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Oct, 17	Fenugreek leaves	S. Sukhminder Singh	Dharamkot, Moga	NA	NA	Chlorpyrifos	1.55	0.2
Oct, 17	Fenugreek leaves	S. Mangal Singh	Gholian Kalan, Moga	NA	NA	Chlorpyrifos	2.33	0.2
Oct, 17	Spinach	S. Mangal Singh	Gholian Kalan, Moga	NA	NA	Chlorpyrifos	6.30	0.2
Nov, 17	Broccoli	Sh. Mohammad	Farour, Samrala	NA	NA	Chlorpyrifos	2.14	0.2

Regional Plant Quarantine Station, Chennai

A total of 967 samples of vegetables, fruits, curry leaves, rice, pulses and surface water were collected and analysed by the Chennai center. The samples were mainly collected from Bangalore, Trichy, Villupuram, Chennai and various other nearby areas. Out of all the samples analysed, 408 (42.2 %) samples were detected with measurable pesticide residues. In 25 (2.6 %) samples, pesticide residues gone beyond the prescribed limit of FSSAI. Commodity-wise monitoring results of RPQS, Chennai is given in table 65. Figure 21 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

Vegetable samples were collected from market, farmer's field and organic outlets. The residues were detected in the 98 (41.2 %) market samples, 113 (44.1 %) farmgate samples and 39 (40.2 %) organic samples. Most commonly detected pesticides were acephate, acetamiprid, chlorantraniliprole, chlorpyrifos, ethion, imidacloprid, methamidophos, profenophos, thiamethoxam and triazophos. The residues of 10 (4.2 %) market samples, 9 (3.5 %) farmgate samples and 3 (3.1 %) organic samples exceeded the MRL. The above MRL samples were found having residues of chlorantraniliprole, dimethoate, chlorpyrifos, indoxacarb, cyhalothrin lambda, imidacloprid, spinosad, thiamethoxam, triazophos and ethion.

The fruit samples which were found above MRL were detected with the residues of monocrotophos and the pulse samples which were found above MRL were detected with the residues of chlorpyrifos.

The most commonly detected non-approved pesticides were acephate, acetamiprid, bifenthrin, buprofezin, chlorantraniliprole, chlorpyrifos, cyhalothrin lambda, cypermethrin, ethion, fenpropathrin, imidacloprid, methamidophos, profenofos, propargite, thiamethoxam, triazophos etc. The details of market samples, farm gate and organic vegetable samples found above FSSAI MRL are provided in table 66, 67 and 68, respectively.

Table 65: Commodity-wise monitoring results of RPQS, Chennai

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Curry Leaves	92	10	82	82	0
Fruits	156	99	57	33	1
Pulses	112	97	15	14	2
Rice	4	0	4	0	0
Surface Water	12	12	0	0	0
Vegetable (Market)	238	140	98	84	10
Vegetables (Farmgate)	256	143	113	89	9
Vegetables (Organic)	97	58	39	32	3
Grand Total	967	559 (57.8 %)	408 (42.2 %)	334 (34.5 %)	25 (2.6 %)

TOTAL SAMPLE ANALYSED (967)

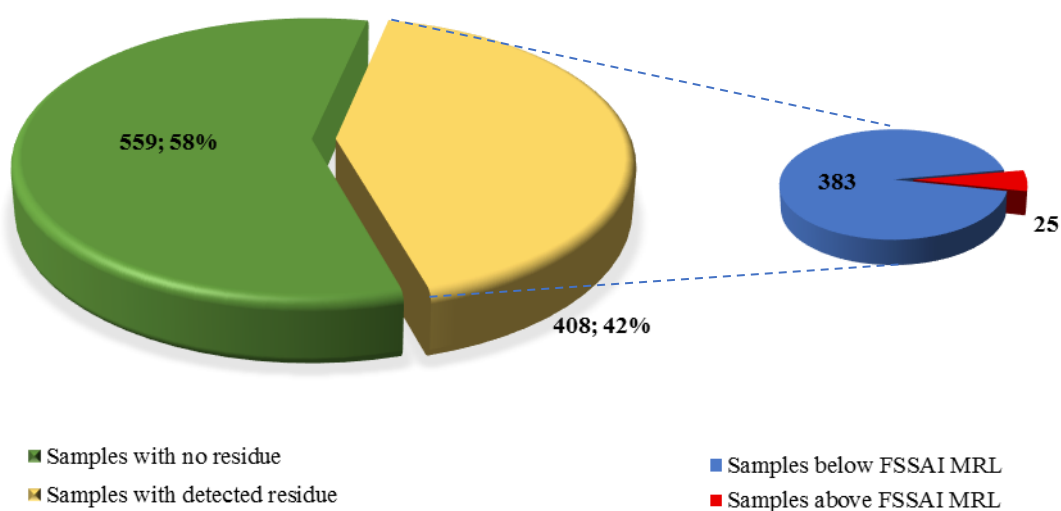


Figure 21: Graph presenting the number of samples analysed and samples with detection

Table 66: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Growing origin	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Fruits	Grapes	Sept, 17	Nanganallur, Chennai	Theni Dt, Tamil Nadu	Monocrotophos	1.05	1.0
Pulses	Black gram	Nov, 17	Retail Outlet	Myanmar	Chlorpyrifos	0.03	0.01
	Beans	Mar, 18	Retail Outlet	Myanmar	Chlorpyrifos	0.03	0.01
Vegetables	Green Chilli	May, 17	Retail Outlet	Norway	Triazophos	1.50	0.2
	Brinjal	Sept, 17	Retail Outlet	Doha	Imidacloprid	0.05	0.01

Commodity	Sample	Month	Collection Point	Growing origin	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
	Tomato	Oct, 17	Koyembedu Mkt, Chennai	Kholar	Thiamethoxam	0.02	0.01
	Tomato	Oct, 17	Gandhi Market, Trichy	Perambalur	Thiamethoxam	0.02	0.01
	Tomato	Nov, 17	Koyembedu Mkt, Chennai	Andhra Pradesh	Thiamethoxam	0.10	0.01
	Green chilli	Nov, 17	Retail Outlet	Norway	Triazophos	0.41	0.2
	Green chilli	Nov, 17	Retail Outlet	Norway	Ethion	3.46	1
					Spinosad	0.16	0.01
	Green chilli	Nov, 17	Retail Outlet	Norway	Triazophos	1.23	0.2
	Green Chilli	Dec, 17	Koyembedu Mkt, Chennai	Andhra Pradesh	Chlorantraniliprole	0.05	0.03
	Green Chilli	Dec, 17	Retail Outlet	Norway	Triazophos	0.34	0.2

Table 67: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block / tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Apr, 17	Green chilli	Mr.Saravanan, Salavathi Viilage, Tindivanam TK, Villupuram Dt	Salavathi, Villupuram Dt	Monostar	Monocrotophos 68 % WW	Monocrotophos	5.30	0.2
Sep, 17	Green Chilli	Malliga, Road Street, Peradikuppam, Tindivanam T.K, Villupuram(Dt)	Peradikuppam, Villupuram (Dt)	NA	NA	Monocrotophos	0.25	0.2
Nov, 17	Green chilli	Mr.Purusothaman, Thenpasar, Tindivanam T.K, Villupuram (Dt),	Thenpasar, Villupuram (Dt)	Aaatauk, ASATAF	Carbosulfan 25% EC, Acephate 75% SP	Indoxacarb	0.03	0.01
Dec, 17	Green Chilli	Mr.Mohan, Thalappallam, Thadangam (PO), Dharmapuri (Dt)	Thalapallam, Dharmapuri (Dt)	Mgacron START HENE Muslang	Monocrotophos 36 % SL Acephate 75% SP Lambda-Cyhalothrin 5% EC	Cyhalothrin Lambda	0.37	0.05
						Triazophos	2.39	0.2
Dec, 17	Broad Bean	198/PQS/TRY/V EG	Export Vegetable	Shekaran	Micheelepalam, Nilakkottai, Dindigul	Chlorpyrifos	0.32	0.2
JAN, 18	Green chilli	A.Kanagavel, Mealpeardikuppam, Ponniamman Kovil St, Villupuram Dt	Mealpeardikuppam, Villupuram (Dt)	Baadshah®	Acetampride 20 % SP	Chlorantraniliprole	0.06	0.03
Feb, 18	Tomato	Ms.Chandra, Throwpathi Amman Koil St, Pamoondi, Villupuram (Dt)	Pamoondi, Villupuram (Dt)	NA	NA	Chlorantraniliprole	0.04	0.03

Month of collection	Sample	Farmer's Name	Collection Point (village/block / tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Mar, 18	Brinjal	Mr.K .Murugan, 4/131 Palamgoandan Kottai, Eachampatti (TK), Dharmapuri (Dt).	Palamgoandan Kottai, Dharmapuri (Dt)	Coragen® & Splendor® & ULTIMO®	Chlorantraniliprole-18.5% w/w SC & Thiacloprid-21.7% & Imidacloprid-17.8% SL	Imidacloprid	0.27	0.2
Mar, 18	Green chilli	Mr.Perumal, Omalnattham, Ealagiri (PO), Dharmapuri (Dt)	Omalnattham, Dharmapuri (Dt)	FASI® & Shourya®	Acephate-75% SP & Profenophos-50% EC	Monocrotophos	2.78	0.2

Table 68: Details of organic samples above FSSAI MRL

Month	Sample	Collection Point	Sample origin/Growing area	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Oct, 17	Green chilli	Green Mandra Organics, Nanganallur, Chennai	Madhuranthagam, Kancheepuram (Dt)	Dimethoate	0.93	0.5
Nov, 17	Green chilli	Green Mandra Organics, Nanganallur, Chennai	Bangalore	Chlorantraniliprole	0.06	0.03
Dec, 17	Green Chilli	Pushtida Organics, Nanganallur, Chennai	Trichy	Chlorantraniliprole	0.04	0.03

Central Island Agricultural Research Institute, Port Blair

CIARI, Port Blair collected a total of 195 samples of vegetables, fruits, rice and pulses, mainly from the areas of South Andaman such as Bathubasti, Chouldari, Guptapara, Hasmatabad, Humphrygunj, Manglutan, Namunaghar, Calicut and Wandoor. The samples were collected by CIARI, Port Blair and transported to RPQS, Chennai for pesticide residue analysis. The pesticide residues were detected in 62 (31.8 %) samples and 5 (2.6 %) samples exceeded the FSSAI MRL. The commodity-wise breakdown of the sample analysed by CIARI, Port Blair is provided in Table 69. Figure 22 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

Vegetable samples were collected from market and farmer's field. The residues were detected in the 50 (32.1 %) market samples and 10 (35.7 %) farmgate samples. Most commonly detected pesticides were acetamiprid, chlorpyrifos, imidacloprid, methamidophos, profenofos and thiamethoxam. The residues of imidacloprid, acetamiprid, chlorantraniliprole, chlorpyrifos and fenpropathrin in 5 (3.2 %) market samples exceeded the MRL.

The most commonly detected non-approved pesticides were acephate, acetamiprid, methamidophos, profenofos etc. The details of market samples found above FSSAI MRL are provided in table 70.

Table 69: Commodity-wise monitoring results of CIARI, Port Blair

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Fruits	6	6	0	0	0
Pulses	3	3	0	0	0
Rice	2	0	2	0	0
Vegetable (Market)	156	106	50	38	5
Vegetables (Farmgate)	28	18	10	9	0
Grand Total	195	133 (68.2 %)	62 (31.8 %)	47 (24.1 %)	5 (2.6 %)

TOTAL SAMPLE ANALYSED (195)

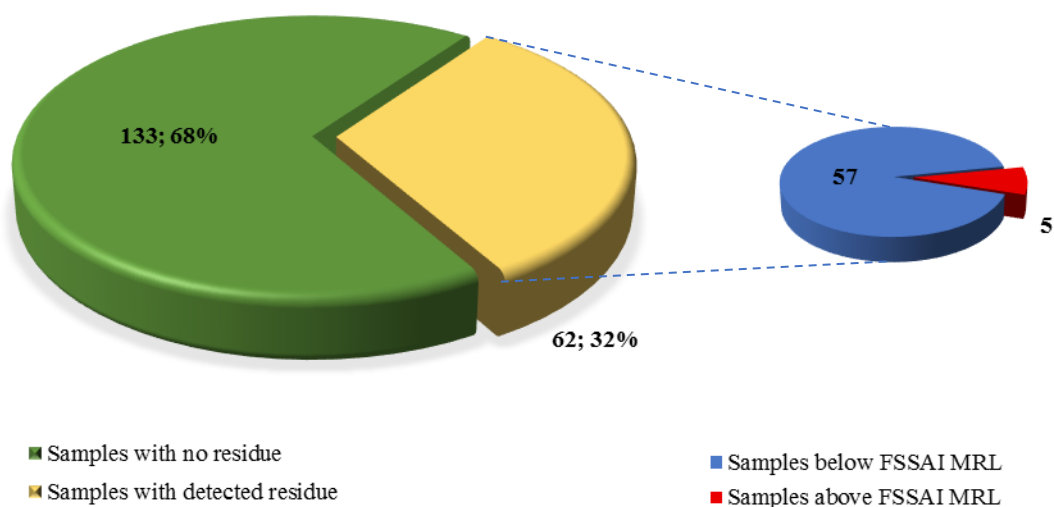


Figure 22: Graph presenting the number of samples analysed and samples with detection

Table 70: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Vegetables	Brinjal	Jul, 17	New Bimbliton, South Andaman	Imidacloprid	0.04	0.01
	Okra	Dec, 17	Bathu Basti Market, South Andaman	Acetamiprid	0.24	0.1
	Brinjal	Jan, 18	Bathu Basti Market, South Andaman	Chlorantranili prole	0.04	0.03
	Coriander leaves	Feb, 18	N & M Andaman District	Chlorpyrifos	1.09	0.2
	Green Chilli	Mar, 18	Guptapara, South Andaman	Fenpropathrin	0.73	0.2

Regional Plant Quarantine Station, Mumbai

A total of 802 samples of fruits, vegetables, rice, wheat, pulses, oilseeds, curry leaves and red chilli powder, were collected and analysed by Mumbai centre. The samples were collected from Vile Parle, Vashi, Byculla, Nagpur, Nashik and other nearby locations. The center also collect and analyse import samples from Iran, Greece, Egypt, Vietnam, Spain, South Africa, Turkey, USA, Chile, Italy, etc. The pesticide residues were detected in 58 (7.2 %) samples and 4 (0.5 %) samples were found above FSSAI MRL. The commodity-wise breakdown of the sample analysed by RPQS, Mumbai is provided in Table 71. Figure 23 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

Overall, 493 vegetable samples were collected and analysed from market, farmer's field and organic outlets; from which residues were detected 16 (8 %) market samples and 3 (1.1 %) farmgate samples. Most commonly detected pesticides were chlorpyrifos and cyhalothrin lambda. The 3 (1.5 %) market samples detected with chlorpyrifos and cyhalothrin lambda were found above MRL. Other than vegetable samples, one fruit sample detected with residues of carbendazim was also found exceeding MRL.

The most commonly detected non-approved pesticides were bifenthrin, chlorpyrifos, cyhalothrin lambda, ethion etc. Table 72 given below is providing the details of market samples which exceeded FSSAI MRL.

Table 71: Commodity-wise monitoring results of RPQS, Mumbai

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Curry Leaves	33	23	10	10	0
Fruits	138	114	24	3	1
Oilseeds	6	6	0	0	0
Pulses	24	24	0	0	0
Red Chilli Powder	10	5	5	5	0
Rice	60	60	0	0	0
Vegetable (Market)	200	184	16	27	3
Vegetables (Farmgate)	269	266	3	4	0
Vegetables (Organic)	24	24	0	0	0

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Wheat	38	38	0	0	0
Grand Total	802	744 (92.8 %)	58 (7.2 %)	49 (6.1 %)	4 (0.5 %)

TOTAL SAMPLE ANALYSED (802)

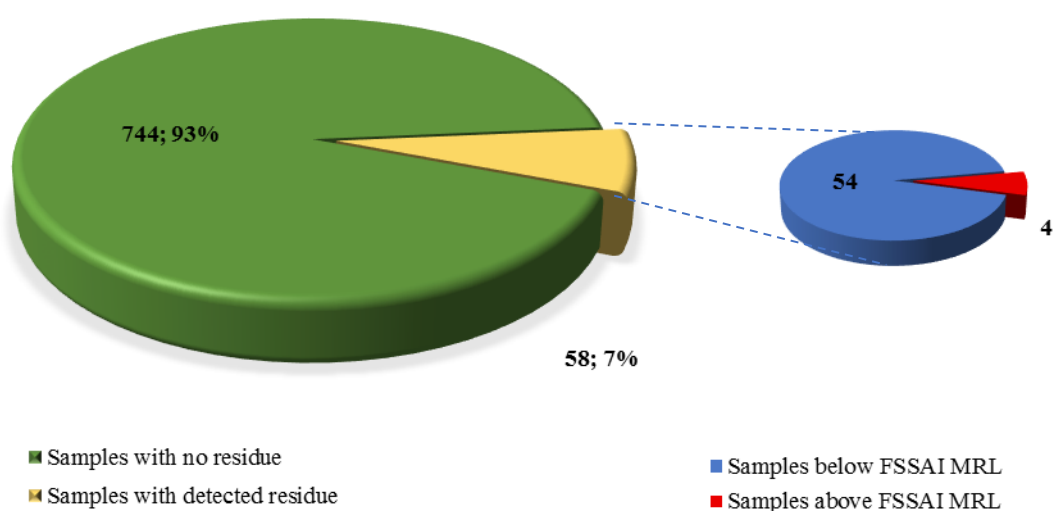


Figure 23: Graph presenting the number of samples analysed and samples with detection

Table 72: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Fruits	Grapes	May, 17	Vashi	Carbendazim	0.61	0.1
Vegetables	Cauliflower	May, 17	Vashi	Chlorpyrifos	0.28	0.01
	Green chilli	Nov, 17	Byculla	Cyhalothrin Lambda	0.26	0.05
	Green Chilli	Dec, 17	DADAR	Cyhalothrin Lambda	0.20	0.05

Sri Karan Narendra Agriculture University, Jaipur

Overall, 907 samples of various food commodities and surface water were collected and analysed by Jaipur centre for the possible presence of pesticide residues. The pesticide residues were detected in 71 (7.8 %) samples and residues in 3 (0.3 %) samples exceeded the FSSAI MRL. The samples were mainly collected from Dausa, Jaipur, Ajmer and Alwar. The commodity-wise breakdown of the sample analysed by SKNAU, Jaipur is provided in Table 73. Figure 24 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

The 501 vegetable samples were collected from market and farmer's field. The residues were detected in 8 (3.6 %) market samples and 23 (8.2 %) farmgate samples. Most commonly detected pesticides were chlorpyrifos, ethion, profenofos and phorate sulfone. The 2 (0.9 %) market samples detected with the residues of chlorpyrifos and one (0.4 %) farmgate sample detected with the residues of pendimethalin were found above MRL.

The most commonly detected non-approved pesticides were dithiocarbamate, ethion, chlorpyrifos, profenofos, triazophos etc. The details of market samples and farm gate vegetable samples found above FSSAI MRL is provided in table 74 & 75, respectively.

Table 73: Commodity-wise monitoring results of SKNAU, Jaipur

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Milk	36	36	0	0	0
Pulses	72	71	1	1	0
Red Chilli Powder	35	28	7	7	0
Rice	72	72	0	0	0
Spices	95	63	32	32	0
Surface Water	24	24	0	0	0
Vegetable (Market)	221	213	8	2	2
Vegetables (Farmgate)	280	257	23	10	1
Wheat	72	72	0	0	0
Grand Total	907	836 (92.2 %)	71 (7.8 %)	52 (5.7 %)	3 (0.3 %)

TOTAL SAMPLE ANALYSED (907)

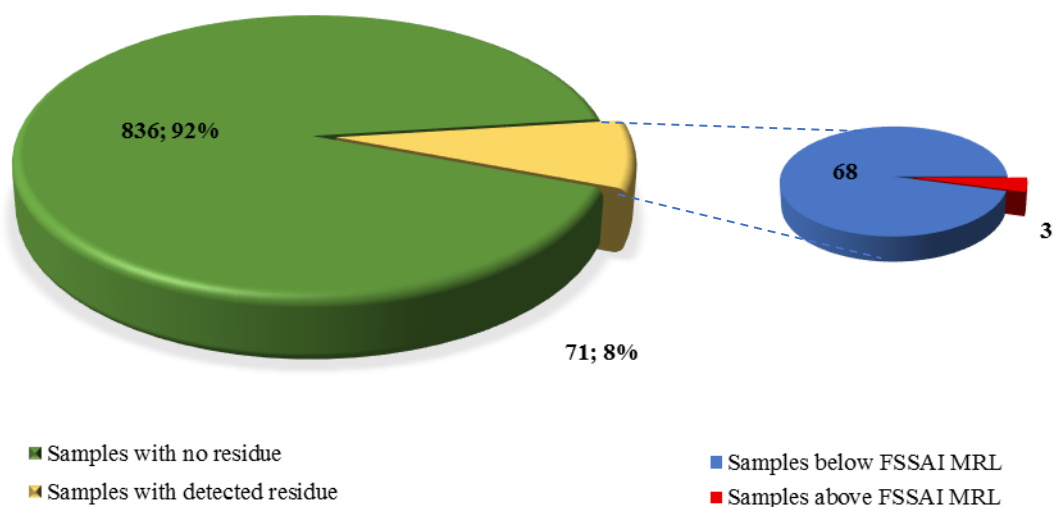


Figure 24: Graph presenting the number of samples analysed and samples with detection

Table 74: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Vegetables	Coriander leaves	Jun, 17	Retail Outlet	Chlorpyrifos	0.51	0.2
	Cabbage	Jul, 17	Retail Outlet	Chlorpyrifos	0.13	0.01

Table 75: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Mar, 18	Green chilli	Banwari lal/ramwtar	Benada/bassi jaipur	Tiger	Acephate	Pendimethalin	0.31	0.05

Tamil Nadu Agricultural University, Coimbatore

A total of 1,294 samples of various food commodities and surface water were collected and analysed by TNAU, Coimbatore. The samples were collected from retail outlets of Coimbatore, Dindigul, Erode, Trichy, Athani, Hosur, Karamadai, Nagapatnam, Gobichettipalayam and Yercaud. The pesticide residues were detected in 308 (23.8 %) samples and in 62 (4.8 %) samples, residues exceeded the prescribed FSSAI limit. The commodity-wise breakdown of the sample analysed by TNAU, Coimbatore is provided in Table 76. Figure 25 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

The center collected 526 vegetable samples from market and farmer's field. The residues were detected in 31 (12.9 %) market samples and 44 (15.4 %) farmgate samples. Most commonly detected pesticides were emamectin benzoate, flubendiamide, profenofos and triazophos. The 14 (4.9 %) farm gate samples detected with the residues of chlorantraniliprole, flubendiamide, cyhalothrin lambda, triazophos and ethion exceeded the FSSAI MRL and 3 (1.3 %) market samples detected with the residues of cypermethrin and flubendiamide exceeded the FSSAI MRL.

The 44 (44 %) samples of spice and one (1.4 %) pulse sample having residues of quinalphos, cyhalothrin lambda and chlorpyrifos, respectively were found exceeding FSSAI MRL.

The most commonly detected non-approved pesticides were bifenthrin, chlorpyrifos, cyhalothrin lambda, cypermethrin, dimethoate, emamectin benzoate, flubendiamide, ethion, profenofos, quinalphos, triazophos etc. The details of market samples and farm gate vegetable samples found above FSSAI MRL is provided in table 77 & 78, respectively.

Table 76: Commodity-wise monitoring results of TNAU, Coimbatore

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Curry Leaves	171	66	105	105	0
Fish/Marine	60	60	0	0	0
Fruits	112	92	20	11	0

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Pulses	74	69	5	4	1
Red Chilli Powder	96	40	56	56	0
Rice	72	72	0	0	0
Spices	100	53	47	46	44
Surface Water	23	23	0	0	0
Tea	60	60	0	0	0
Vegetable (Market)	240	209	31	23	3
Vegetables (Farmgate)	286	242	44	35	14
Grand Total	1294	986 (76.2 %)	308 (23.8 %)	280 (21.6 %)	62 (4.8 %)

TOTAL SAMPLE ANALYSED (1294)

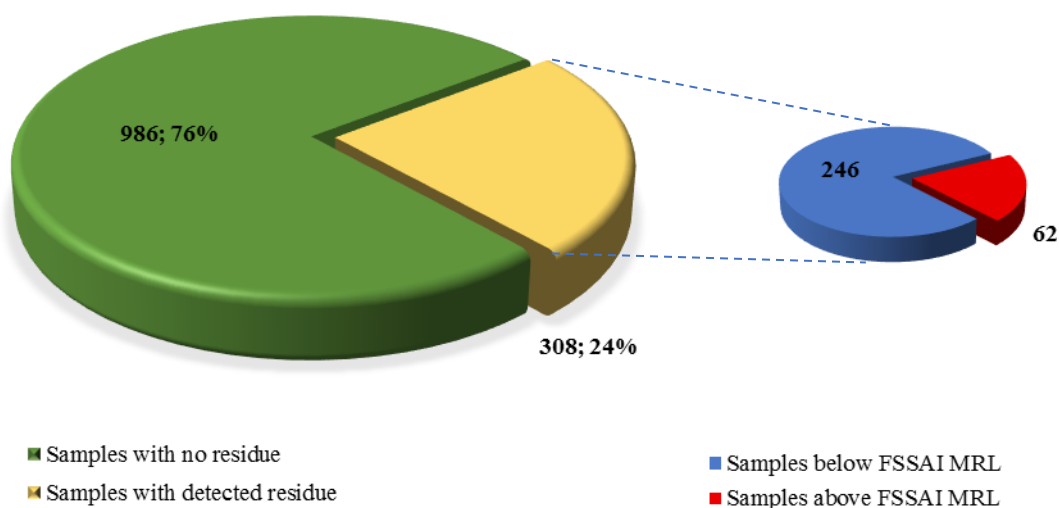


Figure 25: Graph presenting the number of samples analysed and samples with detection

Table 77: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Pulses	Green gram	Dec, 17	Retail Outlet	Chlorpyrifos	0.05	0.01
Spices	Cardamom	Apr, 17	Retail Outlet	Quinalphos	0.57	0.01
	Cardamom	Apr, 17	Retail Outlet	Quinalphos	0.14	0.01
	Cardamom	May, 17	Retail Outlet	Quinalphos	0.84	0.01
	Cardamom	May, 17	Retail Outlet	Quinalphos	0.32	0.01
	Cardamom	Jun, 17	Retail Outlet	Quinalphos	0.25	0.01
	Cardamom	Jul, 17	Retail Outlet	Quinalphos	0.56	0.01
	Cardamom	Jul, 17	Retail Outlet	Quinalphos	0.67	0.01

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
	Cardamom	Aug, 17	Retail Outlet	Quinalphos	0.12	0.01
	Cardamom	Sept, 17	Retail Outlet	Quinalphos	2.77	0.01
	Cardamom	Sept, 17	Retail Outlet	Quinalphos	0.45	0.01
	Cardamom	Oct, 17	Retail Outlet	Quinalphos	0.15	0.01
	Cardamom	Nov, 17	Retail Outlet	Quinalphos	1.08	0.01
	Cardamom	Nov, 17	Retail Outlet	Quinalphos	1.38	0.01
	Cardamom	Dec, 17	Retail Outlet	Quinalphos	0.30	0.01
	Cardamom	Dec, 17	Retail Outlet	Quinalphos	0.44	0.01
	Cardamom	Dec, 17	Retail Outlet	Quinalphos	0.28	0.01
	Cardamom	Dec, 17	Retail Outlet	Quinalphos	0.82	0.01
	Cardamom	Dec, 17	Retail Outlet	Quinalphos	0.34	0.01
	Cardamom	Dec, 17	Retail Outlet	Quinalphos	0.61	0.01
	Cardamom	Dec, 17	Retail Outlet	Quinalphos	0.86	0.01
	Cardamom	Dec, 17	Retail Outlet	Quinalphos	0.55	0.01
	Cardamom	Jan, 18	Retail Outlet	Quinalphos	0.70	0.01
	Cardamom	Jan, 18	Retail Outlet	Quinalphos	0.68	0.01
	Cardamom	Jan, 18	Retail Outlet	Quinalphos	0.75	0.01
	Cardamom	Jan, 18	Retail Outlet	Quinalphos	0.99	0.01
	Cardamom	Jan, 18	Retail Outlet	Cyhalothrin Lambda	0.57	0.01
	Cardamom	Jan, 18	Retail Outlet	Cyhalothrin Lambda	0.70	0.01
	Cardamom	Jan, 18	Retail Outlet	Cyhalothrin Lambda	0.67	0.01
	Cardamom	Jan, 18	Retail Outlet	Cyhalothrin Lambda	0.97	0.01
	Cardamom	Feb, 18	Retail Outlet	Quinalphos	0.46	0.01
	Cardamom	Feb, 18	Retail Outlet	Quinalphos	0.29	0.01
	Cardamom	Feb, 18	Retail Outlet	Quinalphos	0.28	0.01
	Cardamom	Feb, 18	Retail Outlet	Quinalphos	0.36	0.01
	Cardamom	Feb, 18	Retail Outlet	Quinalphos	0.17	0.01
	Cardamom	Feb, 18	Retail Outlet	Quinalphos	0.24	0.01
	Cardamom	Feb, 18	Retail Outlet	Quinalphos	0.59	0.01
	Cardamom	Mar, 18	Nilgiris, Tamil Nadu	Quinalphos	0.28	0.01
	Cardamom	Mar, 18	Nilgiris, Tamil Nadu	Quinalphos	0.3	0.01
	Cardamom	Mar, 18	Coimbatore, Tamil Nadu	Quinalphos	0.37	0.01
	Cardamom	Mar, 18	Erode, Tamil Nadu	Quinalphos	0.58	0.01
	Cardamom	Mar, 18	Villupuram, Tamil Nadu	Quinalphos	0.19	0.01
	Cardamom	Mar, 18	Dindigul, Tamil Nadu	Quinalphos	0.73	0.01
	Cardamom	Mar, 18	Dindigul, Tamil Nadu	Quinalphos	0.47	0.01
	Cardamom	Mar, 18	Salem, Tamil Nadu	Quinalphos	0.51	0.01
Vegetables	Brinjal	Sept, 17	Retail Outlet	Cypermethrin	0.57	0.2
	Brinjal	Mar, 18	Coimbatore, Tamil Nadu	Flubendiamide	1.54	0.1

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
	Tomato	Mar, 18	Coimbatore, Tamil Nadu	Flubendiamide	8.36	2

Table 78: Details of farm gate samples above FSSAI MRL

Month of collection	Sample	Farmer's Name	Collection Point (village/block/tehsil/district)	Trade Name	Chemical Name	Pesticide Detected	Residues (mg/kg)	FSSAI MRL value (mg/kg)
Nov, 17	Green chilli	R. Subramani	Chittanatham/Manapara/Trichy	NA	Wilcore, Willomite, Prolifier Isab	Ethion	8.14	1
Nov, 17	Green chilli	R. Subramani	Chittanatham/Manapara/Trichy	NA	Wilcore, Willomite, Prolifier Isab	Ethion	4.78	1
Dec, 17	Green Chilli	I. Ilayaraja	Seetharamapuram/Alathur/Perambalur	NA	NA	Cyhalothrin Lambda	0.22	0.05
JAN, 18	Green chilli	R. Chinnappan	Seetharamapuram/Alathur/Perambalur	NA	NA	Triazophos	1.30	0.2
Mar, 18	Brinjal	Suresh	Kavalkarranpatti/Kulithalai/Karur	NA	NA	Flubendiamide	2.73	0.1
Mar, 18	Brinjal	Marimuthu	Aravathiursandai/Thayanur/Trichy	NA NA	NA NA	Flubendiamide Chlorantraniliprole	3.79 0.10	0.1 0.03
Mar, 18	Brinjal	Inbaraj	Thayanur/Thayanur/Trichy	NA	NA	Flubendiamide	5.46	0.1
Mar, 18	Brinjal	Rasathi	Thayanur/Thayanur/Trichy	NA	NA	Flubendiamide Chlorantraniliprole	12.26 0.08	0.1 0.03
Mar, 18	Brinjal	Rasayi	Thayanur/Thayanur/Trichy	NA	NA	Flubendiamide	25.67	0.1
Mar, 18	Brinjal	Pitchai	Mellapatti/Kulithalai/Karur	NA	NA	Flubendiamide	9.23	0.1
Mar, 18	Brinjal	Pandiyan	Mellapatti/Kulithalai/Karur	NA	NA	Chlorantraniliprole	0.09	0.03
Mar, 18	Brinjal	Ravi	Mellapatti/Kulithalai/Karur	NA	NA	Flubendiamide	5.66	0.1
Mar, 18	Brinjal	Selvam	Mellapatti/Kulithalai/ Karur	NA	NA	Flubendiamide Chlorantraniliprole	10.77 0.11	0.1 0.03
Mar, 18	Brinjal	Raji	Mellapatti/Kulithalai/Karur	NA	NA	Flubendiamide	6.50	0.1

Export Inspection Agency - Kolkata, Mumbai and Kochi

Under DAC sponsored scheme, “Monitoring of Pesticide Residues at National Level”, the Export Inspection Council has been sub-contracted to collect and analyze samples from uncovered states such as Jammu & Kashmir, Uttrakhand, Kerela, Karnataka, Bihar, Jharkhand, Madhya Pradesh, Odisha, Chhattisgarh and Meghalaya. Overall, 2044 samples of vegetables, rice and spices were collected and analysed by the EIA centres located in Kolkata, Kochi and Mumbai. The commodity-wise breakdown of the sample analysed is provided in Table 79. Figure 26 depicts the number of samples analysed, samples with residue detection and samples above FSSAI MRL.

EIA, Kolkata collected a total of 1,111 vegetable samples from the retail outlets, markets and APMC of Bhubaneswar, Guwahati, Patna, Ranchi and Shillong. Out of all the samples analysed, the pesticides residues were detected in 175 (15.8 %) samples and no sample was found with residues exceeding FSSAI MRL. Most commonly detected pesticides were 4-bromo-2-chlorophenol, acephate, chlorpyrifos, cyhalothrin lambda, deltamethrin, dichlorvos, ethion, fenprothrin, methamidophos, profenofos and triazophos.

EIA, Mumbai collected a total of 873 samples, 795 samples of vegetable and 78 samples of rice from the retail outlets, markets and APMC of Bhubaneswar, Dehradun, Guwahati, Indore, Jammu, Patna, Raipur, Ranchi and Shillong. Out of all the samples analysed, residues were detected in 301 (37.9 %) vegetable samples and 73 (93.6 %) rice samples. Most commonly detected pesticides were acephate, acetamiprid, carbendazim, chlorpyrifos, imidacloprid, methamidophos, omethoate, thiamethoxam and triazophos. The residues detected in 44 (5.5 %) vegetable samples and 35 (44.9 %) rice samples exceeded the FSSAI MRL. The residues of acetamiprid, buprofezin, carbendazim, chlorpyrifos, fenprothrin, imidacloprid, isoprothiolane, spinosad and thiamethoxam were found exceeding MRL in vegetable and rice samples.

EIA, Kochi collected a total of 60 samples of spice (pepper), from the retail outlets, markets and APMC of Calicut, Kochi, Adimali, Alappuzha, Aluva, Chikmangaluru, Kottayam and Mangalore. Out of all the samples analysed, residues were detected in 22 (36.7 %) pepper samples and 4 (6.7 %) samples were found with residues of

quinalphos exceeding FSSAI MRL. Most commonly detected pesticides were chlorpyrifos, cypermethrin, imidacloprid and quinalphos.

The most commonly detected non-approved pesticides in all the samples were 4-bromo-2-chlorophenol, acephate, acetamiprid, cypermethrin, chlorpyrifos, fenpropathrin, imidacloprid, methamidophos, profenofos, omethoate, thiamethoxam, triazophos etc. Table 80 given below is providing the details of market samples analysed by EIA, Kolkata, EIA, Kochi & EIA, Mumbai, exceeding FSSAI MRL.

Table 79: Commodity-wise monitoring results of EIA, Kolkata, EIA Kochi & EIA, Mumbai

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Rice	78	5	73	5	35
Spices	60	38	22	20	4
Vegetable (Market)	1906	1430	476	313	44
Grand Total	2044	1473 (72.1 %)	571 (27.9 %)	338 (16.5 %)	83 (4.1 %)

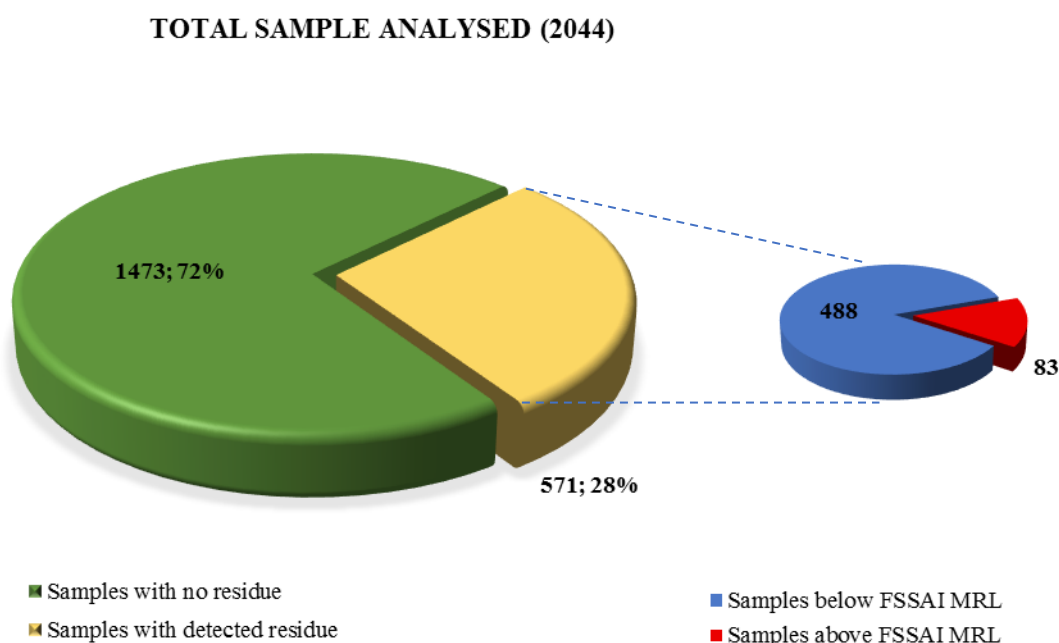


Figure 26: Graph presenting the number of samples analysed and samples with detection

Table 80: Details of market samples above FSSAI MRL

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
Rice	Rice	Apr, 17	Dehradun	Imidacloprid	0.12	0.05
	Basmati rice	Jun, 17	Raipur	Isoprothiolane	0.17	0.1
	Basmati rice	Jun, 17	Bhubaneshwar	Isoprothiolane	0.17	0.1
	Basmati rice	Jul, 17	Patna	Isoprothiolane	0.11	0.1
	Basmati rice	Jul, 17	Patna	Isoprothiolane	0.11	0.1
	Basmati Rice	Aug, 17	Dehradun	Carbendazim	0.15	0.12
				Isoprothiolane	0.32	0.1
	Basmati Rice	Sept, 17	Jammu	Buprofezin	0.28	0.05
	Basmati Rice	Sept, 17	Guwahati	Isoprothiolane	0.13	0.1
	Basmati Rice	Sept, 17	Guwahati	Isoprothiolane	0.16	0.1
	Basmati rice	Oct, 17	Jammu	Buprofezin	0.06	0.05
	Basmati rice	Oct, 17	Shillong	Isoprothiolane	0.14	0.1
	Basmati rice	Oct, 17	Shillong	Isoprothiolane	0.20	0.1
	Basmati rice	Nov, 17	Dehradun	Buprofezin	0.06	0.05
	Basmati Rice	Dec, 17	Indore	Isoprothiolane	0.16	0.1
	Basmati Rice	Dec, 17	Raipur	Buprofezin	0.09	0.05
	Basmati Rice	Dec, 17	Dehradun	Buprofezin	0.06	0.05
				Isoprothiolane	0.13	0.1
	Basmati Rice	Dec, 17	Patna	Isoprothiolane	0.18	0.1
	Basmati Rice	Dec, 17	Patna	Isoprothiolane	0.13	0.1
	Basmati rice	Jan, 18	Dehradun	Buprofezin	0.07	0.05
	Basmati rice	Jan, 18	Jammu	Buprofezin	0.09	0.05
	Basmati rice	Jan, 18	Patna	Buprofezin	0.06	0.05
				Isoprothiolane	0.28	0.1
	Basmati rice	Jan, 18	Patna	Buprofezin	0.07	0.05
				Isoprothiolane	0.30	0.1
	Basmati rice	Feb, 18	Indore	Buprofezin	0.07	0.05
	Basmati rice	Feb, 18	Jammu	Buprofezin	0.10	0.05
	Basmati rice	Feb, 18	Guwahati	Buprofezin	0.07	0.05
	Basmati rice	Feb, 18	Guwahati	Buprofezin	0.08	0.05
				Isoprothiolane	0.13	0.1
	Basmati rice	Mar, 18	Indore	Buprofezin	0.09	0.05
	Basmati rice	Mar, 18	Raipur	Buprofezin	0.06	0.05
	Basmati rice	Mar, 18	Jammu	Buprofezin	0.14	0.05
				Isoprothiolane	0.61	0.1
	Basmati rice	Mar, 18	Guwahati	Buprofezin	0.08	0.05
				Isoprothiolane	0.39	0.1
	Basmati rice	Mar, 18	Guwahati	Isoprothiolane	0.12	0.1
	Basmati rice	Mar, 18	Guwahati	Buprofezin	0.08	0.05
				Isoprothiolane	0.32	0.1
Basmati rice	Mar, 18	Guwahati	Buprofezin	0.06	0.05	
			Isoprothiolane	0.13	0.1	
Basmati rice	Mar, 18	Shillong	Buprofezin	0.08	0.05	

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
				Isoprothiolane	0.39	0.1
	Basmati rice	Mar, 18	Shillong	Isoprothiolane	0.11	0.1
Vegetables	Tomato	Apr, 17	Jammu	Thiamethoxam	0.02	0.01
	Cabbage	May, 17	Indore	Carbendazim	0.56	0.5
				Chlorpyrifos	0.06	0.01
	Cabbage	May, 17	Indore	Chlorpyrifos	0.05	0.01
	Cauliflower	May, 17	Indore	Chlorpyrifos	0.49	0.01
	Cauliflower	May, 17	Indore	Spinosad	0.03	0.02
	Okra	May, 17	Indore	Carbendazim	1.56	0.5
	Tomato	May, 17	Raipur	Thiamethoxam	0.02	0.01
				Carbendazim	0.54	0.5
	Cauliflower	May, 17	Dehradun	Carbendazim	1.01	0.5
	Tomato	May, 17	Dehradun	Carbendazim	0.72	0.5
	Cabbage	May, 17	Dehradun	Carbendazim	6.03	0.5
	Okra	May, 17	Jammu	Carbendazim	6.75	0.5
	Tomato	May, 17	Jammu	Thiamethoxam	0.09	0.01
	Cauliflower	Jun, 17	Raipur	chlorpyrifos	0.14	0.01
	Cabbage	Jun, 17	Dehradun	Carbendazim	0.52	0.5
	Cauliflower	Jun, 17	Dehradun	chlorpyrifos	0.04	0.01
	Cabbage	Jun, 17	Dehradun	chlorpyrifos	0.39	0.01
	Cauliflower	Jun, 17	Jammu	Carbendazim	5.43	0.5
	Cauliflower	Jun, 17	Jammu	Carbendazim	5.11	0.5
	Tomato	Jul, 17	Indore	Thiamethoxam	0.02	0.01
	Cauliflower	Jul, 17	Indore	Carbendazim	0.52	0.5
	Tomato	Jul, 17	Indore	Thiamethoxam	0.02	0.01
	Tomato	Jul, 17	Raipur	Thiamethoxam	0.03	0.01
	Brinjal	Jul, 17	Dehradun	Imidacloprid	0.03	0.01
	Cauliflower	Jul, 17	Jammu	Carbendazim	0.99	0.5
	Brinjal	Jul, 17	Jammu	Imidacloprid	0.03	0.01
	Tomato	Aug, 17	Indore	Thiamethoxam	0.05	0.01
	Cauliflower	Aug, 17	Indore	Chlorpyrifos	0.08	0.01
	Okra	Aug, 17	Raipur	Carbendazim	3.51	0.5
	Brinjal	Aug, 17	Raipur	Imidacloprid	0.02	0.01
	Tomato	Aug, 17	Jammu	Carbendazim	2.88	0.5
	Cabbage	Sept, 17	Jammu	Chlorpyrifos	0.02	0.01
Brinjal	Oct, 17	Raipur	Imidacloprid	0.04	0.01	
Brinjal	Oct, 17	Raipur	Imidacloprid	0.02	0.01	
Tomato	Oct, 17	Dehradun	Thiamethoxam	0.02	0.01	
Tomato	Oct, 17	Jammu	Thiamethoxam	0.03	0.01	
Tomato	Nov, 17	Raipur	Thiamethoxam	0.04	0.01	
Okra	Dec, 17	Indore	Acetamiprid	0.21	0.1	
Tomato	Dec, 17	Raipur	Thiamethoxam	0.03	0.01	
Okra	Dec, 17	Raipur	Acetamiprid	0.35	0.1	
Tomato	Dec, 17	Raipur	Thiamethoxam	0.02	0.01	
Tomato	Dec, 17	Dehradun	Thiamethoxam	0.03	0.01	

Commodity	Sample	Month	Collection Point	Pesticides Detected	Residues (mg/kg)	FSSAI MRL Value (mg/kg)
	Okra	Dec, 17	Jammu	Acetamiprid	0.02	0.1
	Tomato	Feb, 18	Raipur	Fenprothrin	0.04	0.01
	Tomato	Mar, 18	Raipur	Thiamethoxam	0.07	0.01
Spices	Pepper	Dec, 18	Kottayam	Quinalphos	0.06	0.01
	Pepper	Dec, 18	Kottayam	Quinalphos	0.54	0.01
	Pepper	Jan, 18	KOCHI	Quinalphos	0.13	0.01
	Pepper	Jan, 18	Chikmangaluru	Quinalphos	1.30	0.01

Centre for Analysis & Learning in Livestock & Food, National Dairy Development Board, Anand

Under MPRNL, the CALF, NDDDB, Anand has been sub-contracted to collect and analyze samples from uncovered districts of Gujrat, Rajasthan and Madhya Pradesh. The center collected the samples from Rajkot, Kheda, Ahmedabad, Udaipur, Ratlam, Ujjain and Chittorgarh. A total of 193 samples were analysed, from which residues were detected in the 15 (7.8 %) samples and none of the pesticide was found exceeding FSSAI MRL. 14 (7.2 %) samples were detected with the non-approved pesticides.

The center analysed samples of vegetables and milk samples. The vegetable samples were collected from retail outlets, farmer's field and organic outlets. The detection was found in 11 market samples and 4 farmgate samples. Most commonly detected pesticides were cypermethrin, cyhalothrin lambda, imidacloprid, monocrotophos, thiamethoxam and ethion.

Commodity	No. of sample analysed	Samples with no detected residues	Samples with detected residues	Samples with detection of non-approved pesticides	Samples above FSSAI MRL
Milk	6	6	0	0	0
Vegetable (Market)	87	76	11	10	0
Vegetables (Farmgate)	86	82	4	4	0
Vegetables (Organic)	14	14	0	0	0
Grand Total	193	178 (92.2%)	15 (7.8 %)	14 (7.2 %)	0

ANNEXURE I

Results of National and International PT/ ILC programme participated by centres during 2017-18

Name of the Centre	Whether PT/ ILC	Conducted by	Month, Year	Commodity	Pesticide Detected	Z-Score
AAU, Anand	PT	NIPHM, Hyderabad	July, 2017	Chana Dal Powder	Fenvalerate	0.77
					Cyhalothrin-Lambda	0.21
					Malathion	0.96
					Monocrotophos	1.3
					Lindane	0.55
					a-Endosulfan	-0.66
					Fenpropathrin	0.1
					Carbaryl	-0.23
	b-Endosulfan	-0.37				
	PT	NIPHM, Hyderabad	July, 2017	Capsicum Puree	Chlorpyrifos	-0.72
					Quinalphos	-1.13
					Bifenthrin	-0.97
					b-HCH	-1.86
					Endosulfan sulphate	-1.98
	ILC	IARI, New Delhi	December, 2017	Rice	Cypermethrin	1.45
					Deltamethrin	1.29
	PT	NIPHM, Hyderabad	January, 2018	Water	Lindane	1.93
					Endosulfan sulphate	0.22
					Chlorpyrifos	-1.14
Butachlor					1.45	
Alachlor					1.94	
PT	NIPHM, Hyderabad	January, 2018	Pomegranate	Chlorpyrifos	-0.17	
				Monocrotophos	0.93	
				Dimethoate	-0.18	
				Acetamiprid	-0.01	
				Emamectin benzoate	0.42	
				Profenofos	0.44	
				Cyhalothrin-Lambda	1.38	
				Deltamethrin	0.38	
BVC, Mumbai	ILC	WRRL dept. of BVC, Parel, Mumbai	November, 2017	Raw Fish	Gamma HCH	-0.07
					Aldrin	0.11
					b-Endosulfan	-1.75
					p,p'-DDD	0.9
IIHR, Bangalore	PT	NIPHM, Hyderabad	July, 2017	Chana dal	Fenvalerate	1.75
					Cyhalothrin-Lambda	0.76
					Malathion	0.47
					Monocrotophos	-1.91
					Lindane	0.27
					a-Endosulfan	0.61
					Fenpropathrin	0.64
	b-Endosulfan	0.28				
	PT	LGC Promochem (USA)	July, 2017	Kiwi fruit	Fenpropathrin	0.56
					Parathion methyl	-0.75
	PT	Aashavi proficiency Testing & Analytical Services, Hyderabad	January, 2018	Water	Alpha HCH	-1.23
					Beta HCH	-0.18
					Gamma HCH	-0.52
					Delta HCH	-0.76
Chlorpyrifos					-1.16	
PT			Pomegranate	Chlorpyrifos	1.73	

Name of the Centre	Whether PT/ ILC	Conducted by	Month, Year	Commodity	Pesticide Detected	Z-Score	
		NIPHM, Hyderabad	January, 2018		Monocrotophos	-1.75	
					Dimethoate	-0.98	
					Dicofol	0.04	
					Profenofos	1.15	
					Cyhalothrin-Lambda	1.15	
					Deltamethrin	0.98	
	PT	NIPHM, Hyderabad	January, 2018	Water	Gamma HCH	1.32	
					Butachlor	0.17	
					Alachlor	0.13	
	PT	NIPHM, Hyderabad	January, 2018	Water		R1	R2
					Alpha HCH	-0.64	-0.58
					Profenofos	-0.33	-0.05
					Fenpropathrin	0.74	0.84
					Beta cyfluthrin	1.35	1.28
					Alpha cypermethrin	0.19	0.6
					Cyhalothrin-Lambda	-0.4	0.58
					Dimethoate	-0.79	-0.13
					Quinalphos	-0.64	0.04
					pp-DDD	0.52	0.72
pp-DDT					-0.7	-0.81	
Heptachlor					-0.73	0.02	
Fluchloralin					-0.35	-0.13	
Deltamethrin	1.15	1.09					
Pendimethalin	-1.08	-0.16					
Fenvalerate	0.71	1.48					
IITR, Lucknow	PT	NIPHM, Hyderabad	July, 2017	Chana dal	Fenvalerate	1.01	
					Cyhalothrin-Lambda	1.02	
					Malathion	-0.27	
					Lindane	1.47	
					a-Endosulfan	1.22	
					Fenpropathrin	1.13	
				Capsicum	Chlorpyrifos	-0.13	
					Bifenthrin	0.23	
					Beta HCH	0.77	
					Endosulfan sulphate	4.24	
	PT	NIPHM, Hyderabad	January, 2018	Pomegranate	Chlorpyrifos	0.06	
					Profenofos	0.88	
					Deltamethrin	0.25	
KAU, Vellayani	ILC	PRAL, PAU	April, 2017	Tomato Puree	Acetamiprid	-0.2	
					Chlorantraniliprole	0.16	
	PT	NIPHM, Hyderabad	July, 2017	Chana Dal Powder	Fenvalerate	0.86	
					Cyhalothrin-Lambda	0.37	
					Malathion	0.74	
					Monocrotophos	2.38	
					Lindane	0.45	
					a-Endosulfan	1.12	
					Fenpropathrin	0.92	
					Carbaryl	0.49	
	b-Endosulfan	0.28					
	PT	NIPHM, Hyderabad	July, 2017	Capsicum Puree	Chlorpyrifos	0.21	
					Quinalphos	0.01	
					Bifenthrin	-0.76	
					Beta HCH	-1.69	
					Endosulfan sulphate	-0.92	
PT			Pomegranate	Carbaryl	-0.39		
				Chlorpyrifos	-1.04		

Name of the Centre	Whether PT/ ILC	Conducted by	Month, Year	Commodity	Pesticide Detected	Z-Score		
		NIPHM, Hyderabad	January, 2018		Monocrotophos	0.41		
					Acetamiprid	-0.48		
					Profenofos	-1.93		
					Cyhalothrin-Lambda	-0.56		
	PT	NIPHM, Hyderabad	January, 2018	Water	Lindane	-0.54		
					Endosulfan sulphate	0.36		
	ILC	PRL, IARI, New Delhi	March, 2018	Rice	Cypermethrin	-0.39		
	ILC	PRL, IARI, New Delhi	March, 2018	Water	p,p'-DDT	-0.78		
	ILC	NIPHM, Hyderabad	March, 2018	Water	Fenpropathrin	-0.32		
					Beta Cyfluthrin	1.11		
					Alpha Cypermethrin	-1.3		
					Cyhalothrin-Lambda	0.25		
					Dimethoate	-0.51		
Quinalphos					-0.04			
p,p'- DDD					-1.23			
p,p'- DDT					-0.15			
Fenvalerate	-1.34							
MPEDA, Kochi	PT	M/s FAPAS, UK	June, 2017	Oily Fish	Oxychlorthane	1.8		
					Cis-Heptachlor epoxide	0.1		
MPKV, Rahuri	PT	NIPHM, Hyderabad	July, 2017	Chana Dal	Fenvalerate	-0.75		
					Cyhalothrin-Lambda	-0.59		
					Malathion	-1.71		
					Monocrotophos	-1.86		
					Lindane	-1.78		
					Fenpropathrin	-1.22		
	b-Endosulfan	2.05						
	PT	NIPHM, Hyderabad	January, 2018	Water	Lindane	-0.82		
					Endosulfan sulphate	-2.06		
	ILC	PJ TSAU, Hyderabad	February, 2018	Rice flour	Malathion	1.78		
Profenofos					0.22			
NDDB, Anand	PT	FAPAS	March, 2017	Carrot Puree	Azoxystrobin	0.1		
					Cypermethrin (sum isomers)	-2.2		
					Dieldrin	-2		
					Metolachlor (sum)	-1		
			February, 2017	Potato Puree	Chlorpropham	-1		
					Chlorpyrifos (-ethyl)	0.3		
					Diazinon	-1.4		
					Flusilazole	-1.5		
	ILC	NIPHM, Hyderabad	June, 2017	Water		R1	R2	
					Beta HCH	-1.13	-0.49	
				Chlorpyrifos	-0.41	-0.41		
				Endosulfan Sulphate	-0.08	0.38		
ILC	IARI, New Delhi	March, 2018	Water	op-DDT	0.28			
				Rice	Cypermethrin	-0.75		
						Deltamethrin	-0.98	
NIOH, Ahmedabad	PT	NIPHM, Hyderabad	July, 2017	Capsicum	Chlorpyrifos	-0.75		
					Quinalphos	-2.16		
					Bifenthrin	0.44		
					b-HCH	0.69		
					Endosulfan Sulphate	-0.98		
	PT			Pomegranate	Chlorpyrifos	0.75		

Name of the Centre	Whether PT/ ILC	Conducted by	Month, Year	Commodity	Pesticide Detected	Z-Score
		NIPHM, Hyderabad	January, 2018		Monocrotophos	-0.81
					Dimethoate	1.81
					Acetamiprid	1.33
					Profenofos	-0.34
					Cyhalothrin-Lambda	-0.33
					Deltamethrin	0.51
PAU, Ludhiana	ILC	ANGRAU, Hyderabad	May, 2017	Rice Flour	Dimethoate	0.61
					Malathion	-0.43
					Acephate	1.37
					Tebuconazole	1
					Indoxacarb	0.84
					Thiacloprid	1
					Profenofos	0.22
					Acetamiprid	1.2
	PT	NIPHM, Hyderabad	July, 2017	Chana Dal Powder	Fenvalerate	-0.11
					Cyhalothrin-Lambda	-0.69
					Malathion	0.37
					Monocrotophos	0.83
					Lindane	-0.66
					a-Endosulfan	-0.66
					Fenpropathrin	-0.83
					Carbaryl	-1.4
					b-Endosulfan	-1.46
	PT	NIPHM, Hyderabad	July, 2017	Capsicum	Chlorpyrifos	3.22
					Quinalphos	2.03
					Bifenthrin	2.75
					Beta HCH	1.82
					Carbaryl	1.68
	PT	NIPHM, Hyderabad	January, 2018	Water	Lindane	-0.1
					Chlorpyrifos	2.28
					Alachlor	2.01
	PT	NIPHM, Hyderabad	January, 2018	Pomegranate	Chlorpyrifos	-1.59
					Monocrotophos	-1.48
					Dimethoate	1.28
					Acetamiprid	0.48
					Cyhalothrin-Lambda	-1.6
					Deltamethrin	-1.23
PC CELL, Delhi	PT	FAPAS, UK	June, 2017	Cucumber Puree	Cyhalothrin-Lambda	-0.2
					Dimethoate	-0.4
					b-Endosulfan	-0.2
					Endosulfan sulphate	0.2
					Fenazaquin	-0.8
					Fenpropathrin	0.2
					Pencycuron	-0.8
	PT	NIPHM, Hyderabad	July, 2017	Capsicum Puree	Beta- HCH	0.29
					Endosulfan sulphate	0.26
					Chlorpyrifos	0.44
					Quinalphos	-0.23
					Bifenthrin	-0.15
					Carbaryl	0.37
	PT	NIPHM, Hyderabad	January, 2018	Pomegranate	Dicofol	-0.2
					Chlorpyrifos	0.58
					Profenofos	-0.78
					Deltamethrin	0.82
					Cyhalothrin-Lambda	0.66
					Acetamiprid	-0.47
	PT		July, 2017	Capsicum	Chlorpyrifos	-0.44

Name of the Centre	Whether PT/ ILC	Conducted by	Month, Year	Commodity	Pesticide Detected	Z-Score
PJ TSAU, Hyderabad		NIPHM, Hyderabad			Quinalphos	0.07
					Bifenthrin	-0.18
					Carbaryl	-0.65
	PT	NIPHM, Hyderabad	March, 2017	Grape puree	Dimethoate	0.49
					Phosphamidon	0.08
					Fenpropathrin	0.2
					Imidacloprid	-0.18
					Profenofos	0.59
	PT	NIPHM, Hyderabad	March, 2017	Water	Ethion	0.73
					Atrazine	0.08
					Malathion	-0.27
	PT	EURL, Technical University of Denmark	April, 2017	Oat meal	Chlorpyrifos	0
					Carbendazim	2.7
					Tebuconazole	-1.1
	PT	NIPHM, Hyderabad	January, 2018	Pomegranate	Chlorpyrifos	1.66
					Monocrotophos	0.6
					Dimethoate	0.86
					Acetamiprid	0.38
Profenofos					3.37	
Cyhalothrin-Lambda					-0.3	
Deltamethrin					1.85	
PT	NIPHM, Hyderabad	January, 2018	Water	Gamma HCH	-0.32	
				Endosulfan sulphate	2.74	
				Alachlor	0.81	
RPQS, New Delhi	PT	NIPHM, Hyderabad	July, 17	Capsicum Puree	Chlorpyrifos	-1.41
					Quinalphos	-1.45
					Bifenthrin	-0.7
					β -HCH	-1.47
					Endosulfan sulphate	-1.44
				Chana Dal	Malathion	0.54
					Cyhalothrin-Lambda	-2.04
					Lindane	-0.2
					a-Endosulfan	-0.66
					Fenvalerate	-2.46
					Fenpropathrin	-0.36
					b-Endosulfan	-0.15
	PT	NIPHM, Hyderabad	January, 2018	Pomegranate	Chlorpyrifos	1.73
					Dicofol	0.25
					Profenofos	-1.79
					Cyhalothrin-Lambda	-0.23
					Deltamethrin	-1.55
				Water	Lindane	1.05
Endosulfan sulphate	0.53					
Butachlor	1.06					
Alachlor	1.33					
ILC	RPQS, Chennai	March, 2018	Pulses	Lindane	-1.45	
				p,p'-DDT	0.06	
				Endosulfan sulphate	-0.49	
				Cyhalothrin-Lambda	-0.19	
				Fenpropathrin	0.04	
				Fenitrothion	-1.26	
				Profenofos	-1.55	
				Parathion-Ethyl	0.27	
RPQS, Mumbai	PT	NIPHM, Hyderabad	July, 2017	Chana Dal	Fenvalerate	-0.8
					Cyhalothrin-Lambda	-1.55

Name of the Centre	Whether PT/ ILC	Conducted by	Month, Year	Commodity	Pesticide Detected	Z-Score
					G-HCH	-0.17
					a-Endosulfan	-0.51
					b-Endosulfan	0.37
					Fenpropathrin	-0.11
	PT	NIPHM, Hyderabad	July, 2017	Capsicum Puree	Bifenthrin	-1.14
					Endosulfan sulphate	1.52
	ILC	NIPHM, Hyderabad	February, 2018	Curry Leaves	Endosulfan sulphate	1.52
					Bifenthrin	-1.14
	ILC	RPQS, Chennai	March, 2018	Green Pea	Gamma HCH	-0.36
					p,p'-DDE	-0.31
					Endosulfan sulphate	0.16
					Cyhalothrin-Lambda	0.72
					Fenpropathrin	0.32
SKNAU, Jaipur	ILC	PAU, Ludhiana	April, 2017	Tomato Puree	Malathion	-1.39
					Profenofos	0.21
	PT	NIPHM, Hyderabad	August, 2017	Water	Malathion	-2
					PT	NIPHM, Hyderabad
	Dimethoate	-0.12				
	Malathion	-0.04				
	Deltamethrin	-0.1				
	Fenpropathrin	-0.84				
	PT	NIPHM, Hyderabad	November, 2017	Chana Dal	Cyhalothrin-Lambda	-1.2
					Malathion	-2
					Lindane	-0.19
					a-Endosulfan	1.39
					Fenpropathrin	-0.42
					b-Endosulfan	0.35
	PT	NIPHM, Hyderabad	November, 2017	Capsicum	Chlorpyrifos	-0.45
					Quinalphos	-0.62
					Bifenthrin	-0.71
					b-HCH	0.05
					Endosulfan sulphate	-1.71
Dr. YSPUHF, Solan	PT	NIPHM, Hyderabad	July, 2017	Capsicum	Chlorpyrifos	0.99
					Quinalphos	0.28
					Bifenthrin	0.82
					b-HCH	-0.09
					Endosulfan sulphate	0.24
	PT	NIPHM, Hyderabad	July, 2017	Chana Dal	Fenvalerate	1.93
					Malathion	1.12
					Cyhalothrin-Lambda	2.03
					Monocrotophos	1.1
					Lindane	3.88
					a-Endosulfan	1.04
					b-Endosulfan	1.22
					Fenpropathrin	1.91
	Deltamethrin	-0.1				
	PT	NIPHM, Hyderabad	January, 2018	Pomegranate	Chlorpyrifos	0.58
					Dicofol	0.02
					Profenofos	-0.09
					Cyhalothrin-Lambda	1.55
					Deltamethrin	0.2
	PT	NIPHM, Hyderabad	January, 2018	Water	Lindane	-1.11
					Endosulfan sulphate	1.01
					Butachlor	0.66
					Alachlor	-0.26

Name of the Centre	Whether PT/ ILC	Conducted by	Month, Year	Commodity	Pesticide Detected	Z-Score	
						R1	R2
	ILC	NIPHM, Hyderabad	January, 2018	Water			
					Phosphamidon	-0.58	-0.11
					Beta-cyfluthrin	-0.04	0.25
					Alpha-cypermethrin	-0.76	-0.26
					Dimethoate	0.46	0.88
					Quinalphos	0.47	1.26
					p,p'-DDT	-0.37	0.01
					Fluchloralin	-0.71	0.12
					Deltamethrin	-0.58	0.26
					Pendimethalin	-0.61	1.12
Fenvalerate	-0.6	0.62					
TNAU, Coimbatore	ILC	Kannan Devan Hills Plantation Company Pvt. Ltd., Kerala	June, 2017	Tea	Dicofol	-0.71	
	PT	NIPHM, Hyderabad	July, 2017	Capsicum Puree	Chlorpyrifos	-0.72	
					Quinalphos	0.51	
					Bifenthrin	-1.68	
					b-HCH	-0.59	
					Endosulfan sulphate	-1.44	
	PT	NIPHM, Hyderabad	July, 2017	Chana Dal Powder	Fenvalerate	-0.01	
					Cyhalothrin-Lambda	-0.51	
					Malathion	-0.71	
					Monocrotophos	1.04	
					Lindane	-1.6	
					a-Endosulfan	-2.43	
					Fenpropathrin	-0.98	
					b-Endosulfan	-1.9	
	PT	NIPHM, Hyderabad	January, 2018	Pomegranate	Chlorpyrifos	-2.57	
					Dimethoate	-2.42	
					Dicofol	0.16	
					Profenofos	-1.4	
					Cyhalothrin-Lambda	-0.63	
Deltamethrin					-0.69		
PT	NIPHM, Hyderabad	January, 2018	Water	Lindane	-1.48		
				Endosulfan sulphate	0.47		
				Butachlor	-0.8		
				Alachlor	-2.74		
BCKV, Kalyani	PT	NIPHM, Hyderabad	January, 2018	Water	Lindane	0.35	
					Endosulfan sulphate	0.79	
					Butachlor	1.56	
					Alachlor	0.18	
	PT	NIPHM, Hyderabad	January, 2018	Fruit (Grape)	Dimethoate	-1.87	
					b-HCH	-2.1	
					Chlorpyrifos Methyl	-1.13	
					Malathion	-2.02	
					Fenpropathrin	-1.35	
					Deltamethrin	-1.59	
					Beta HCH	-1.68	
					Endosulfan sulphate	-1.3	
	ILC	Pesticide Referral Laboratory, IARI, New Delhi	December, 2017	Water	o,p'-DDT	-1.95	
p,p'-DDT					-0.39		
ILC	Pesticide Referral Laboratory,	December, 2017	Cereals (Rice)	Cypermethrin	0.05		
				Deltamethrin	0.15		

Name of the Centre	Whether PT/ ILC	Conducted by	Month, Year	Commodity	Pesticide Detected	Z-Score
		IARI, New Delhi				
	PT	NIPHM, Hyderabad	July, 2017	Vegetable	b-HCH	-1.68
					Endosulfan Sulphate	-1.3
					Chlorpyrifos	-3.04
					Quinalphos	-3.24
					Bifenthrin	-3.28
					Beta HCH	-2.1
	PT	NIPHM, Hyderabad	July, 2017	Chana Dal	Fenvalerate	-2.36
					Cyhalothrin-Lambda	-2.59
					Malathion	-2.83
					Lindane	-2.9
					a-Endosulfan	-1.27
					Fenpropathrin	-2.94
					b-Endosulfan	-1.83
NIPHM, Hyderabad	PT	Water quality research center, K-water Institute, K-water, 200 Shintanjinro Daedeok Daejeon 34350, Korea.	October, 2017	Water	Diazinon	0
					Parathion	-0.08
	ILC	Pesticide Residue Laboratory, Rajendranagar, Hyderabad	February, 2018	Rice Flour	Tricyclazole	-0.6
					Dimethoate	-1.72
					Malathion	-0.52
					Acephate	-0.25
					Tebuconazole	-0.75
					Indoxacarb	-1.42
					Thiacloprid	-1.28
					Profenofos	-1.77
					Acetamiprid	-0.8
					Carbendazim	0.76
EIA, Kolkata	ILC	Tea Board India, Quality Control Laboratory, Bhakti Nagar-735 135 District-Jalpaiguri, WB	May, 2017	Tea	Ethion	-1.51
					Dicofol	-0.79
					Bifenthrin	-1.17
					Fenpropathrin	-0.25
					Chlorpyrifos	-0.83

ANNEXURE II

List of PI's/ Scientists of participating laboratories

S. No.	Name of Centre	Name	Designation	Phone No.		E-mail
				Mobile	Land line	
1.	P. C. Cell, New Delhi	Dr. K.K. Sharma	Project Coordinator	09868510292	011-25846396	kksaicrp@yahoo.co.in
		Dr. Vandana Tripathy	Sr. Scientist	09601519661		vs_agch@yahoo.com
2.	AAU, Anand	Dr. Paresh G. Shah	Residue Analyst	09426385411	02692652807	paresh243@yahoo.co.in
		Dr. K. D. Parmar	Assistant Residue Analyst	9879379993	-	drkdp28@gmail.com
		Ms. N. N. Chaudhary	Assistant Residue Analyst	9512042718	-	nnchaudhary1991@gmail.com
3.	BCKV, Kalyani	Dr. Rajib Karmakar	Assistant Professor & PI	8389817959	-	rajibc183@rediffmail.com
		Dr. Dipak Kumar Hazra	Assistant Professor	8159024819	-	dipakipft@gmail.com
4.	BVC, Mumbai	Dr. R. J. Zende	Professor & PI	09969625744/ 09167423754	022- 24131180, 24137030, 24132792	ravindrazende@gmail.com
5.	CIARI Port Blair	Dr.T.P. Swarnam	Principal Scientist	09676541781/ 9531918831	-	Swarna_8yahoo.com
6.	CPCB Delhi	Sh. Sanjay Kumar	Scientist 'D' & Division Head	43102376	9911867604	skpcb@rediffmail.com, skumar.cpcb@nic.in
		Sh. Bhupander Kumar	Scientist 'D'	43102379	9212135238	bhupander_kumar@yahoo.com
		Shri Dev Prakash	Scientist 'B'	43102378	9968655604	-
		Sh. S.K. Singh	Scientist 'B'	43102380	9968651341	raghavsk@rediffmail.com
7.	Dr. YSPUH&F, Solon	Dr JK Dubey	Principal Scientist	9418116150 (M)	01792 -252191 (O)	jdkubey14@yahool.com
		Dr SK Patyal	Principal Scientist	9418491123	01792 -252191 (O)	patyalskp@yahoo.co.in
		Dr Sapna Katna	Scientist	9418828835	01792 -252191 (O)	katnasapna@gmail.com

S. No.	Name of Centre	Name	Designation	Phone No.		E-mail
				Mobile	Land line	
8.	EIC, New Delhi	Dr. S.K. Saxena	Director	9717968880	01123341263 / 23748189/ 23365540	sksaxena_dr@yahoo.com
		Sabeerali A.M	Assistant Director	9953484973	011-23341263, 23748189	tech3@eicindia.gov.in
9.	IIHR, Bangalore	Dr. Soudamini Mohapatra	Principal Scientist	9448226454	080-28446649	prlbangalore@rediffmail.com
		Dr. Debi Sharma	Principal Scientist	9845270395	080-28466240	debisharma@gmail.com
		Dr. Partha P Choudhury	Principal Scientist	9179457045	080-28466240	Partha.Choudhury1@icar.gov.in
10.	IITR, Lucknow	Dr. Sheelendra Pratap Singh	(In-Charge) Scientist	8052427555	-	shilu1july@gmail.com
11.	IPFT, Gurugram	Dr. L K Thakur	PI	9868721652	0124-2341361	thakurlk1964@rediffmail.com
12.	KAU, Vellayani	Dr. Thomas George	Professor & PI	9447586226	0471-2380520	thomasgeorgetvm@yahoo.co.uk
		Dr. Ambily Paul	Assistant Professor	9446179111	-	ambilypaul7@gmail.com
13.	MPEDA, Kochi	Mr. Mahesh G	Deputy Director / PI	8331911899	0484-2311033	mahesh@mpeda.gov.in
14.	MPKV, Rahuri	Dr. C. S. Patil	Principal Investigator	9922061475	02426-243532 O) 02426-243661 R)	prlab.mpkv@rediffmail.com; cspatils@rediffmail.com
		Dr. B. V. Deore	Scientist	7020946438	02426-243532 (O)	bhaidevare@rediffmail.com
		Dr. Y. S. Saindane	Scientist	9850295308	02426-243532 (O)	yogeshsaindane13@rediffmail.com
15.	NDDB, Anand	Dr. Rajesh Nair	Director, CALF	7574835057	-	rajeshnair@nddb.coop
		Mr. Shashikant Gupta	Scientist- II	9427549027	02692-226655	guptask@nddb.coop
		Dr. Rajiv Chawla	Scientist- III	9726425899	02692-226652	rchawla@nddb.coop
		Ms. Swati Patil	Scientist- I / Residue Analyst	7574833606	02692-226673	sspatil@nddb.coop
		Mr. Sushil Gawande	Scientist- I / Residue Analyst	9601751632	02692-226662	sggawande@nddb.coop

S. No.	Name of Centre	Name	Designation	Phone No.		E-mail
				Mobile	Land line	
		Mr. Dnyaneshwar Shinde	Scientist- I / Residue Analyst	8758555183	02692-226662	drshinde@nddb.coop
16.	NEERI, Nagpur	Dr. Kavita Gandhi	Scientist and PI	9822082027	0712-2249885 Ext.-255	kn_gandhi@neeri.res.in
		Mr. G.S. Kanade	Principle Scientist	9422301168	0712-2249885 Ext.-232	gs_kanade@neeri.res.in
		Mr. S.M. Kashyap	Sr. Scientist	-	0712-2249885 Ext.-260	sm_kashyap@neeri.res.in
17.	NIOH, Ahmedabad	Dr. P. Sivaperumal	Scientist 'D'	9904721778	079-22688864/65	sivaperum2003@yahoo.co.in
18.	NIPHM, Ahmedabad	Dr. Cherukuri Sreenivasa Rao	Director (Pesticide Management)	9441026576	-	cherukurisrao@yahoo.com
		Dr. Nirmali Saikia	Assistant Director	8008260926	-	nirmali_saikia@rediffmail.com
		Dr. M. Jaya Devi	Scientific Officer (R&NMA)	8978778728	-	mjaya2002@gmail.com
19.	RPQS New Delhi	Dr. D.C. Rajak	Joint Director (E)	8968633245	011-26133799	npqfc@nic.in
		Sh. Umesh Chandra	Chem. Div. Incharge/ Deputy Director (E)	9999013803	-	umesh.cgo123@gmail.com
		Sh. R.L. Raiger	APPO	9711529587 9899448122	-	ppocmprnl@gmail.com jayeshritwik@gmail.com
		Dr. Gunjan Bhatia	APPO	9910100046	-	gunjanbhatia07@gmail.com
		Ms. Ritu Sisodia	APPO	9868902626	-	ritu_sisodia14@yahoo.com
20.	PAU, Ludhiana	Dr (Mrs) Smriti Sharma	Assistant Residue Analyst	9872524090	0161-2401962 (320 ext)	smritisharma80@pau.edu
		Dr. Sanjay Kumar Sahoo	Assistant Residue Analyst	9872655270	-	sksahoo@pau.edu
		Dr. Kousik Mandal	Assistant Residue Analyst	9815631454	-	kousik30@pau.edu
21.	PJ TSAU, Hyderabad	Dr. V. Anitha	Principal Scientist & Head	9440258050	-	anitha.vodur@gmail.com
		Dr. K. Kavitha	Senior Scientist	9440651379	-	kaviangrau@gmail.com

S. No.	Name of Centre	Name	Designation	Phone No.		E-mail
				Mobile	Land line	
		Ms. N. Jemimah	Scientist	9642514947	-	jemimahjems27@gmail.com
22.	RPQS, Mumbai	Shri. C. B. Singh	PPO (Chemistry)	9465146461	022-23757459 (Ext-402)	pralabrpqsm@gmail.com
		Dr. R. U. Pathan	APPO (Chemistry)	9850786725	022-23757459 (Ext-403)	rupchemistry@gmail.com
		Dr. (Ms) B. A.Gharpinde	APPO (Chemistry)	8424055452/ 9970788909	022-23757459 (Ext-403)	bhavana.gharpinde@gmail.com
		Mr. Amgoth Naresh	APPO (Chemistry)	8309156607	022-23757459 (Ext-403)	naresh.a66@gmail.com
23.	RPQS, Chennai	Shri Subhash Chand	Deputy Director (Chemistry)	9811431994	044-22347488/ 22347522/ 22323888/ 22331586	subhash.chand69@gov.in
		Shri. N. Selvakumar	APPO (Chemistry)	9711527375	-	shelva84@gmail.com
		Smt. R. Anandhi	APPO (Chemistry)	9643383414	-	anansel14@gmail.com
24.	SKNAU, Jaipur	Dr. A. R. K. Pathan	Residue Analyst	9928348095	0141-2175520 (R)	arkpathan@gmail.com
25.	TNAU, Coimbatore	Dr. K. Bhuvanewari	Residue Analyst	9944050779	0422-6611295(O); 0422-2477222(R)	bhuvanetnau@gmail.com
		Dr. B. Vinothkumar	Assistant Residue Analyst	8940703385	-	drbvinothkumar@gmail.com
		Dr.A.Suganthi	Assistant Residue Analyst	9444426631	-	suganthi.a@tnau.ac.in