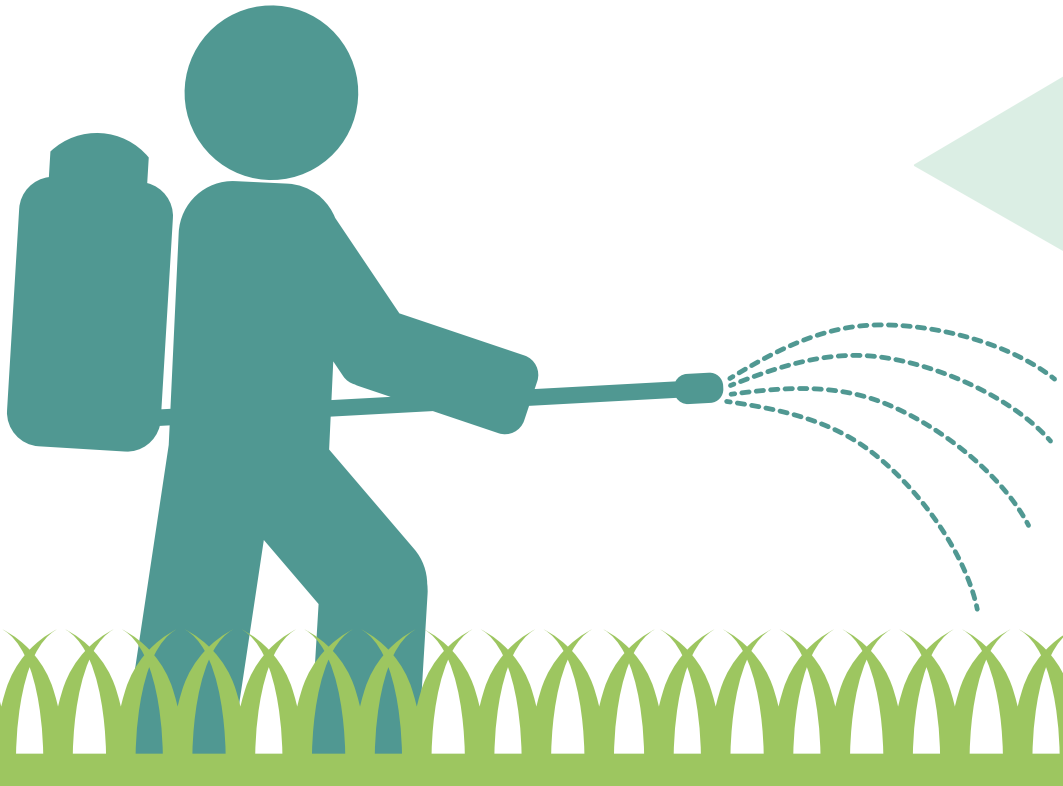
وزارة البيئة والمياه والزراعة
Ministry of Environment Water & Agriculture
Kingdom of Saudi Arabia المملكة العربية السعودية

وزارة الشؤون البلدية والقروية
Ministry of Municipal & Rural Affairs

الهيئة العامة للغذاء والدواء
Saudi Food & Drug Authority

National Pesticide Residue Monitoring Program



in the name of allah
the most beneficent
the most merciful

The application of pesticides on a variety of agricultural products is inevitable to ward off pests and sustain the quality and quantity of crops. Nevertheless, these chemicals must be administered according to specific requirements determining the type of pesticide used, as well as the dose .and intervals at which they are applied

The 2nd national PRMP is prepared and implemented jointly by SFDA, MEAW and MOMRA pursuant to Royal decree No. 559 of Jan 29th. 2008, identifying the various controls in relation to pesticides and providing radical solutions to the adverse effects of pesticide residues on public health in Saudi Arabia. The Program involves analyzing food samples collected from different regions to make sure detectable residues, if any, are compliant with the allowable MRLs as approved by international .competent bodies

Executive Summery

PRMP samples were taken from central domestic markets and date processing plants around the country, including points of entry to the capital city. Representatives of big local businesses were invited to a workshop to help facilitating the sampling process, and to ensure that the necessary corrective actions were taken in case of violations to permissible MRLs. In addition, several workshops were held at various MEWA regional offices to address the roles played by SFDA, MEWA, and MOMRA in reducing violative MRLs in food based on the residue findings of previous programs and industry inspections with the purpose of establishing the safe use of pesticides.

In 2018, 3421 imported and domestically produced samples of fruit and vegetables were drawn from the local market for analysis. % 91.29 of the samples were in compliance, while % 8.71 contained violative residues. Yet, there was a remarkable decline in the violation rate throughout the Program, falling from % 17.69 in the 1st quarter to % 7.36 in the 4the quarter, and setting the total rate at % 8.71 (see table 1). In light of these findings, the necessary measures were taken against violative samples as per the approved standards to maintain food safety in the local food market.

2018 Survey of Compliant and Violative Samples:

Year/Quarter	No Residues	Residues Within Tolerance Levels	Residues Exceeding Tolerance Levels
1st Quarter	% 52.83	% 29.48	% 17.69
2nd Quarter	% 55.24	% 34.29	% 10.48
3rd Quarter	% 64.69	% 28.99	% 6.31
4th Quarter	% 63.53	% 29.11	% 7.36
Total	**% 61.53**	**% 29.76**	**% 8.71**

MRLs in fruit and vegetables according to the 2018 National Pesticide Monitoring Program

PREAMBLE

Under article 3 of Ordinance 559 (on 29.1.2008), SFDA shall set up a national program for monitoring chemical pesticide residues in food and announce their findings to the public.

The SFDA Executive Department for Monitoring & Risk Assessment (EDMRA) prepares and implements a national program for monitoring pesticide residues in food. This may require carrying out focused sampling for commodities of high exposure level to pesticides.

The SFDA may also require the collaboration of MEWA and MOMRA to ensure that detectable residues are kept within tolerance levels as approved by SFDA standards and stipulated under Article 2 of the Saudi Food Law:

" this Law aims at ensuring food safety and quality, protecting consumer's health through minimizing food-related risks and spreading sound food safety awareness, protecting consumers' from harmful, adulterated, or otherwise implicated foodstuff"

By Dec 31, 2018, all samples of the 2nd national PRMP had been taken and analyzed. Findings of the survey were compared to SFDA.FD standard No. 2019/382 "Maximum Limits of Pesticide Residues in Agricultural & Food Products" and the list of Codex Maximum Residue Limits for Pesticide, in addition to EU and USA standards whichever is the lesser of the two.

1.Execution Plan:

The PRMP target commodity groups were samples of fruit and vegetables collected from different regions of the country and analyzed for pesticide residues. Of the total 3421 samples collected and analyzed, vegetables accounted for %60 (2033 samples)whereas fruit made up the remaining %40 (1388 samples). The geographical distribution of samples positively correlated with the number of population and analytical lab capacities per region. For example, since % 25.48 of the Saudi population lived in Makkah, a corresponding percentage was assigned to the samples allocated for this district (look at Table1).

The number of samples collected for the purpose of the PRMP are divided into two commodity groups as illustrated in the following (table 1):

1. **vegetables:** 2033 samples including potatoes, tomatoes, squash, zucchini, eggplants, okra, lettuce, mints, carrots, pumpkin, beans, garlic, onion, coriander, jute mallow, spinach, watercress, bell and pepper (as shown in table 2).
2. **Fruit:** 1388 samples including dates, grapes, melon, watermelon, orange, lemon, banana, pomegranate, guava, cherry, apple, mango, strawberry, peach, and apricot (look at Table3).

Table 1: Samples Collected from Different Areas in Saudi Arabia:

Area	Vegetables	Fruit	Total	Proportion of samples allocated	Proportion of samples allocated
Makkah	504	417	921	26.92	25.48
Riyadh	494	313	807	23.59	24.97
Easter Province	331	200	531	15.52	15.12
Madinah	142	117	259	7.57	6.55
Asir	114	75	189	5.52	7.05
Jazan	99	56	155	4.53	5.03
Tabuk	90	41	131	3.83	2.91
Gassem	71	50	121	3.54	4.48
Baha	58	38	96	2.81	1.51
Najran	44	21	65	1.90	1.86
Hail	39	22	61	1.78	2.2
Northern Borders	28	21	49	1.43	1.18
Jouf	19	17	36	1.05	1.62
Total amount	**2033**	**1388**	**3421**		

Table 2: No. Vegetable Samples per Region

Sample Area/	Makkah	Riyadh	Eastern Prov.	Maddinah	Asir	Jazan	Tabuk	Gassim	Baha	Najran	Hail	Northern Border	Jouf	Total
Onion	40	42	23	10	6	7	5	6	4	1	2	2	2	150
Eggplant	51	34	21	8	6	5	3	4	4	1	2	2	2	143
Pumpkin	46	37	20	7	9	5	4	4	3	-	-	2	1	138
Tomato	30	37	21	9	7	6	3	6	4	4	5	2	-	134
Potato	32	36	21	11	4	6	3	5	4	4	5	2	-	133
Cucumber	23	33	23	9	5	4	3	5	4	4	3	2	-	118
lettuce	34	20	24	11	6	6	2	4	4	2	2	1	-	116
Bell pepper	30	21	12	10	7	8	8	4	2	4	2	2	1	111
Garlic	26	11	35	7	6	5	3	2	2	1	2	2	2	104
Okra	20	31	22	4	7	5	4	2	4	1	1	1	2	104
parsley	20	30	15	8	4	5	8	4	3	4	2	1	-	104
Zucchini	21	24	22	7	6	6	3	4	4	1	1	2	2	103
Carrot	19	20	21	6	10	5	3	3	4	1	1	2	2	97
Watercress	20	23	11	7	8	4	8	3	2	2	3	1	1	93
Mint	19	23	10	8	4	5	8	4	2	4	2	1	2	92
Coriander	20	19	12	7	3	4	7	4	3	3	2	1	-	85
Bean	22	16	10	6	4	3	7	3	3	4	1	2	1	82
Spinach	16	20	5	3	6	5	5	2	1	1	2	-	-	66
Jute mallow	15	17	3	4	6	5	3	2	1	2	1	-	1	60
Total	**504**	**494**	**331**	**142**	**114**	**99**	**90**	**71**	**58**	**44**	**39**	**28**	**19**	**2033**

Table 3: No. Samples of Fruit per Region

Sample Area/	Makkah	Riyadh	Eastern Prov.	Maddinah	Asir	Jazan	Tabuk	Gassim	Baha	Najran	Hail	Northern Border	Jouf	Total
Dates	19	72	21	26	-	-	3	28	-	-	-	-	-	169
Apple	77	14	23	13	11	7	3	-	2	3	5	2	3	163
Orange	40	23	24	12	8	7	2	-	4	4	5	2	2	133
Lemon	35	24	21	10	8	6	5	-	2	4	2	2	1	120
Mango	49	16	15	8	7	5	4	6	4	1	1	2	1	119
Grape	43	19	14	9	7	5	4	2	4	3	2	2	2	116
pomegranate	20	21	16	8	5	5	6	-	4	3	2	3	2	95
Banana	27	11	19	8	6	6	3	2	4	1	2	2	2	93
Cantaloupe	17	31	16	5	4	2	1	2	4	-	-	1	1	84
Watermelon	23	37	2	4	3	3	3	3	2	-	-	1	1	82
peach	27	8	14	5	5	5	4	3	4	-	1	2	2	80
Strawberry	18	12	3	6	6	4	-	-	-	1	1	-	-	51
Apricot	10	8	7	1	1	-	1	3	2	-	-	2	-	35
Cherry	6	7	5	1	1	-	1	1	2	-	-	-	-	24
Guava	6	10	-	1	3	1	1	-	-	1	1	-	-	24
Total	**417**	**313**	**200**	**117**	**75**	**56**	**41**	**50**	**38**	**21**	**22**	**21**	**17**	**1388**

Fruit and vegetable samples were taken from different sites: major markets, fruit and vegetable markets, date factories, warehouses and Riyadh inspection entry points (Table 4). In terms of sample source, almost % 60 of the samples were domestic whereas 40% were imported commodities of the total targeted samples. (Table 5)

Table 4: PRMP Samples According to Facility Type

Facility	No. samples	in Total %
Major Markets	3010	% 87.99
fruit and vegetable markets	282	% 8.24
Date factories	98	% 2.86
Points of entry to Riyadh	19	% 0.56
warehouses	12	% 0.35

Table 5: PRMP Samples According to Source (Domestic And Imported):

Food Group	Domestic		Imported		Total	
	Number	%	Number	%	Number	%
Vegetable	1673	% 82.29	360	% 17.71	2033	% 59.43
Fruit	372	% 26.80	1016	% 73.20	1388	% 40.57
Total	**2045**	**% 59.78**	**1376**	**% 40.22**	**3421**	**% 100**

2.Transportation and Preparation of Samples:

The NPMP samples must be collected and held at appropriate temperature while in transit by SFDA inspectors until they arrive at the nearest SFDA lab. In regions where there are no SFDA labs available, the delivery mission may be assigned to a private cold transportation company, requiring that the samples reach their destination in SFDA labs in Riyadh within 24 hours.

Upon arrival at their designated labs, samples of fruit and vegetable are mixed and homogenized after removing all inedible parts. The homogenous samples are then kept frozen at the sample reception section of the lab unit requested for later pesticide residue analyses.

3. Sample Analysis:

Pesticide residue analyses were conducted in accordance with the analytical methods adopted by EU (QECHERS-method v.2007) to determine the maximum residue levels of pesticides in foodstuff using LCMSMS of the trademark “Agilent”.

According to the aforementioned analytical methods employed and the capacities of SFDA labs, 59 pesticides were detected as shown in table 6:

Table 6: No of pesticides detected according to SFDA lab test results

SFDA lab	No. samples analyzed	%	No. pesticides detected
Riyadh Monitoring Lab	1041	% 30.43	154
Riyadh Food Control lab	928	% 27.13	141
Jeddah Food Control Lab	921	% 26.92	59
Dammam Food Control Lab	531	% 15.52	135

4. Findings:

General finding:

The analysis of 3421 samples of food showed that % 91.29 of the samples tested were complied with the standards adopted in the program. % 61.53 of samples had no traces of pesticide residues whereas 8.71% (298 samples) proved to be in excess of the allowable limits as shown in table 7

Table 7: The total number of samples with pesticide residues in excess of the allowable limits:

Group	Total	MRL-free		Within Acceptable limits		Exceeding limits	
		Number	%	Number	%	Number	%
Vegetable	2033	1392	68.47%	438	21.54%	203	9.99%
Fruit	1388	713	51.37%	580	41.79%	95	6.84%
Total	**3421**	**2105**	**61.53%**	**1018**	**29.76%**	**298**	**8.71%**

The analysis of vegetable samples showed that 9.99% contained pesticide residues exceeding the acceptable MRLs, whereas only 6.84% of fruit samples found to be in excess of the MRLs (see table 7).

In terms of the sample source, 211 samples (10.32%) of the local food population (a total of 2045 local food samples) contained pesticide residues higher than the tolerance rates (see table 8) whereas only 87 (6.32 %) samples from a total of 1376 imported food commodities found to be in violation of the allowable MRLs (as in table 9).

Table 8: the total number of locally produced samples in excess of the tolerance levels:

Group	Total	MRL-free		Within Acceptable limits		Exceeding limits	
		Number	%	Number	%	Number	%
Vegetable	1673	1089	65.09%	393	23.49%	191	11.42%
Fruit	372	270	72.58%	82	22.04%	20	5.38%
Total	**2045**	**1359**	**66.45%**	**475**	**23.23%**	**211**	**10.32%**

Table 9: the total number of imported samples higher than the allowable MRLs:

Group	الإجمالي	MRL-free		Within Acceptable limits		Exceeding limits	
		Number	%	Number	%	Number	%
Vegetable	360	303	84.17%	45	12.50%	12	3.33%
Fruit	1016	443	43.60%	498	49.02%	75	7.38%
Total	1376	746	54.22%	543	39.46%	87	6.32%

The current PRMP findings compared to that of a former program, a total of 8.62% and 8.71% respectively, indicate a proximity of ratios between the two programs.

Comparatively, the total percentage of pesticide residue limits in food in Saudi Arabia is higher than those in EU and the United States of America (see table 10).

Table 10: No. Samples Exceeding Pesticide Residue Limits According to Monitoring Programs in Some Countries:

Country	samples exceeding % MRLs			Program Name	Acting body	date
	Total	Local	imported			
Saudi Arabia	8.62	11.2	5.92	1st National Program for Monitoring Pesticide Residues in Food	SFDA	2016
Saudi Arabia	8.71	10.32	6.32	2nd National Program for Monitoring Pesticide Residues in Food	SFDA	2018
EU	3.8	2.4	7.2	The 2016 EU report on Pesticide Residues in Food	EFSA	2018
UK	3.22	2.2	4.25	Pesticide Residues in Food	PRIF	2016
Australia	8.2	-	-	Monitoring Agricultural Chemicals in fresh fruit and vegetables	Health Department – Government of West Australia	2016
USA	-	0.9	9.8	Pesticide Residue Monitoring Program	FDA	2016
Canada	4	-	-	National Chemical Residue Monitoring Program	Canadian Food Inspection Agency	2014

5. Pesticide Residues per Food Commodity Group:

1. Vegetables:

Vegetables accounted for the majority of samples collected in the national PRMP as they made up % 59.43. The total number of samples taken were 2033, with domestic products representing 82.29% whereas imported samples constituting 17.71%.

The analyses results showed that 1830 samples (90.01%) were in conformity with the standards adopted for the program, of which 1329 (68.47%) samples were free of residues, 438 (21.54%) samples had traces of pesticide residues within the tolerance levels, and 203 (9.99%) samples had residues exceeding the limits as shown in table 11. The number of vegetable samples in excess of MRLs makes up 11.42% of domestically produced commodities and 3.3% of imported products (see tables 8&9).

Most violative samples fell into the following subgroups: jute mallow, mint, and parsley representing 26.67%, 26.09%, and 25.96% respectively. Samples of zucchini, garlic and pumpkin were the least to be in violation with allowable MRLs at the following percentages: %1.94, %1.92 and %1.45 respectively (table 11).

Table 11: vegetable MRL status

Group	Total	No traces of residues		Residues within allowable limits		Exceeding limits	
		Number	%	Number	%	Number	%
Jute mallow	60	40	66.67%	4	6.67%	16	26.67%
Mint	92	54	58.70%	14	15.22%	24	26.09%
Parsley	104	55	52.88%	22	21.15%	27	25.96%
Bell pepper	111	44	39.64%	43	38.74%	24	21.62%
Coriander	85	57	67.06%	12	14.12%	16	18.82%
Cucumber	118	52	44.07%	51	43.22%	15	12.71%
Eggplant	143	80	55.94%	45	31.47%	18	12.59%
Spinach	66	51	77.27%	7	10.61%	8	12.12%
Tomato	134	47	35.07%	73	54.48%	14	10.45%
Jute mallow	93	76	81.72%	9	9.68%	8	8.60%
Okra	104	70	67.31%	27	25.96%	7	6.73%
Beans	82	65	79.27%	12	14.63%	5	6.10%
Potato	133	109	81.95%	18	13.53%	6	4.51%
Lettuce	116	94	81.03%	18	15.52%	4	3.45%
Carrot	97	59	60.82%	36	37.11%	2	2.06%
Onion	150	135	90.00%	12	8.00%	3	2.00%
Zucchini	103	81	78.64%	20	19.42%	2	1.94%
Garlic	104	102	98.08%	0	0.00%	2	1.92%
Pumpkin	138	121	87.68%	15	10.87%	2	1.45%
Total	**2033**	**1392**	**68.47%**	**438**	**21.54%**	**203**	**9.99%**

2. Fruit:

Fruit accounted for % 40.57 of the total samples collected for the program. 1388 samples of fruit were collected of which % 26.80 were domestic and %73.20 were imported.

The analyses revealed a compliance rate of % 93.16 of which % 51.37 had no traces of residues. % 6.84 of the samples collected were in excess of the tolerance levels % 5.38 of which were domestic and %7.38 were imported.

Samples of guava, pomegranate, lemon and strawberry were the at top of the list of violative samples at 41.67%, 12.63%, 10%, and 9.80% respectively. Samples of watermelon showed the minimum traces of pesticide residues in excess of the allowable limits at 1.22%. On the other hands, samples of melon and cherries had no detectable pesticide residues (see table 12).

Table 12: MRL Status According To Fruit Type

Group	Total	MRL-free		Within Acceptable limits		Exceeding limits	
		Number	%	Number	%	Number	%
Guava	24	9	37.50%	5	20.83%	10	41.67%
Pomegranate	95	60	63.16%	23	24.21%	12	12.63%
Lemon	120	34	28.33%	74	61.67%	12	10.00%
Strawberry	51	11	21.57%	35	68.63%	5	9.80%
Dates	169	146	86.39%	8	4.73%	15	8.88%
Peach	80	19	23.75%	54	67.50%	7	8.75%
Orange	133	37	27.82%	85	63.91%	11	8.27%
Banana	93	48	51.61%	39	41.94%	6	6.45%
Grape	116	29	25.00%	79	68.10%	8	6.90%
Apricot	35	11	31.43%	23	65.71%	1	2.86%
Mango	119	102	85.71%	14	11.76%	3	2.52%
Apple	163	78	47.85%	81	49.69%	4	2.45%
Watermelon	82	64	78.05%	17	20.73%	1	1.22%
Melon	84	51	60.71%	33	39.29%	0	0.00%
Cherry	24	14	58.33%	10	41.67%	0	0.00%
Total	**1388**	**713**	**51.37%**	**580**	**41.79%**	**95**	**6.84%**

6. Results of Sampling by Geographical Coverage

1. Sampling per region:

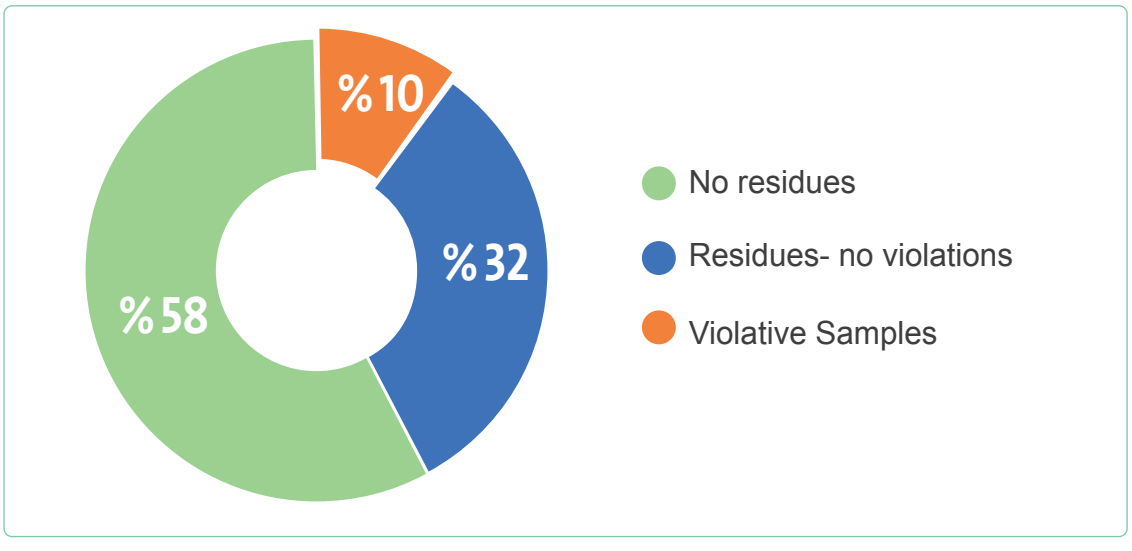
In reference to regions where the samples were taken and checked for compliance, Najran came at top of the list with a violation ratio of 18.46%. Baha, on the other hands, were the least on the list at 4.17%. For samples collected in the Northern Border, the analyses results showed no traces of pesticide residues (see table 13):

Table 13: Fruit MRL Status by Regions in Saudi Arabia

Area	Total	MRL-free		Within Acceptable limits		Exceeding limits	
		Number	%	Number	%	Number	%
Najran	65	28	43.08	25	38.46	12	18.46
Tabuk	131	77	58.78	33	25.19	21	16.03
Madinah	259	124	47.88	100	38.61	35	13.51
Jouf	36	19	52.78	13	36.11	4	11.11
Riyadh	807	467	57.87	258	31.97	82	10.16
Asir	189	97	51.32	73	38.62	19	10.05
Jazan	155	82	52.90	58	37.42	15	9.68
Gassem	121	86	71.07	24	19.83	11	9.09
Hail	61	35	57.38	21	34.43	5	8.20
.Eastern Prov	531	340	64.03	156	29.38	35	6.59
Makkah	921	675	73.29	191	20.74	55	5.97
Baha	96	49	51.04	43	44.79	4	4.17
Northern Border	49	26	53.06	23	46.94	0	0.00
Total	**3421**	**2105**	**61.53**	**1018**	**29.76**	**298**	**8.71**

Riyadh

In Riyadh region, 807 samples were collected and analyzed, forming 23.59% of the total number samples allocated for the national PRMP. According to analyses, 89.84% of the samples were within the permissible pesticide residue limits of which 57.87% were free of any detectable residues, whereas 82 (10.16%) samples found to have exceeded the tolerance levels.



The program's data indicated that 599 (% 74.23) of samples were produced domestically whereas 208 (% 25.77) samples were imported. Moreover, the test results showed that Guava samples came at top of the list of nonconformity to the allowable pesticide residue limits in Riyadh region followed by samples of jute mallow, mint, and coriander with violation ratios of 5 (% 50), 7,10, and 8 out of 10,17,23 and 19 samples respectively (table 14).

Fig1: food type with the highest level of pesticide residues in Riyadh

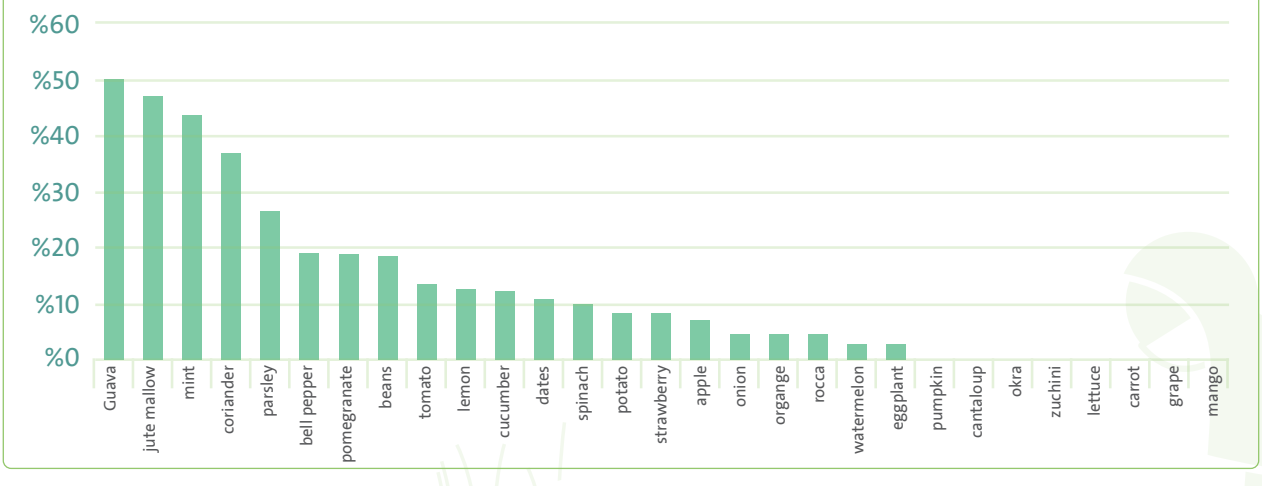
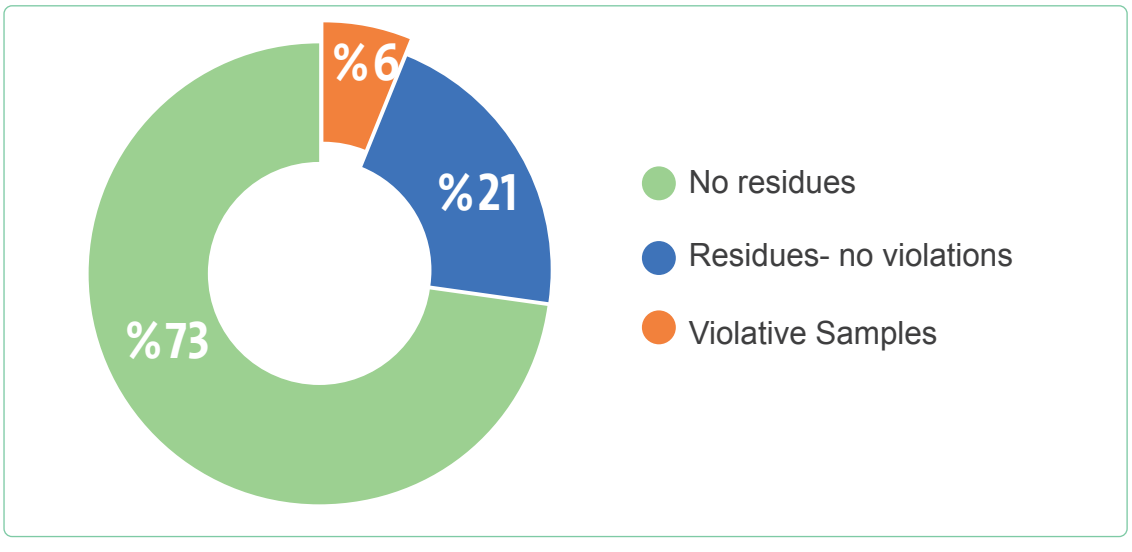


Table 14: Foodstuff with Maximum Residue Levels Monitored In Riyadh

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
Guava	10	2	20.00	3	30.00	5	50.00
Jute mallow	17	8	47.06	1	5.88	8	47.06
Mint	23	8	34.78	5	21.74	10	43.48
Coriander	19	8	42.11	4	21.05	7	36.84
Parsley	30	17	56.67	5	16.67	8	26.67
Bell pepper	21	8	38.10	9	42.86	4	19.05
Pomegranate	21	12	57.14	5	23.81	4	19.05
Beans	16	9	56.25	4	25.00	3	18.75
Tomato	37	16	43.24	16	43.24	5	13.51
Lemon	24	7	29.17	14	58.33	3	12.50
Cucumber	33	11	33.33	18	54.55	4	12.12
Dates	72	56	77.78	8	11.11	8	11.11
Spinach	20	14	70.00	4	20.00	2	10.00
Potato	36	25	69.44	8	22.22	3	8.33
Strawberry	12	3	25.00	8	66.67	1	8.33
Apple	14	9	64.29	4	28.57	1	7.14
Onion	42	35	83.33	5	11.90	2	4.76
Orange	23	8	34.78	14	60.87	1	4.35
Watercress	23	19	82.61	3	13.04	1	4.35
Eggplant	34	22	64.71	11	32.35	1	2.94
Watermelon	37	26	70.27	10	27.03	1	2.70
Pumpkin	37	32	86.49	5	13.51	-	0.00
cantaloupe	31	14	45.16	17	54.84	-	0.00
okra	31	21	67.74	10	32.26	-	0.00
Zucchini	24	14	58.33	10	41.67	-	0.00
Lettuce	20	13	65.00	7	35.00	-	0.00
Carrot	20	8	40.00	12	60.00	-	0.00
Grape	19	5	26.32	14	73.68	-	0.00
Mango	16	13	81.25	3	18.75	-	0.00
Banana	11	6	54.55	5	45.45	-	0.00
Garlic	11	11	100.00	-	0.00	-	0.00
Apricot	8	1	12.50	7	87.50	-	0.00
peach	8	3	37.50	5	62.50	-	0.00
cherries	7	3	42.86	4	57.14	-	0.00
Total	**807**	**467**	**57.87**	**258**	**31.97**	**82**	**10.16**

Makkah

In Makkah region, 921 samples were collected and analyzed for pesticide residues. According to the results, 866 (94.03%) of the samples were within the tolerance limits of which 675 (73.29%) samples were free of residues, whereas 55 (5.97%) samples found to have exceeded the allowable limits.



The program's data indicated that 467 (% 53.71) samples were domestic samples whereas 454 (% 49.29) samples were imported. Moreover, the test results showed that samples of parsley and spinach were at the top of the list of violation to the pesticide residue limits in Makkah region at ratios of 5 and 4 out of 20 and 16 (% 25) respectively. This was followed by samples of bell pepper, eggplant, mint and dates with a ratio of 6, 10, 3, 3 out of 30,51, 19, 19 samples respectively (table 15).

Fig2: food type with the highest level of pesticide residues in Makkah

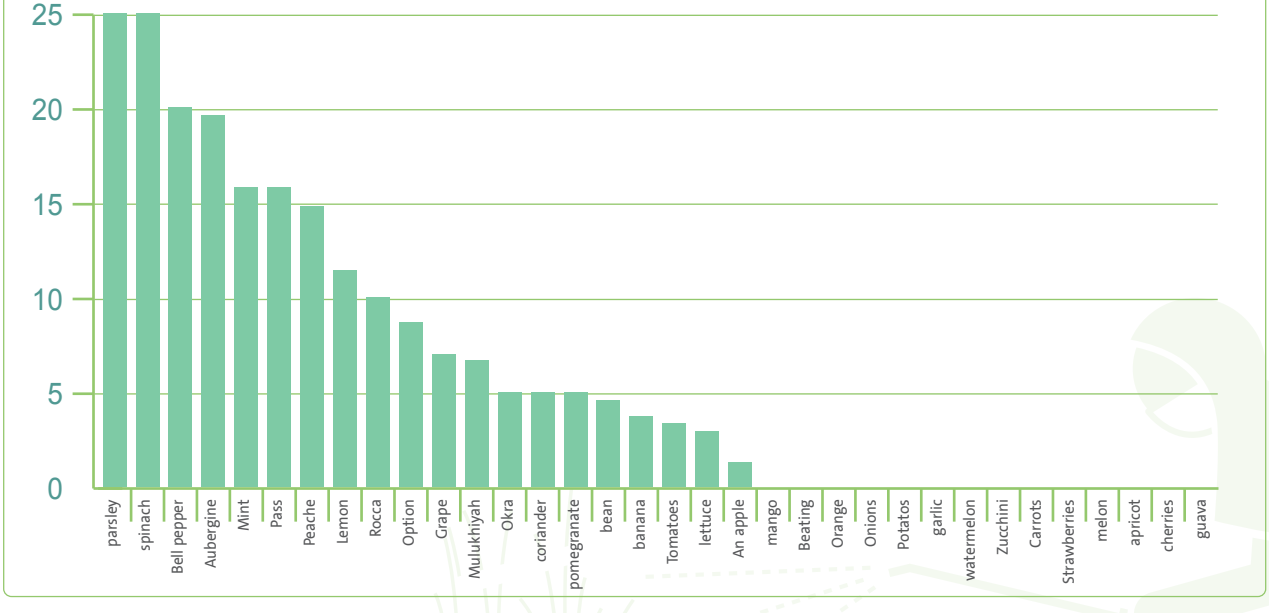
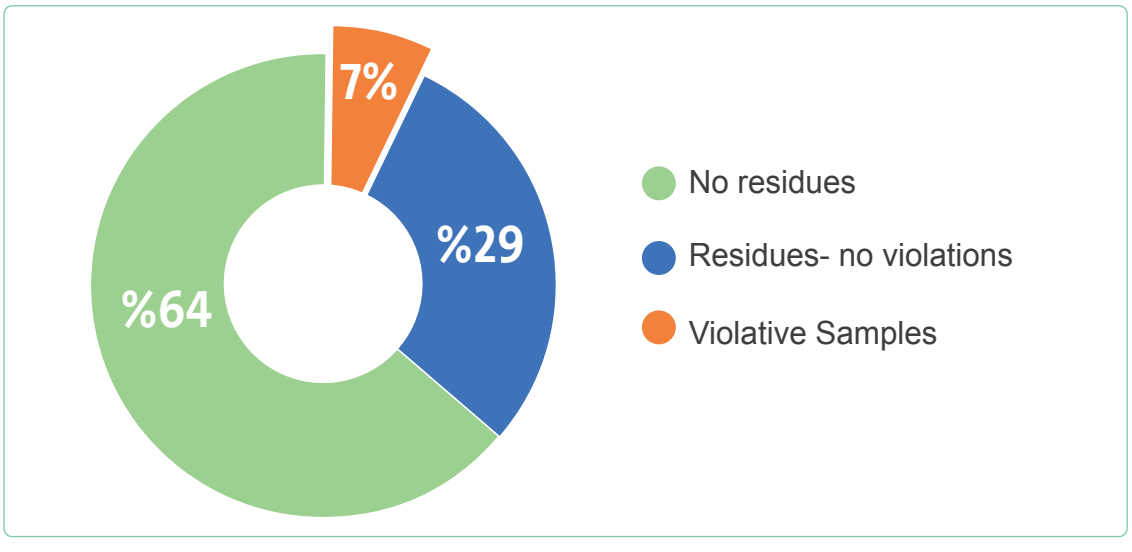


Table 15: Foodstuff with Maximum Residue Levels Monitored In Makkah

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
Parsley	20	11	55.00	4	20.00	5	25.00
Spinach	16	11	68.75	1	6.25	4	25.00
bell pepper	30	16	53.33	8	26.67	6	20.00
Eggplant	51	34	66.67	7	13.73	10	19.61
Mint	19	14	73.68	2	10.53	3	15.79
Dates	19	16	84.21	-	0.00	3	15.79
Peach	27	12	44.44	11	40.74	4	14.81
Lemon	35	16	45.71	15	42.86	4	11.43
Watercress	20	18	90.00	-	0.00	2	10.00
Cucumber	23	17	73.91	4	17.39	2	8.70
Grape	43	15	34.88	25	58.14	3	6.98
jute mallow	15	12	80.00	2	13.33	1	6.67
Okra	20	18	90.00	1	5.00	1	5.00
Coriander	20	19	95.00	-	0.00	1	5.00
pomegranate	20	18	90.00	1	5.00	1	5.00
Beans	22	20	90.91	1	4.55	1	4.55
Banana	27	25	92.59	1	3.70	1	3.70
Tomato	30	21	70.00	8	26.67	1	3.33
Lettuce	34	30	88.24	3	8.82	1	2.94
apple	77	32	41.56	44	57.14	1	1.30
mango	49	47	95.92	2	4.08	-	0.00
pumpkin	46	44	95.65	2	4.35	-	0.00
orange	40	16	40.00	24	60.00	-	0.00
onion	40	40	100.00	-	0.00	-	0.00
potato	32	32	100.00	-	0.00	-	0.00
garlic	26	26	100.00	-	0.00	-	0.00
watermelon	23	22	95.65	1	4.35	-	0.00
zuchini	21	21	100.00	-	0.00	-	0.00
carrot	19	17	89.47	2	10.53	-	0.00
strawberry	18	6	33.33	12	66.67	-	0.00
cantaloup	17	16	94.12	1	5.88	-	0.00
apricot	10	5	50.00	5	50.00	-	0.00
cherries	6	3	50.00	3	50.00	-	0.00
guava	6	5	83.33	1	16.67	-	0.00
Total	**921**	**675**	**73.29**	**191**	**20.74**	**55**	**5.97**

Eastern Province

In the Eastern Province, 531 (%15.52) samples were collected and analyzed for pesticide residues. According to the results, 496 (% 93.41) of the samples were within the tolerance limits of which % 64.3 of the samples were free of residues, whereas 35 (% 6.59) samples found to have exceeded the allowable limits.



The program's data indicated that 291 (% 54.80) samples were domestic samples whereas 240 (% 45.20) samples were imported. Moreover, the test results showed that samples of watercress were at the top of the list of violation to the pesticide residue limits in the Eastern province at a ratio of 1 out of 3 and 16 (% 33.33). This was followed by samples of parsley, pomegranate, orange and bell pepper with ratios of 4, 3, 4, 2 out of 15, 16, 14, 12 samples respectively (table 16).

Fig3: food type with the highest level of pesticide residues in Eastern Province

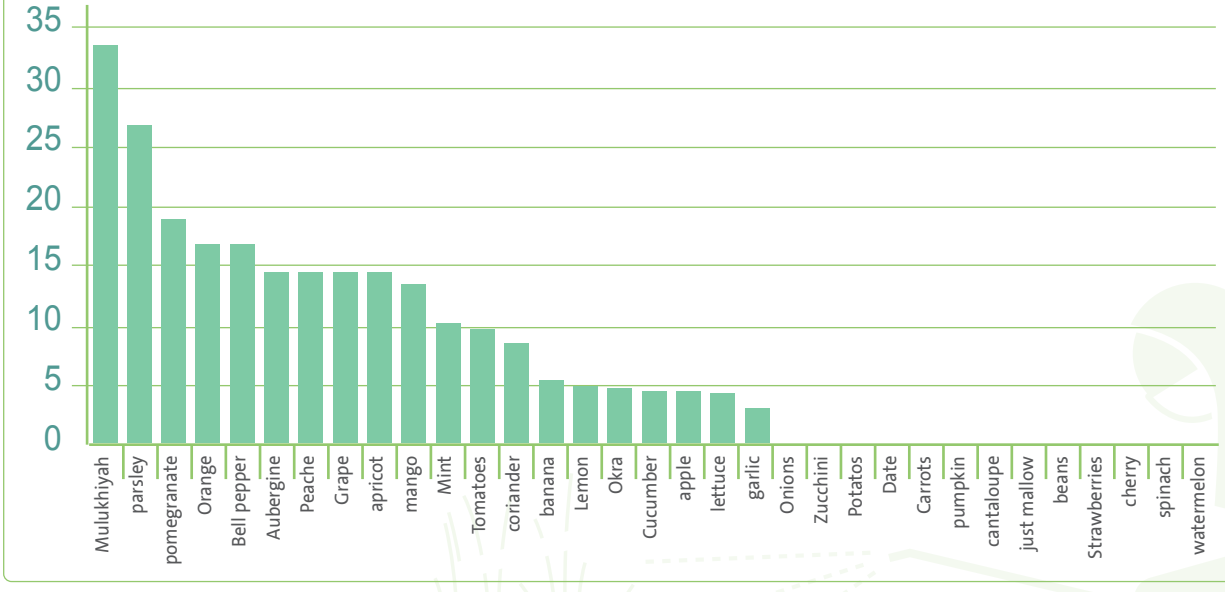
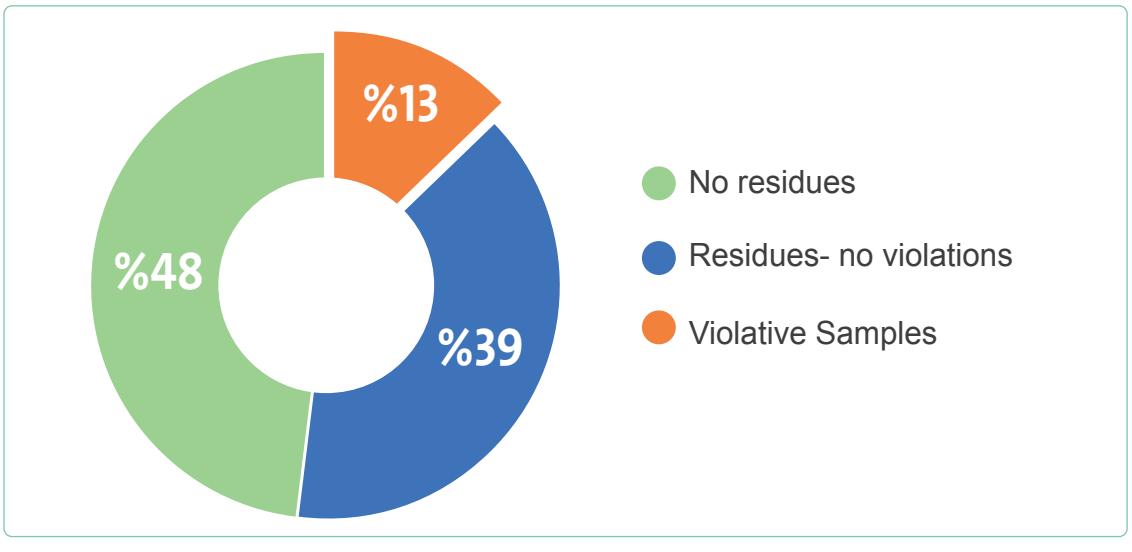


Table 16: Foodstuff with Maximum Residue Levels Monitored In Eastern Province

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
Jute mallow	3	1	33.33	1	33.33	1	33.33
Parsley	15	5	33.33	6	40.00	4	26.67
Pomegranate	16	8	50.00	5	31.25	3	18.75
Orange	24	5	20.83	15	62.50	4	16.67
Bell pepper	12	6	50.00	4	33.33	2	16.67
Eggplant	21	9	42.86	9	42.86	3	14.29
peach	14	3	21.43	9	64.29	2	14.29
Grape	14	3	21.43	9	64.29	2	14.29
Apricot	7	4	57.14	2	28.57	1	14.29
Mango	15	12	80.00	1	6.67	2	13.33
Mint	10	7	70.00	2	20.00	1	10.00
Tomato	21	3	14.29	16	76.19	2	9.52
Coriander	12	10	83.33	1	8.33	1	8.33
Banana	19	7	36.84	11	57.89	1	5.26
Lemon	21	5	23.81	15	71.43	1	4.76
Okra	22	15	68.18	6	27.27	1	4.55
Cucumber	23	17	73.91	5	21.74	1	4.35
Apple	23	12	52.17	10	43.48	1	4.35
Lettuce	24	20	83.33	3	12.50	1	4.17
Garlic	35	34	97.14	-	0.00	1	2.86
Onion	23	22	95.65	1	4.35	-	0.00
Zucchini	22	20	90.91	2	9.09	-	0.00
Potato	21	19	90.48	2	9.52	-	0.00
Date	21	21	100.00	-	0.00	-	0.00
Carrot	21	14	66.67	7	33.33	-	0.00
Pumpkin	20	18	90.00	2	10.00	-	0.00
Cantaloupe	16	11	68.75	5	31.25	-	0.00
Jute mallow	11	8	72.73	3	27.27	-	0.00
Beans	10	8	80.00	2	20.00	-	0.00
strawberry	3	1	33.33	2	66.67	-	0.00
Cherry	5	5	100.00	-	0.00	-	0.00
Spinach	5	5	100.00	-	0.00	-	0.00
Watermelon	2	2	100.00	-	0.00	-	0.00
Total	**921**	**675**	**64.03**	**191**	**29.38**	**55**	**6.59**

Madinah

In Madinah, 259 (% 7.57) samples were collected and analyzed for pesticide residues. According to the results, 224 (% 86.49) samples were within the tolerance limits of which 124 (% 47.88) samples had no traces of residues, whereas 35 (% 13.51) samples found to have exceeded the allowable limits.



The program's data indicated that 155 (% 59.58) samples were domestic samples whereas 104 (% 40.15) samples were imported. Moreover, the test results showed that samples of mint and jute mallow were at the top of the list of violation to the pesticide residue limits in Madinah region at a ratio of 6 and 3 out of 8 and 4 respectively (%75). This was followed by samples of spinach, parsley and coriander with ratios of 2, 5, 4 out of 3, 8, 7 samples respectively (table 17).

Fig4: food type with the highest level of pesticide residues in Madinah

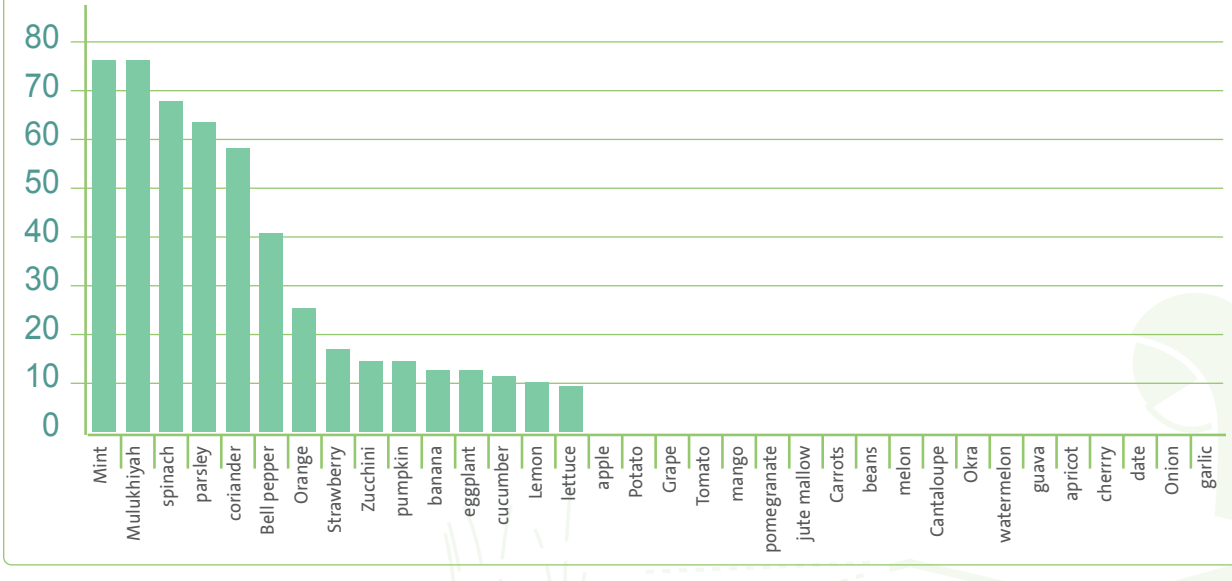
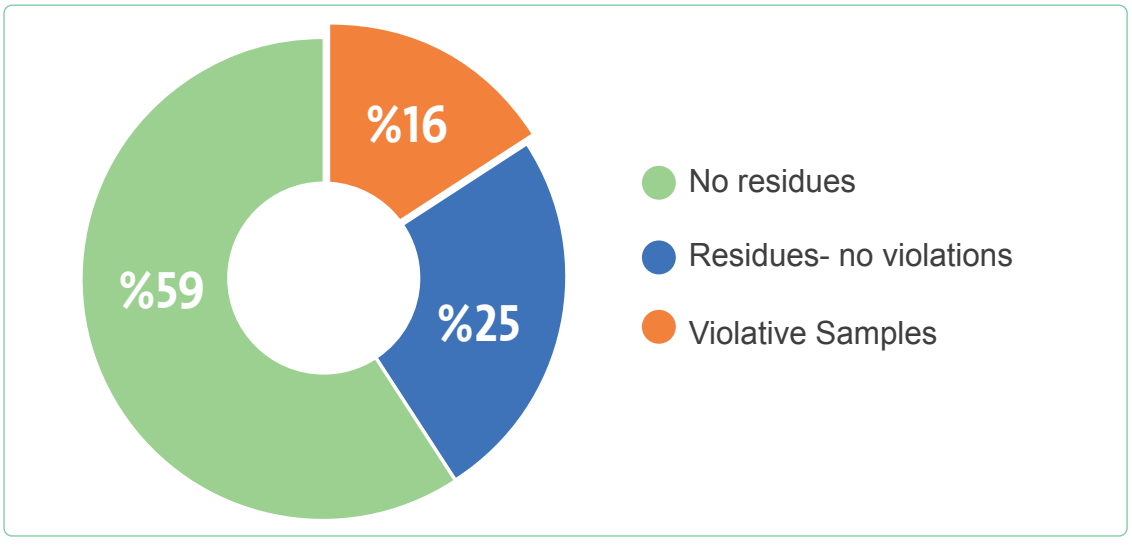


Table 17: Foodstuff with Maximum Residue Levels Monitored In Madinah

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
Mint	8	1	12.50	1	12.50	6	75.00
Watercress	4	1	25.00	-	0.00	3	75.00
Spinach	3	1	33.33	-	0.00	2	66.67
Parsley	8	2	25.00	1	12.50	5	62.50
Coriander	7	2	28.57	1	14.29	4	57.14
Bell pepper	10	4	40.00	2	20.00	4	40.00
Orange	12	3	25.00	6	50.00	3	25.00
Strawberry	6	-	0.00	5	83.33	1	16.67
Zucchini	7	3	42.86	3	42.86	1	14.29
Pumpkin	7	5	71.43	1	14.29	1	14.29
Banana	8	2	25.00	5	62.50	1	12.50
Eggplant	8	3	37.50	4	50.00	1	12.50
Cucumber	9	1	11.11	7	77.78	1	11.11
Lemon	10	-	0.00	9	90.00	1	10.00
Lettuce	11	9	81.82	1	9.09	1	9.09
Apple	13	5	38.46	8	61.54	-	0.00
Potato	11	9	81.82	2	18.18	-	0.00
Grape	9	-	0.00	9	100.00	-	0.00
Tomato	9	1	11.11	8	88.89	-	0.00
Mango	8	6	75.00	2	25.00	-	0.00
Pomegranate	8	5	62.50	3	37.50	-	0.00
Jute mallow	7	5	71.43	2	28.57	-	0.00
Carrot	6	3	50.00	3	50.00	-	0.00
Beans	6	3	50.00	3	50.00	-	0.00
Peach	5	-	0.00	5	100.00	-	0.00
Cantaloupe	5	2	40.00	3	60.00	-	0.00
Okra	4	3	75.00	1	25.00	-	0.00
Watermelon	4	2	50.00	2	50.00	-	0.00
Guava	1	-	0.00	1	100.00	-	0.00
Apricot	1	-	0.00	1	100.00	-	0.00
Cherry	1	-	0.00	1	100.00	-	0.00
Date	26	26	100.00	-	0.00	-	0.00
onion	10	10	100.00	-	0.00	-	0.00
garlic	7	7	100.00	-	0.00	-	0.00
Total	**259**	**124**	**47.88**	**100**	**38.61**	**35**	**13.51**

Tabuk

In Tabuk, 131 (% 3.83) samples were collected and analyzed for pesticide residues. According to the results, 110 (% 83.97) samples were within the tolerance limits of which 77 (% 58.78) samples had no traces of residues, whereas 21 (% 16.03) samples found to have exceeded the allowable limits.



The program's data indicated that 85 (% 64.89) samples were domestic samples whereas 46 (% 35.11) samples were imported. Moreover, the test results showed that samples of guava, and okra were at the top of the list of violation to the pesticide residue limits in Tabuk region (table 18).

Fig5: food type with the highest level of pesticide residues in Tabuk

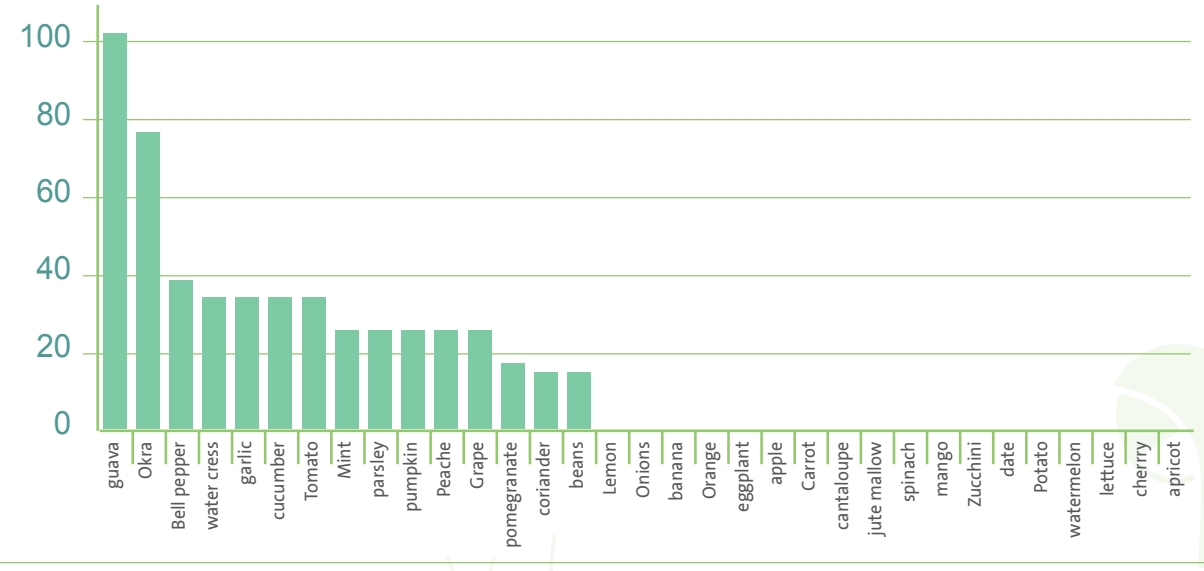
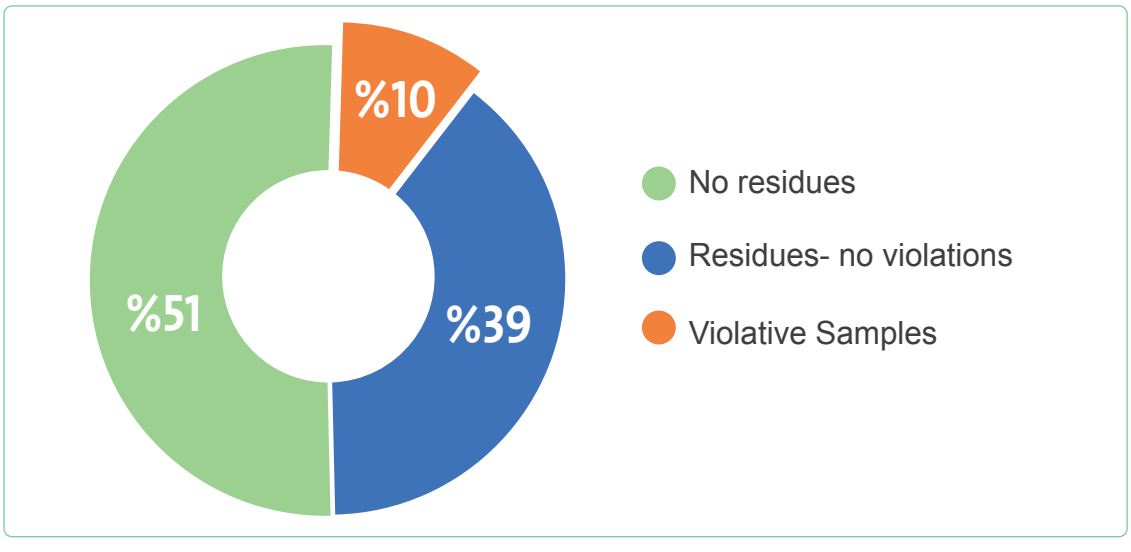


Table 18: Foodstuff with Maximum Residue Levels Monitored In Tabuk

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
guava	1	-	0.00	-	0.00	1	100.00
okra	4	1	25.00	-	0.00	3	75.00
bell pepper	8	1	12.50	4	50.00	3	37.50
watercress	3	2	66.67	-	0.00	1	33.33
garlic	3	2	66.67	-	0.00	1	33.33
cucumber	3	1	33.33	1	33.33	1	33.33
tomato	3	-	0.00	2	66.67	1	33.33
mint	8	5	62.50	1	12.50	2	25.00
parsley	8	5	62.50	1	12.50	2	25.00
pumpkin	4	3	75.00		0.00	1	25.00
peach	4	-	0.00	3	75.00	1	25.00
grape	4	-	0.00	3	75.00	1	25.00
pomegranate	6	3	50.00	2	33.33	1	16.67
coriander	7	5	71.43	1	14.29	1	14.29
beans	7	5	71.43	1	14.29	1	14.29
lemon	5	1	20.00	4	80.00	-	0.00
onion	5	3	60.00	2	40.00	-	0.00
banana	3	1	33.33	2	66.67	-	0.00
orange	2	-	0.00	2	100.00	-	0.00
eggplant	3	2	66.67	1	33.33	-	0.00
apple	3	2	66.67	1	33.33	-	0.00
carrot	3	2	66.67	1	33.33	-	0.00
cantaloupe	1	-	0.00	1	100.00	-	0.00
jute mallow	8	8	100.00	-	0.00	-	0.00
spinach	5	5	100.00	-	0.00	-	0.00
mango	4	4	100.00	-	0.00	-	0.00
zucchini	3	3	100.00	-	0.00	-	0.00
date	3	3	100.00	-	0.00	-	0.00
potato	3	3	100.00	-	0.00	-	0.00
watermelon	3	3	100.00	-	0.00	-	0.00
lettuce	2	2	100.00	-	0.00	-	0.00
cherry	1	1	100.00	-	0.00	-	0.00
apricot	1	1	100.00	-	0.00	-	0.00
Total	**131**	**77**	**58.78**	**33**	**25.19**	**21**	**16.03**

Asir

In Asir, 189 (% 5.25) samples were collected and analyzed for pesticide residues. According to the results, 170 (% 89.94) samples were within the tolerance limits of which 97 (% 51.32) samples had no traces of residues, whereas 19 (%10.05) samples found to have exceeded the allowable limits.



The program's data indicated that 99 (% 52.38) samples were domestic samples whereas 90 (% 47.62) samples were imported. Moreover, the test results showed that samples of guava were at the top of the list of violation to the pesticide residue limits in Asir region at a ratio of 2 out of 3 (% 66.67). This was followed by samples of jute mallow, strawberry and eggplant with ratios of 4,2,2 out of 8,6,6 samples respectively (table 19).

Fig6: food type with the highest level of pesticide residues in Asir

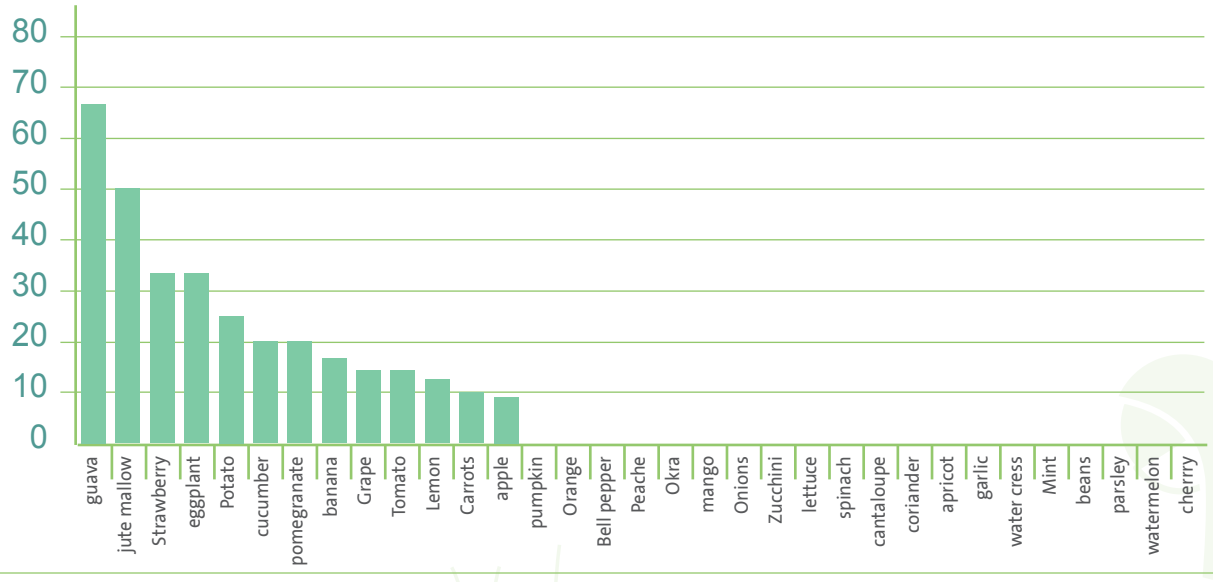
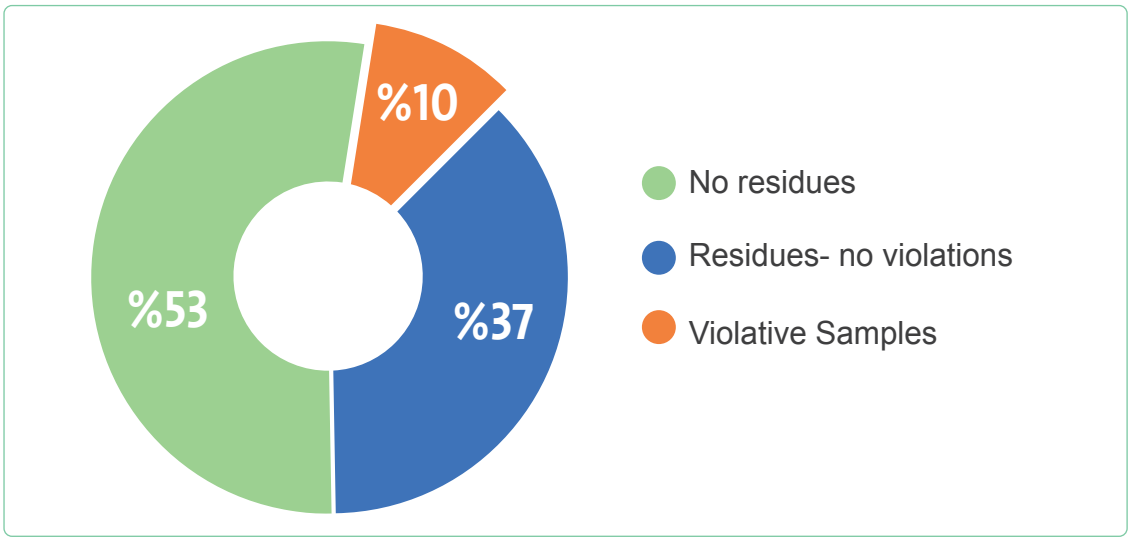


Table 19: Foodstuff with Maximum Residue Levels Monitored In Asir

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
guava	3	1	33.33	-	0.00	2	66.67
jute mallow	8	4	50.00	-	0.00	4	50.00
strawberry	6	1	16.67	3	50.00	2	33.33
eggplant	6	3	50.00	1	16.67	2	33.33
potato	4	2	50.00	1	25.00	1	25.00
cucumber	5	1	20.00	3	60.00	1	20.00
pomegranate	5	3	60.00	1	20.00	1	20.00
banana	6	-	0.00	5	83.33	1	16.67
grape	7	1	14.29	5	71.43	1	14.29
tomato	7	1	14.29	5	71.43	1	14.29
lemon	8	2	25.00	5	62.50	1	12.50
carrot	10	4	40.00	5	50.00	1	10.00
apple	11	4	36.36	6	54.55	1	9.09
pumpkin	9	8	88.89	1	11.11	-	0.00
orange	8	-	0.00	8	100.00	-	0.00
bell pepper	7	2	28.57	5	71.43	-	0.00
peach	5	-	0.00	5	100.00	-	0.00
okra	7	3	42.86	4	57.14	-	0.00
mango	7	5	71.43	2	28.57	-	0.00
onion	6	4	66.67	2	33.33	-	0.00
zucchini	6	5	83.33	1	16.67	-	0.00
lettuce	6	5	83.33	1	16.67	-	0.00
spinach	6	5	83.33	1	16.67	-	0.00
cantaloupe	4	3	75.00	1	25.00	-	0.00
coriander	3	2	66.67	1	33.33	-	0.00
apricot	1	-	0.00	1	100.00	-	0.00
garlic	6	6	100.00	-	0.00	-	0.00
watercress	6	6	100.00	-	0.00	-	0.00
mint	4	4	100.00	-	0.00	-	0.00
beans	4	4	100.00	-	0.00	-	0.00
parsley	4	4	100.00	-	0.00	-	0.00
watermelon	3	3	100.00	-	0.00	-	0.00
cherry	1	1	100.00	-	0.00	-	0.00
Total	**189**	**97**	**51.32**	**73**	**38.62**	**19**	**10.05**

Jazan

In Jazan, 155 (% 4.53) samples were collected and analyzed for pesticide residues. According to the results, 140 (% 90.32) samples were within the tolerance limits of which 82 (% 52.90) samples had no traces of residues, whereas 15 (%9.68) samples found to have exceeded the allowable limits.



The program's data indicated that 87 (%56.13) samples were domestic samples whereas 68 (% 43.87) samples were imported. Moreover, the test results showed that samples of okra and parsley were at the top of the list of violation to the pesticide residue limits in Madinah region at a ratio of 2 out of 5 (% 40). This was followed by samples of orange, strawberry, and jute mallow with ratios of two, and one out of 7, and 4 samples respectively (table 20).

Fig7: food type with the highest level of pesticide residues in Jazan

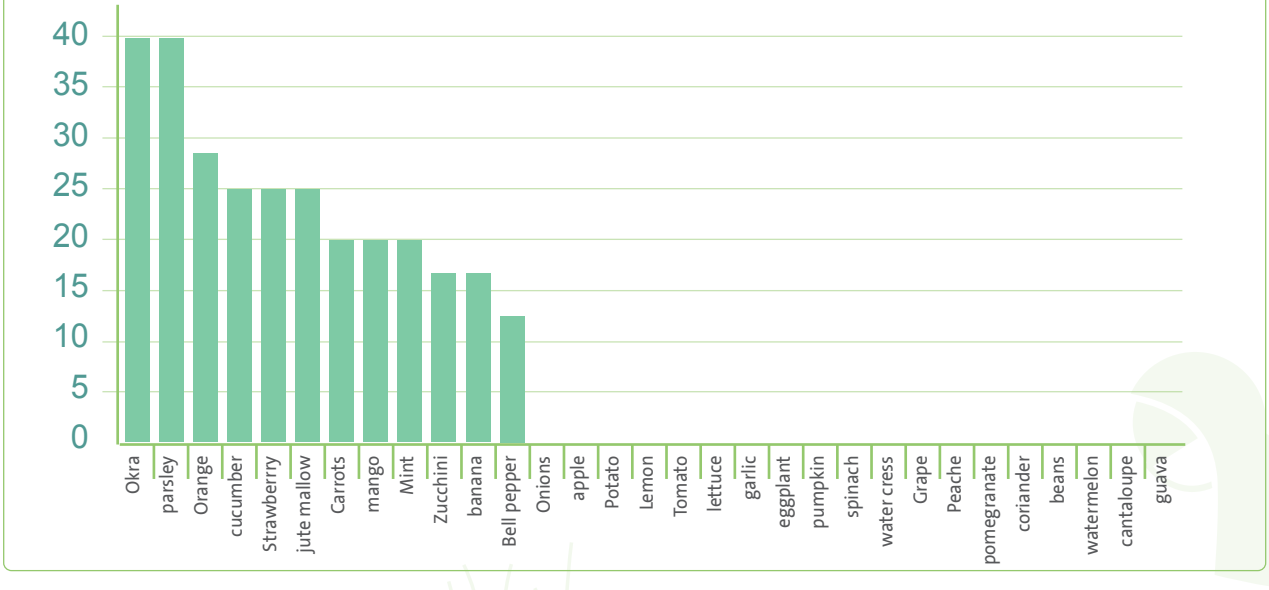
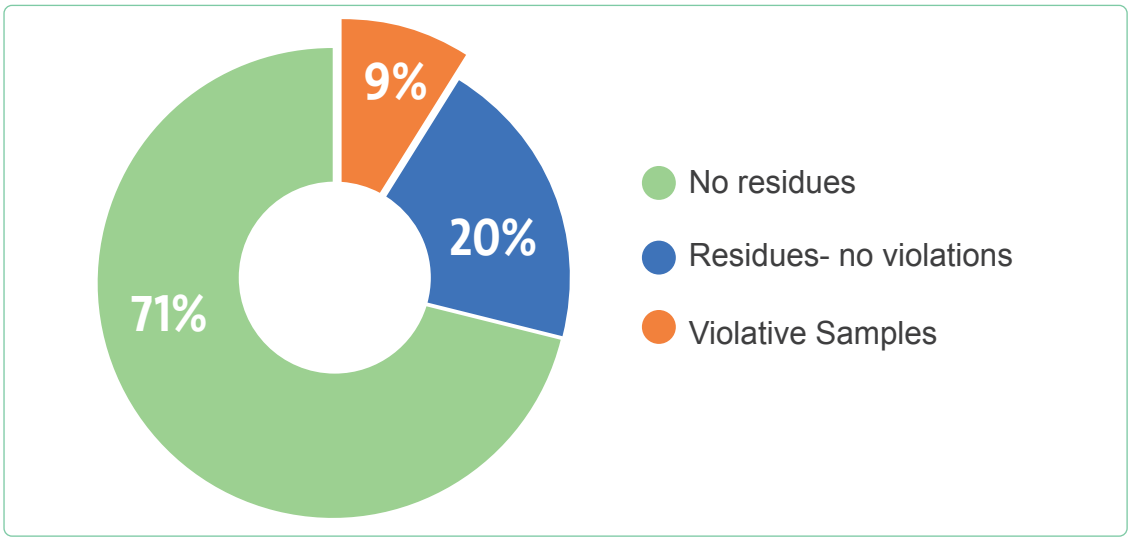


Table 20: Foodstuff with Maximum Residue Levels Monitored In Jazan

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
Okra	5	2	40.00	1	20.00	2	40.00
Parsley	5	2	40.00	1	20.00	2	40.00
Orange	7	2	28.57	3	42.86	2	28.57
cucumber	4	2	50.00	1	25.00	1	25.00
strawberry	4	-	0.00	3	75.00	1	25.00
Jute mallow	4	3	75.00	-	0.00	1	25.00
Carrot	5	2	40.00	2	40.00	1	20.00
Mango	5	3	60.00	1	20.00	1	20.00
Mint	5	4	80.00	-	0.00	1	20.00
Zucchini	6	3	50.00	2	33.33	1	16.67
Banana	6	2	33.33	3	50.00	1	16.67
Bell pepper	8	5	62.50	2	25.00	1	12.50
Onion	7	5	71.43	2	28.57	-	0.00
Apple	7	5	71.43	2	28.57	-	0.00
Potato	6	5	83.33	1	16.67	-	0.00
Lemon	6	2	33.33	4	66.67	-	0.00
Tomato	6	1	16.67	5	83.33	-	0.00
Lettuce	6	4	66.67	2	33.33	-	0.00
Garlic	5	5	100.00	-	0.00	-	0.00
Eggplant	5	-	0.00	5	100.00	-	0.00
Pumpkin	5	2	40.00	3	60.00	-	0.00
Spinach	5	4	80.00	1	20.00	-	0.00
Watercress	5	5	100.00	-	0.00	-	0.00
Grape	5	1	20.00	4	80.00	-	0.00
Peach	5	-	0.00	5	100.00	-	0.00
Pomegranate	5	2	40.00	3	60.00	-	0.00
Coriander	4	3	75.00	1	25.00	-	0.00
Bean	3	3	100.00	-	0.00	-	0.00
Watermelon	3	3	100.00	-	0.00	-	0.00
Cantaloupe	2	1	50.00	1	50.00	-	0.00
guava	1	1	100.00	-	0.00	-	0.00
Total	**155**	**82**	**52.90**	**58**	**37.42**	**15**	**9.68**

Gassim

In Gassim, 121 (%3.54) samples were collected and analyzed for pesticide residues. According to the results, 110 (%90.9) samples were within the tolerance limits of which 86 (% 71.07) samples had no traces of residues, whereas 11 (%9.09) samples found to have exceeded the allowable limits.



The program's data indicated that 90 (%74.38) samples were domestic samples whereas 31 (%25.62) samples were imported. Moreover, the test results showed that samples of coriander and watercress were at the top of the list of violation to the pesticide residue limits in Gassim at a ratio of 2 and 4, respectively, out of 2 (%50). This was followed by samples of tomato (a ratio of 2 out 6), parsley and cucumber (a ratio of 1 out of 4 for both samples) as shown in table 21.

Fig8: food type with the highest level of pesticide residues in Gassim

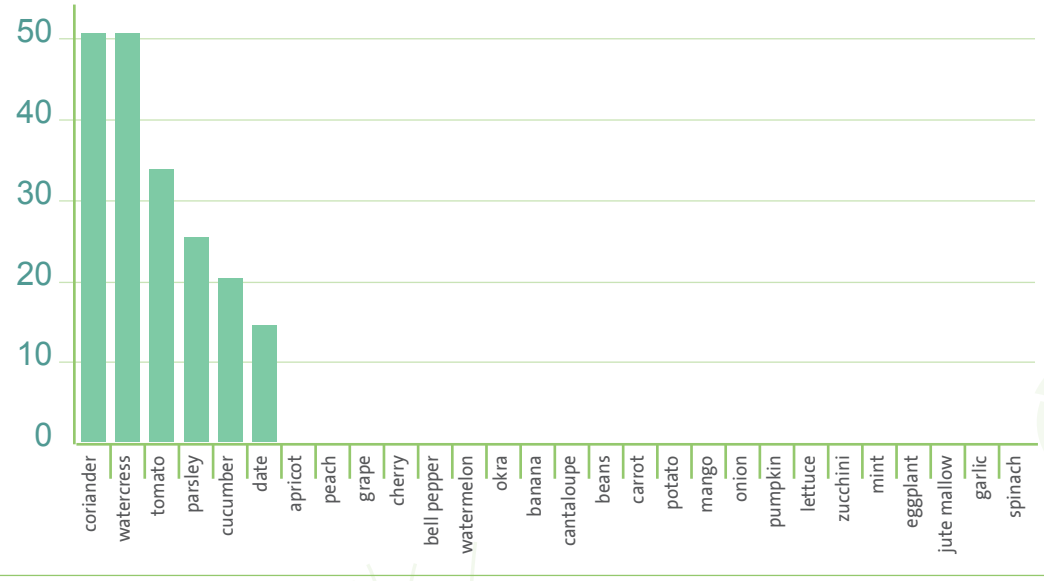
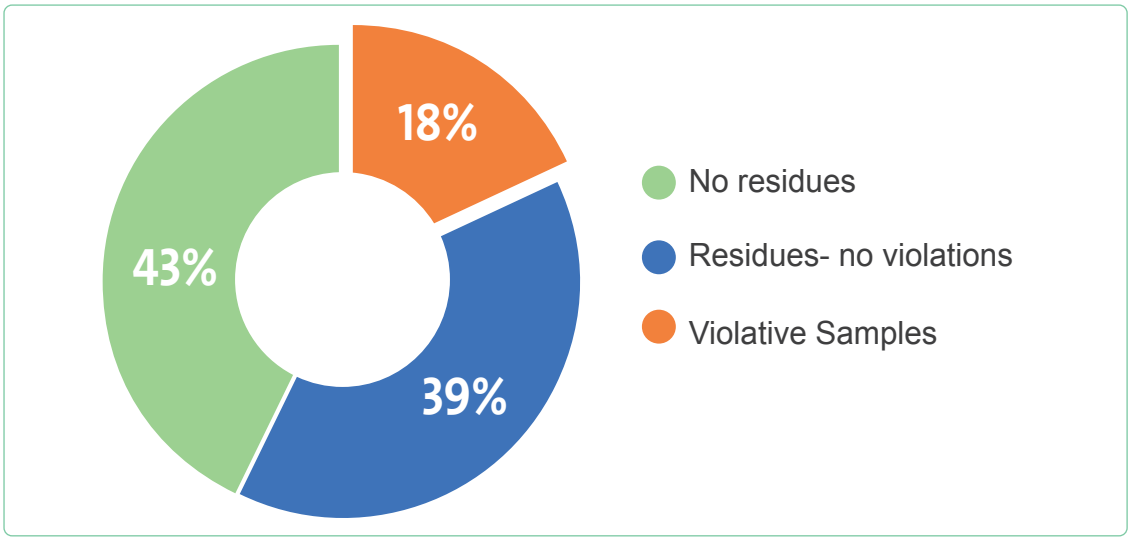


Table 21: Foodstuff with Maximum Residue Levels Monitored In Gassim

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
coriander	4	2	50.00	-	0.00	2	50.00
watercress	2	1	50.00	-	0.00	1	50.00
tomato	6	3	50.00	1	16.67	2	33.33
parsley	4	2	50.00	1	25.00	1	25.00
cucumber	5	2	40.00	2	40.00	1	20.00
date	28	24	85.71	-	0.00	4	14.29
apricot	3	-	0.00	3	100.00	-	0.00
peach	3	-	0.00	3	100.00	-	0.00
grape	2	-	0.00	2	100.00	-	0.00
cherry	1	-	0.00	1	100.00	-	0.00
bell pepper	4	1	25.00	3	75.00	-	0.00
watermelon	3	1	33.33	2	66.67	-	0.00
okra	2	1	50.00	1	50.00	-	0.00
banana	2	1	50.00	1	50.00	-	0.00
cantaloupe	2	1	50.00	1	50.00	-	0.00
beans	3	2	66.67	1	33.33	-	0.00
carrot	3	2	66.67	1	33.33	-	0.00
potato	5	4	80.00	1	20.00	-	0.00
mango	6	6	100.00	-	0.00	-	0.00
onion	6	6	100.00	-	0.00	-	0.00
pumpkin	4	4	100.00	-	0.00	-	0.00
lettuce	4	4	100.00	-	0.00	-	0.00
zucchini	4	4	100.00	-	0.00	-	0.00
mint	4	4	100.00	-	0.00	-	0.00
eggplant	4	4	100.00	-	0.00	-	0.00
jute mallow	3	3	100.00	-	0.00	-	0.00
garlic	2	2	100.00	-	0.00	-	0.00
spinach	2	2	100.00	-	0.00	-	0.00
Total	**121**	**86**	**71.07**	**24**	**19.83**	**11**	**9.09**

Najran

n Najran, 65 (%1.9) samples were collected and analyzed for pesticide residues. According to the results, 53 (%81.54) samples were within the tolerance limits of which 28 (% 43.08) samples had no traces of residues, whereas 12 (%18.46) samples found to have exceeded the allowable limits.



The program's data indicated that 42 (% 64.63) samples were domestic samples whereas 23 (%35.38) samples were imported. Moreover, the test results showed that samples of bell pepper and potato were at the top of the list of violation to the pesticide residue limits in Najran region at a ratio of 3 and 2, respectively, out of 4 (table 22).

Fig9: food type with the highest level of pesticide residues in Najran

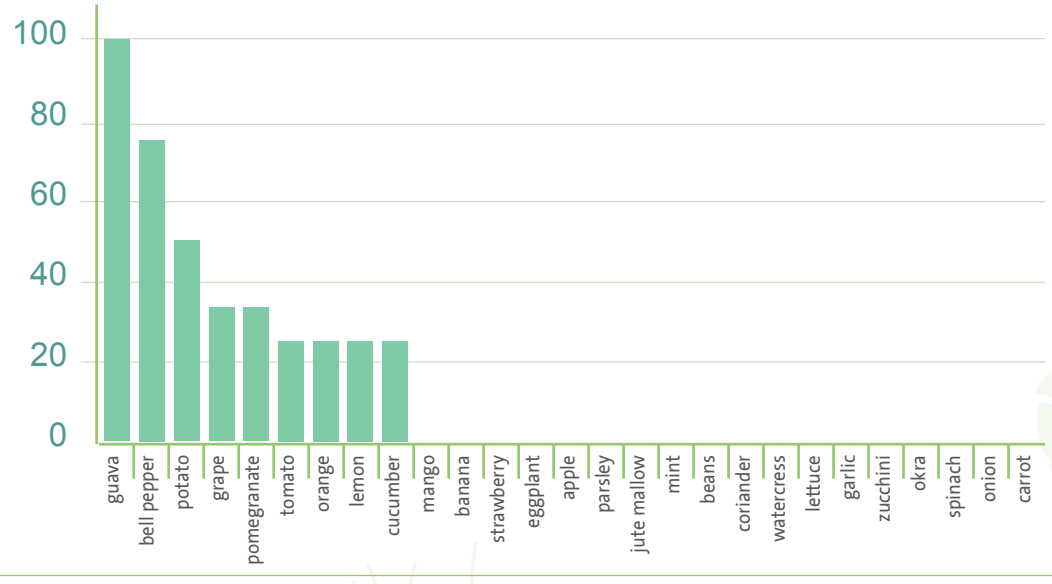
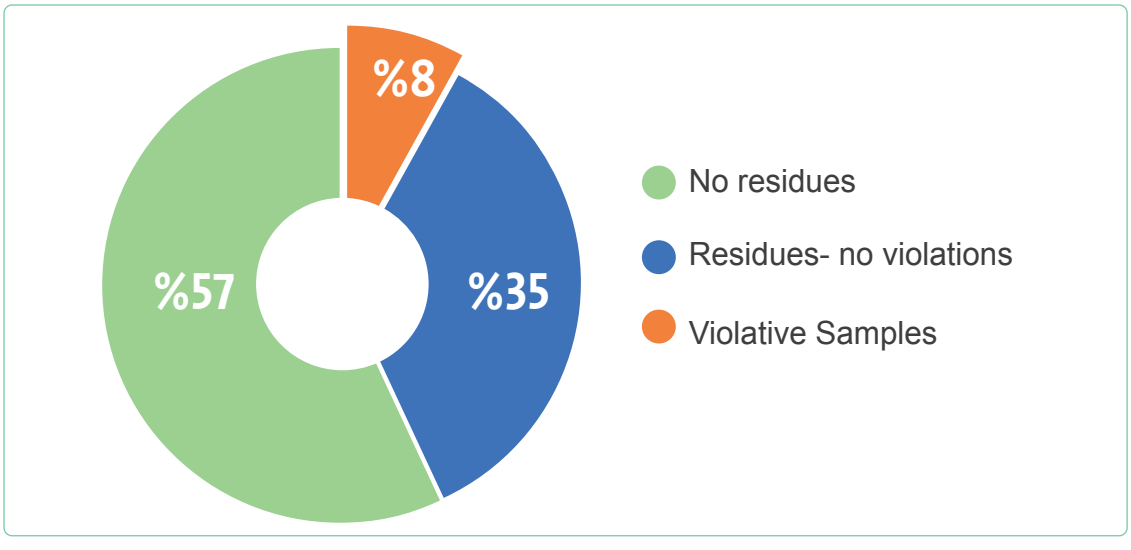


Table 22: Foodstuff with Maximum Residue Levels Monitored In Najran

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
guava	1	-	0.00	-	0.00	1	100.00
bell pepper	4	-	0.00	1	25.00	3	75.00
potato	4	2	50.00	-	0.00	2	50.00
grape	3	1	33.33	1	33.33	1	33.33
pomegranate	3	1	33.33	1	33.33	1	33.33
tomato	4	-	0.00	3	75.00	1	25.00
orange	4	-	0.00	3	75.00	1	25.00
lemon	4	-	0.00	3	75.00	1	25.00
cucumber	4	-	0.00	3	75.00	1	25.00
mango	1	-	0.00	1	100.00	-	0.00
banana	1	-	0.00	1	100.00	-	0.00
strawberry	1	-	0.00	1	100.00	-	0.00
eggplant	1	-	0.00	1	100.00	-	0.00
apple	3	1	33.33	2	66.67	-	0.00
parsley	4	2	50.00	2	50.00	-	0.00
jute mallow	2	1	50.00	1	50.00	-	0.00
mint	4	3	75.00	1	25.00	-	0.00
beans	4	4	100.00	-	0.00	-	0.00
coriander	3	3	100.00	-	0.00	-	0.00
watercress	2	2	100.00	-	0.00	-	0.00
lettuce	2	2	100.00	-	0.00	-	0.00
garlic	1	1	100.00	-	0.00	-	0.00
zucchini	1	1	100.00	-	0.00	-	0.00
okra	1	1	100.00	-	0.00	-	0.00
spinach	1	1	100.00	-	0.00	-	0.00
onion	1	1	100.00	-	0.00	-	0.00
carrot	1	1	100.00	-	0.00	-	0.00
Total	**65**	**28**	**43.08**	**25**	**38.46**	**12**	**18.46**

Hail

In Hail, 61 (%1.78) samples were collected and analyzed for pesticide residues. According to the results, 56 (%91.8) samples were within the tolerance limits of which 35 (% 57.38) samples had no traces of residues, whereas 5 (%8.20) samples found to have exceeded the allowable limits.



The program's data indicated that 34 (%55.74) samples were domestic samples whereas 27 (%44.26) samples were imported. Moreover, the test results showed that samples of guava, watercress, pomegranate, mint and tomato were at the top of the list of violation to the pesticide residue limits in Hail at a ratio of sample for each food group (table 23).

Fig10: food type with the highest level of pesticide residues in Hail

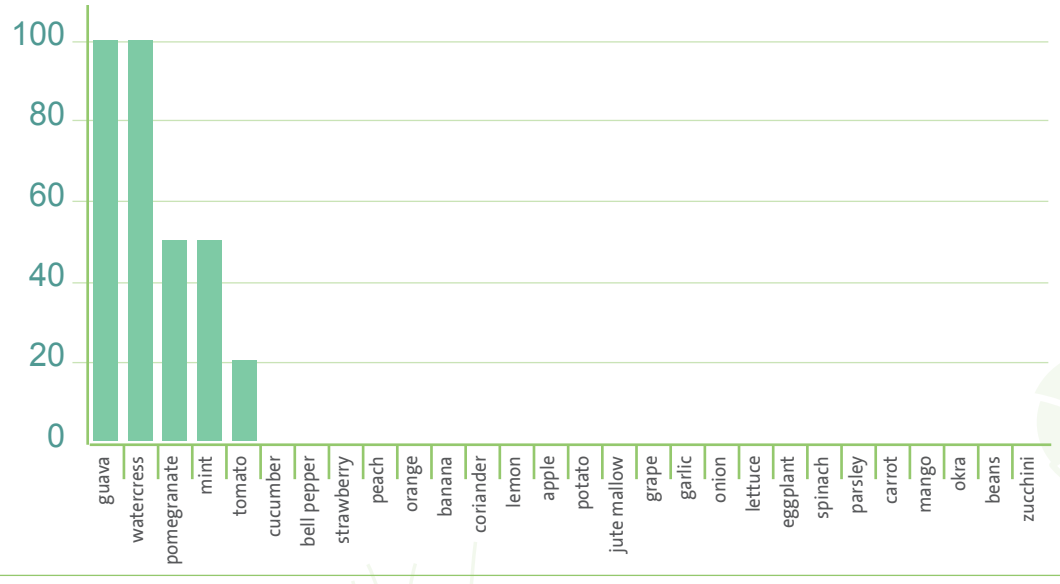
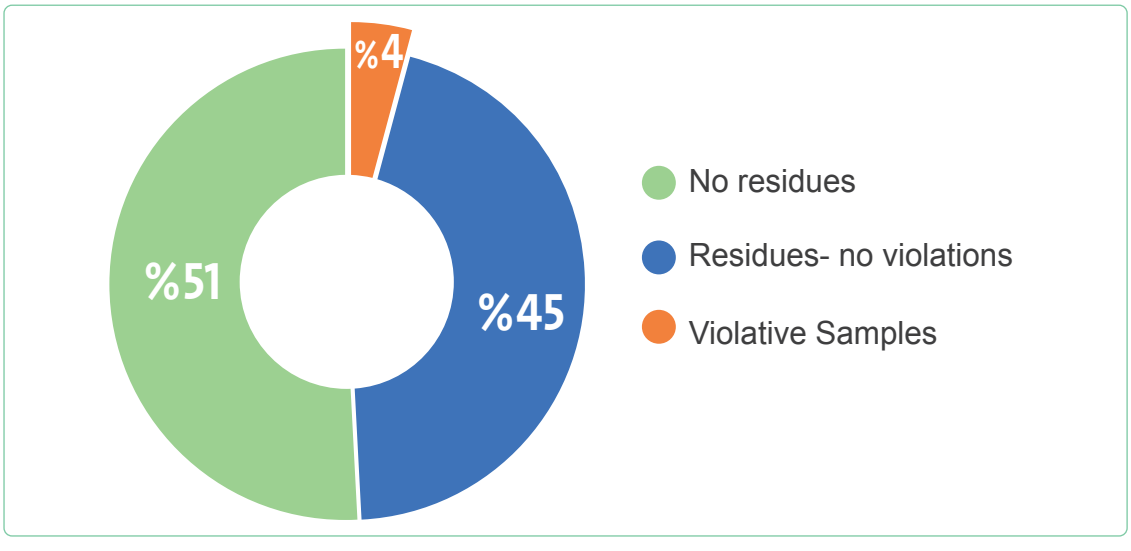


Table 23: Foodstuff With Maximum Residue Levels Monitored In Hail

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
guava	1	-	0.00	-	0.00	1	100.00
watercress	1	-	0.00	-	0.00	1	100.00
pomegranate	2	1	50.00	-	0.00	1	50.00
mint	2		0.00	1	50.00	1	50.00
tomato	5	1	20.00	3	60.00	1	20.00
cucumber	3	-	0.00	3	100.00	-	0.00
bell pepper	2	-	0.00	2	100.00	-	0.00
strawberry	1	-	0.00	1	100.00	-	0.00
peach	1	-	0.00	1	100.00	-	0.00
orange	5	1	20.00	4	80.00	-	0.00
banana	2	1	50.00	1	50.00	-	0.00
coriander	2	1	50.00	1	50.00	-	0.00
lemon	2	1	50.00	1	50.00	-	0.00
apple	5	3	60.00	2	40.00	-	0.00
potato	5	4	80.00	1	20.00	-	0.00
jute mallow	3	3	100.00	-	0.00	-	0.00
grape	2	2	100.00	-	0.00	-	0.00
garlic	2	2	100.00	-	0.00	-	0.00
onion	2	2	100.00	-	0.00	-	0.00
lettuce	2	2	100.00	-	0.00	-	0.00
eggplant	2	2	100.00	-	0.00	-	0.00
spinach	2	2	100.00	-	0.00	-	0.00
parsley	2	2	100.00	-	0.00	-	0.00
carrot	1	1	100.00	-	0.00	-	0.00
mango	1	1	100.00	-	0.00	-	0.00
okra	1	1	100.00	-	0.00	-	0.00
beans	1	1	100.00	-	0.00	-	0.00
zucchini	1	1	100.00	-	0.00	-	0.00
Total	**61**	**35**	**57.38**	**21**	**34.43**	**5**	**8.20**

Baha

In Baha, 96 (%2.81) samples were collected and analyzed for pesticide residues. According to the results, 92 (%95.83) samples were within the tolerance limits of which 49 (% 51.04) samples had no traces of residues, whereas 4 (%4.17) samples found to have exceeded the allowable limits.



The program's data indicated that 57 (%59.38) samples were domestic samples whereas 39 (%40.63) samples were imported. Moreover, the test results showed that samples of cucumber and lemon were at the top of the list of violation to the pesticide residue limits in Baha at a ratio of 2 out of 4, and one out of 2, respectively (%50 each). This was followed by a sample of lettuce out of 4 (table 24).

Fig11: food type with the highest level of pesticide residues in Baha

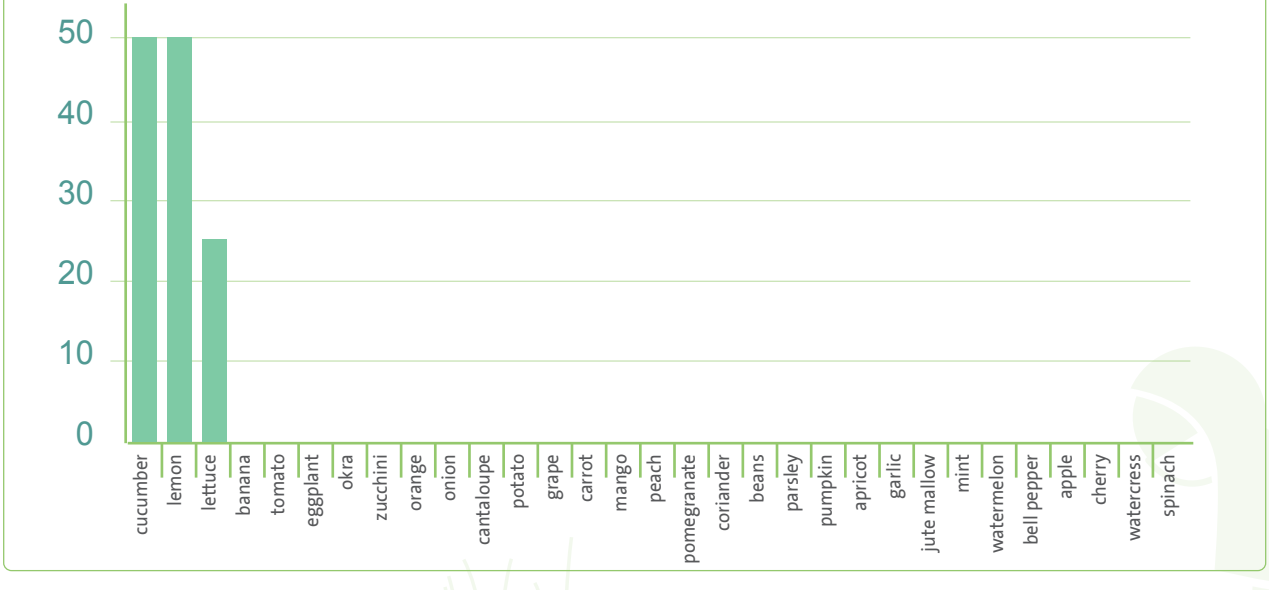
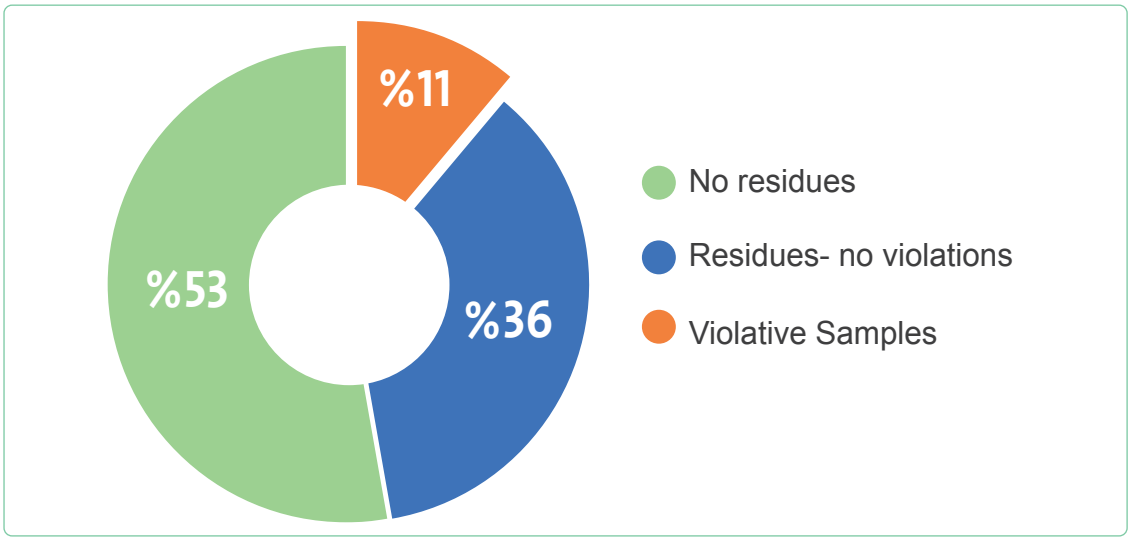


Table 24: Foodstuff With Maximum Residue Levels Monitored In Baha

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
cucumber	4	-	0.00	2	50.00	2	50.00
lemon	2	-	0.00	1	50.00	1	50.00
lettuce	4	2	50.00	1	25.00	1	25.00
banana	4	1	25.00	3	75.00	-	0.00
tomato	4	-	0.00	4	100.00	-	0.00
eggplant	4	-	0.00	4	100.00	-	0.00
okra	4	1	25.00	3	75.00	-	0.00
zucchini	4	3	75.00	1	25.00	-	0.00
orange	4	1	25.00	3	75.00	-	0.00
onion	4	4	100.00	-	0.00	-	0.00
cantaloupe	4	2	50.00	2	50.00	-	0.00
potato	4	2	50.00	2	50.00	-	0.00
grape	4	1	25.00	3	75.00	-	0.00
carrot	4	2	50.00	2	50.00	-	0.00
mango	4	3	75.00	1	25.00	-	0.00
peach	4	1	25.00	3	75.00	-	0.00
pomegranate	4	4	100.00	-	0.00	-	0.00
coriander	3	2	66.67	1	33.33	-	0.00
beans	3	3	100.00	-	0.00	-	0.00
parsley	3	2	66.67	1	33.33	-	0.00
pumpkin	3	3	100.00	-	0.00	-	0.00
apricot	2	-	0.00	2	100.00	-	0.00
garlic	2	2	100.00	-	0.00	-	0.00
jute mallow	2	2	100.00	-	0.00	-	0.00
mint	2	2	100.00	-	0.00	-	0.00
watermelon	2	1	50.00	1	50.00	-	0.00
bell pepper	2	1	50.00	1	50.00	-	0.00
apple	2	1	50.00	1	50.00	-	0.00
cherry	2	1	50.00	1	50.00	-	0.00
watercress	1	1	100.00	-	0.00	-	0.00
spinach	1	1	100.00	-	0.00	-	0.00
Total	**96**	**49**	**51.04**	**43**	**44.79**	**4**	**4.17**

Jouf

In Jouf, 36 (%1.05) samples were collected and analyzed for pesticide residues. According to the results, 32 (%88.89) samples were within the tolerance limits of which 19 (% 52.78) samples had no traces of residues, whereas 4 (%11.11) samples found to have exceeded the allowable limits.



The program's data indicated that 15 (%41.67) samples were domestic samples whereas 21 (%58.33) samples were imported. Moreover, the test results showed that samples of bell pepper, eggplant, onion and banana were at the top of the list of violation to the pesticide residue limits in Jouf at a ratio of one sample for each group (table 25).

Fig12: food type with the highest level of pesticide residues in Jouf

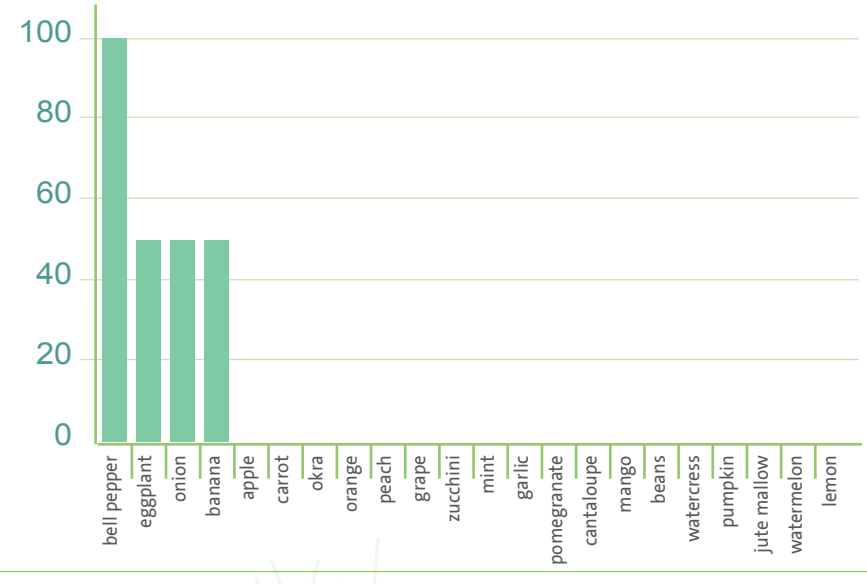
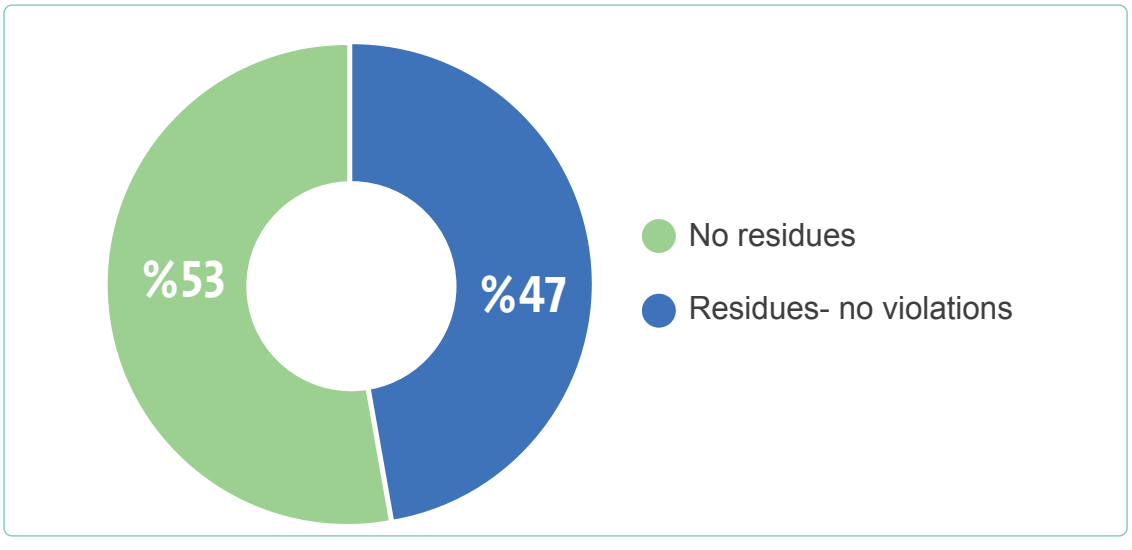


Table 25: Foodstuff with Maximum Residue Levels Monitored In Jouf

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
bell pepper	1	-	0.00	-	0.00	1	100.00
eggplant	2	1	50.00	-	0.00	1	50.00
onion	2	1	50.00	-	0.00	1	50.00
banana	2	-	0.00	1	50.00	1	50.00
apple	3	3	100.00	-	0.00	-	0.00
carrot	2	2	100.00	-	0.00	-	0.00
okra	2	2	100.00	-	0.00	-	0.00
orange	2	-	0.00	2	100.00	-	0.00
peach	2	-	0.00	2	100.00	-	0.00
grape	2	-	0.00	2	100.00	-	0.00
zucchini	2	1	50.00	1	50.00	-	0.00
mint	2	1	50.00	1	50.00	-	0.00
garlic	2	2	100.00	-	0.00	-	0.00
pomegranate	2	1	50.00	1	50.00	-	0.00
cantaloupe	1	-	0.00	1	100.00	-	0.00
mango	1	-	0.00	1	100.00	-	0.00
beans	1	1	100.00	-	0.00	-	0.00
watercress	1	1	100.00	-	0.00	-	0.00
pumpkin	1	1	100.00	-	0.00	-	0.00
jute mallow	1	1	100.00	-	0.00	-	0.00
watermelon	1	1	100.00	-	0.00	-	0.00
lemon	1	-	0.00	1	100.00	-	0.00
Total	**36**	**19**	**52.78**	**13**	**36.11**	**4**	**11.11**

Northern Border

In the Northern Border region, 49 (%1.43) samples were collected and analyzed for pesticide residues. According to the results, all samples were found compliant to the maximum residues limits, of which 26 had no traces of residues (%53,06). No samples shown violation to the allowable limits in this region.



The program's data indicated that 24 (%48.98) samples were domestic samples whereas 25 (%51.02) samples were imported (table 26).

Table 26: MRLs Detected In Food Samples in the Northern Border

Food	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
Lemon	2	-	0.00	2	100.00	-	0.00
Tomato	2	-	0.00	2	100.00	-	0.00
Apricot	2	-	0.00	2	100.00	-	0.00
Grapes	2	-	0.00	2	100.00	-	0.00
Green Pepper	2	-	0.00	2	100.00	-	0.00
Peach	2	-	0.00	2	100.00	-	0.00
Eggplant	2	-	0.00	2	100.00	-	0.00
Cucumber	2	-	0.00	2	100.00	-	0.00
Coriander	1	-	0.00	1	100.00	-	0.00
Watermelon	1	-	0.00	1	100.00	-	0.00
Orange	2	1	50.00	1	50.00	-	0.00
Pumpkin	2	1	50.00	1	50.00	-	0.00
Apple	2	1	50.00	1	50.00	-	0.00
Carrot	2	1	50.00	1	50.00	-	0.00
Pomegranate	3	2	66.67	1	33.33	-	0.00
Beans	2	2	100.00	-	0.00	-	0.00
Onion	2	2	100.00	-	0.00	-	0.00
Potato	2	2	100.00	-	0.00	-	0.00
Garlic	2	2	100.00	-	0.00	-	0.00
Zucchini	2	2	100.00	-	0.00	-	0.00
Mango	2	2	100.00	-	0.00	-	0.00
Banana	2	2	100.00	-	0.00	-	0.00
Mint	1	1	100.00	-	0.00	-	0.00
Okra	1	1	100.00	-	0.00	-	0.00
Lettuce	1	1	100.00	-	0.00	-	0.00
Cantaloupe	1	1	100.00	-	0.00	-	0.00
Watercress	1	1	100.00	-	0.00	-	0.00
Parsley	1	1	100.00	-	0.00	-	0.00
Total	**49**	**26**	**53.06**	**23**	**46.94**	**-**	**0.00**

Table 27: summarized list of samples in excess of allowable MRLs according to food type and geographic coverage

Type /Region	Riyadh	Makkah	Eastern Province	Medinah	Tabuk	Asir	Asir	Najran	Qassim	Ha'il	Al-Jouf	Al-Baha	Total Food Items
Parsley	8	5	4	5	2	-	2	-	1	-	-	-	27
Mint	10	3	1	6	2	-	1	-	-	1	-	-	24
Green Pepper	4	6	2	4	3	-	1	3	-	-	1	-	24
Eggplant	1	10	3	1	-	2	-	-	-	-	1	-	18
Jute mallow	8	1	1	3	1	-	-	-	1	1	-	-	16
Coriander	7	1	1	4	1	-	-	-	2	-	-	-	16
Dates	8	3	-	-	-	-	-	-	4	-	-	-	15
Cucumber	4	2	1	1	1	1	1	1	1	-	-	2	15
Tomato	5	1	2	-	1	1	-	1	2	1	-	-	14
Lemon	3	4	1	1	-	1	-	1	-	-	-	1	12
Pomegranate	4	1	3	-	1	1	-	1	-	1	-	-	12
Orange	1	-	4	3	-	-	2	1	-	-	-	-	11
Guava	5	-	-	-	1	2	-	1	-	1	-	-	10
Watercress	1	2	-	-	-	4	1	-	-	-	-	-	8
Spinach	2	4	-	2	-	-	-	-	-	-	-	-	8
Grapes	-	3	2	-	1	1	-	1	-	-	-	-	8
Okra	-	1	1	-	3	-	2	-	-	-	-	-	7
Peach	-	4	2	-	1	-	-	-	-	-	-	-	7
Banana	-	1	1	1	-	1	1	-	-	-	1	-	6
Potato	3	-	-	-	-	1	-	2	-	-	-	-	6
Beans	3	1	-	-	1	-	-	-	-	-	-	-	5
Strawberry	1	-	-	1	-	2	1	-	-	-	-	-	5
Lettuce	-	1	1	1	-	-	-	-	-	-	-	1	4
Apple	1	1	1	-	-	1	-	-	-	-	-	-	4
Onion	2	-	-	-	-	-	-	-	-	-	1	-	3
Mango	-	-	2	-	-	-	1	-	-	-	-	-	3
Garlic	-	-	1	-	1	-	-	-	-	-	-	-	2
Carrot	-	-	-	-	-	1	1	-	-	-	-	-	2
Zucchini	-	-	-	1	-	-	1	-	-	-	-	-	2
Pumpkin	-	-	-	1	1	-	-	-	-	-	-	-	2
Watermelon	1	-	-	-	-	-	-	-	-	-	-	-	1
Apricot	-	-	1	-	-	-	-	-	-	-	-	-	1
Total	**82**	**55**	**35**	**35**	**21**	**19**	**15**	**12**	**11**	**5**	**4**	**4**	**298**

Results and Discussions

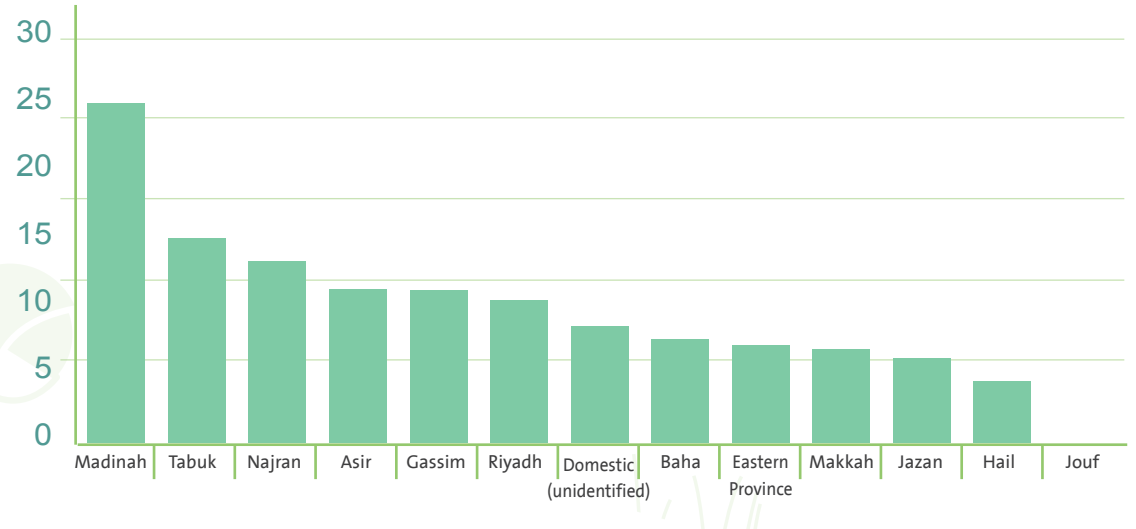
Geographic Origin of Samples:

For domestic samples, the survey showed that Madinah had the highest rate of samples in excess of the tolerance levels at % 25.25 whereas Hail came last on the list of violation at % 4.55, and Jouf had no traces of residues (Table 28).

Table 28: Domestic Commodities in Compliance/In Excess of Allowable Limits by Origin of Samples

City of Origin	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
Madinah	99	56	56.57	18	18.18	25	25.25
Tabuk	112	73	65.18	22	19.64	17	15.18
Najran	37	19	51.35	13	35.14	5	13.51
Asir	140	82	58.57	42	30	16	11.43
Gassim	168	115	68.45	34	20.24	19	11.31
Riyadh	472	283	59.96	139	29.45	50	10.59
Domestic (unidentified)	680	490	72.06	131	19.26	59	8.68
Baha	13	8	61.54	4	30.77	1	7.69
Eastern Province	55	40	72.73	11	20	4	7.27
Makkah	159	111	69.81	37	23.27	11	6.92
Jazan	16	15	93.75	0	0	1	6.25
Hail	66	45	68.18	18	27.27	3	4.55
Jouf	28	22	78.57	6	21.43	0	0
Total	**2045**	**1359**	**66.45**	**475**	**23.23**	**211**	**10.32**

Fig13: Cities in Saudi Arabia with the highest violative rate



For imported samples, the survey showed that 87 samples were in violation of the tolerance levels accounting for % 6.32. Table 29 lists violative samples per country of origin, in which Sari Lanka comes at the top of the list with a violation rate of %100, and Peru comes second making up %50. China, on the other hands, were the last on the list, accounting only for % 3.26.

Fig14: Countries with the highest violative rate

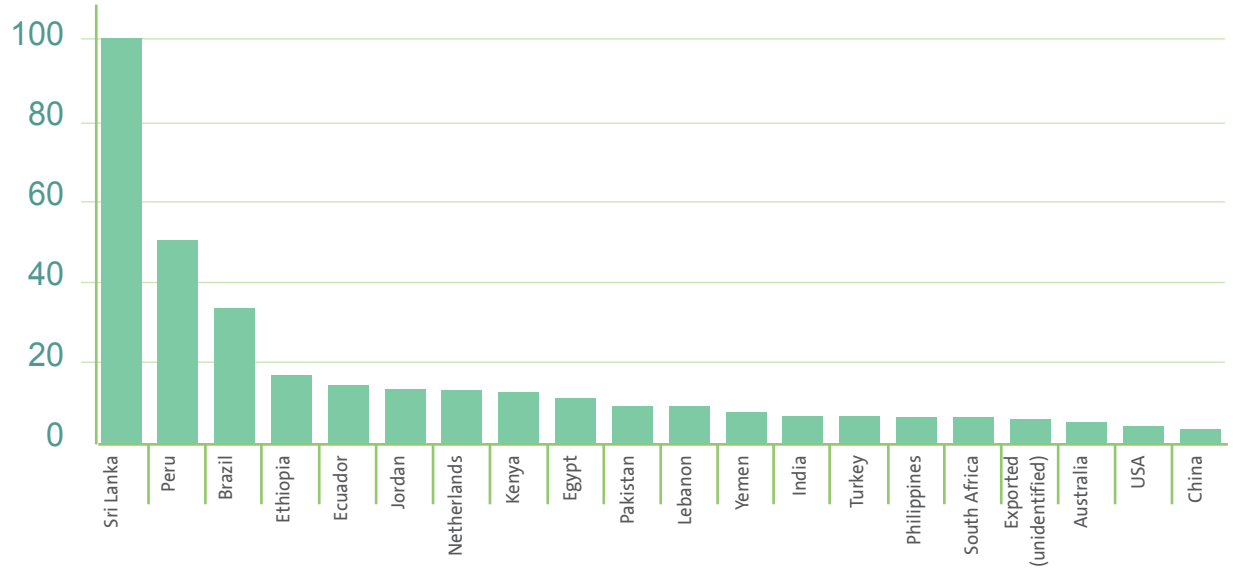


Table 28: Domestic Commodities in Compliance/In Excess of Allowable Limits by Origin of Samples

Country of Origin	Total	No residues		Within Tolerance limits		Exceeding limits	
		Number	%	Number	%	Number	%
Sri Lanka	1	-	0.00%	-	0.00%	1	100.00%
Peru	2	-	0.00%	1	50.00%	1	50.00%
Brazil	3	1	33.33%	1	33.33%	1	33.33%
Ethiopia	6	2	33.33%	3	50.00%	1	16.67%
Ecuador	15	7	46.67%	6	40.00%	2	13.33%
Jordan	23	8	34.78%	12	52.17%	3	13.04%
Netherlands	8	6	75.00%	1	12.50%	1	12.50%
Kenya	8	6	75.00%	1	12.50%	1	12.50%
Egypt	209	118	56.46%	68	32.54%	23	11.00%
Pakistan	11	10	90.91%	-	0.00%	1	9.09%
Lebanon	11	7	63.64%	3	27.27%	1	9.09%
Yemen	40	32	80.00%	5	12.50%	3	7.50%
India	92	69	75.00%	17	18.48%	6	6.52%
Turkey	124	43	34.68%	73	58.87%	8	6.45%
Philippines	47	22	46.81%	22	46.81%	3	6.38%
South Africa	95	33	34.74%	56	58.95%	6	6.32%
Exported (unidentified)	246	120	48.78%	112	45.53%	14	5.69%
Australia	58	40	68.97%	15	25.86%	3	5.17%
USA	121	60	49.59%	56	46.28%	5	4.13%
China	92	84	91.30%	5	5.43%	3	3.26%
Italy	54	21	38.89%	33	61.11%	-	0.00%
Spain	37	17	45.95%	20	54.05%	-	0.00%
Chile	22	7	31.82%	15	68.18%	-	0.00%
France	19	13	68.42%	6	31.58%	-	0.00%
Vietnam	9	4	44.44%	5	55.56%	-	0.00%
Syria	3	1	33.33%	2	66.67%	-	0.00%
Ghana	2	-	0.00%	2	100.00%	-	0.00%
UAE	1	1	100.00%	-	0.00%	-	0.00%
Portugal	3	2	66.67%	1	33.33%	-	0.00%
Germany	1	1	100.00%	-	0.00%	-	0.00%
Morocco	5	4	80.00%	1	20.00%	-	0.00%
Austria	1	-	0.00%	1	100.00%	-	0.00%
Greece	2	2	100.00%	-	0.00%	-	0.00%
Bangladesh	1	1	100.00%	-	0.00%	-	0.00%
Thailand	1	1	100.00%	-	0.00%	-	0.00%
New Zealand	3	3	100.00%	-	0.00%	-	0.00%
Total	**1376**	**746**	**54.22%**	**543**	**39.46%**	**87**	**6.32%**

Pesticides Detected in Domestic Samples:

112 pesticides were detected in the 2018 PRMP program of which 14 types were found in samples of domestic origin whereas 39 were traced to imported samples. 59 types of pesticides were in both domestic and imported samples.

Table 30: Status of Pesticides Detected in Domestic Samples

Name	Status	Detection Frequency
TEFLUBENZURON	Registered	1
Phoxim	Registered	1
Fluazifop -P- butyl	Registered	2
QUINALPHOS	Registered	11
PENCYCURON	Registered	1
Pendimethalin	Registered	1
CYROMAZINE	Registered	6
MALAOXON	Not Registered	4
FENUORON	Not Registered	1
OXAMYL	Restricted	4
PHENTHOATE	Banned	11
Mevinphos	Banned	1
OXADIAZON	Banned	9
Chinomethionat	Banned	15

Of the 14 types of domestically produced pesticides, there were 7 registered in Saudi Arabia, 2 unregistered, one restricted, and 4 banned from use as per MEWA List of Banned Pesticides (table 30).

39 pesticides were detected in imported samples, 12 of which were registered in Saudi Arabia, 10 unregistered, 5 restricted, and 12 were among the list of pesticides banned by MEWA (table 31)

Table 31: Status of Pesticides Detected in Samples Imported Into KSA

Name	Status	Detection Frequency
FURALAXYL	Registered	1
Triflumuron	Registered	1
CHLORPYRIFOS-METHYL	Registered	7
DIMETHOMORPH	Registered	2
ETOFENPROX	Registered	3
CHLORMEQUAT-CHLORIDE	Registered	4
PHOSMET	Registered	4
Etoxazole	Registered	1
Prothioconazole	Registered	2
DODINE	Registered	1
SPIROXAMINE	Registered	3
Tetraconazole	Registered	3
AZACONAZOLE	Not Registered	1
2-Phenylphenol	Not Registered	1
CYAZOFAMID	Not Registered	2
Mefenpyr-Diethyl	Not Registered	1
Fenamiphos-Sulfoxide	Not Registered	1
METHIOCARB-SULFOXIDE	Not Registered	1
PACLOBUTRAZOL	Not Registered	1
CLOFENTEZINE	Not Registered	2
Fenbuconazole	Not Registered	1
QUINOXYFEN	Not Registered	8
BUPIRIMATE	Restricted	3
METHIOCARB	Restricted	2
FENPROPATHRIN	Restricted	3
Thiacloprid	Restricted	2
DICHLORVOS	Restricted	1
FLUSILAZOLE	Banned	2
AZINPHOS METHYL	Banned	4
Hexachlorobenzen	Banned	1
CHLORFENVINPHOS	Banned	1
IPROVALICARB	Banned	1
KRESOXIM-METHYL	Banned	2
OXADIXYL	Banned	1
Pirimicarb	Banned	3
PROPARGITE	Banned	2
FENVALERATE	Banned	2
Propham	Banned	1
CARBARYL	Banned	2

59 pesticides were found in both imported and domestic samples, 28 of which were registered in Saudi Arabia, 9 unregistered, 6 restrictions, and 16 banned as per MEWA List of Banned Pesticides (table 32).

Table 32: Status of Pesticides Detected in Domestic/Imported Samples

Name	Status	Detection Frequency		Total Detection
		Local	Imported	
ACETAMIPRID	Registered	180	73	253
AZOXYSTROBIN	Registered	38	48	86
BOSCALID	Registered	30	50	80
BROMOPROPYLATE	Registered	1	1	2
BUPROFEZIN	Registered	7	26	33
CYMOXANIL	Registered	1	3	4
DELTAMETHRIN	Registered	3	3	6
DIFENOCONAZOLE	Registered	33	7	40
DIFLUBENZURON	Registered	6	3	9
FENAMIDONE	Registered	1	2	3
Fenazaquin	Registered	1	1	2
FENHEXAMID	Registered	8	15	23
Indoxacarb	Registered	44	18	62
Iprodione	Registered	9	6	15
LUFENURON	Registered	5	1	6
METALAXYL	Registered	47	9	56
MYCLOBUTANIL	Registered	16	17	33
Penconazole	Registered	3	6	9
PROCHLORAZ	Registered	1	21	22
PROPICONAZOLE	Registered	8	14	22
PYRACLOSTROBIN	Registered	1	22	23
PYRIDABEN	Registered	46	14	60
PYRIPROXYFEN	Registered	9	34	43
TEBUCONAZOLE	Registered	35	40	75
Thiabendazole	Registered	6	54	60
THIAMETHOXAM	Registered	21	12	33
Tolclofos-methyl	Registered	1	2	3
TRIFLOXYSTROBIN	Registered	1	4	5

Table 32: Status of Pesticides Detected in Domestic/Imported Samples

Name	Status	Detection Frequency		Total Detection
		Local	Imported	
BIPHENYL	Not Registered	15	2	17
Clothianidin	Not Registered	2	2	4
CYPRODINIL	Not Registered	6	68	74
DIPHENYLAMINE	Not Registered	8	25	33
FIPRONILSULFONE	Not Registered	1	1	2
METALAXYL-M	Not Registered	24	2	26
METAMITRON	Not Registered	2	14	16
PROTHIOCONAZOLE DESTHIO	Not Registered	1	1	2
PYRIMETHANIL	Not Registered	11	88	99
Bifenthrin	Restricted	10	9	19
CHLORPYRIFOS	Restricted	24	119	143
Cypermethrin	Restricted	7	6	13
FIPRONIL	Restricted	3	1	4
IMIDACLOPRID	Restricted	148	52	200
METHOMYL	Restricted	51	7	58
ACEPHATE	Banned	4	5	9
Carbendazim	Banned	122	92	214
CHLORFENAPYR	Banned	3	2	5
DIAZINON	Banned	2	1	3
DIMETHOATE	Banned	2	7	9
EPN	Banned	1	3	4
Ethion	Banned	26	2	28
HEXACONAZOLE	Banned	3	3	6
HEXYTHIAZOX	Banned	16	11	27
IMAZALIL	Banned	8	91	99
LINURON	Banned	29	1	30
MALATHION	Banned	10	3	13
OMETHOATE	Banned	1	5	6
PROCYMIDONE	Banned	2	3	5
PROFENOFOS	Banned	7	10	17
Resmethrin	Banned	1	6	7

Pesticide Name Detected in Domestic Samples

73 pesticides were detected in 2045 food samples spearheaded by ACETAMIPRID which was found in 180 samples of domestic origin with Riyadh alone accounting for 50 samples. IMIDACLOPRID came second on the list with 148 samples of which 41 were detected in Riyadh. Carbendazim was also detected in 122 samples 32 of which were in Riyadh.

Fig15: the top 30 Pesticides detected in domestic samples

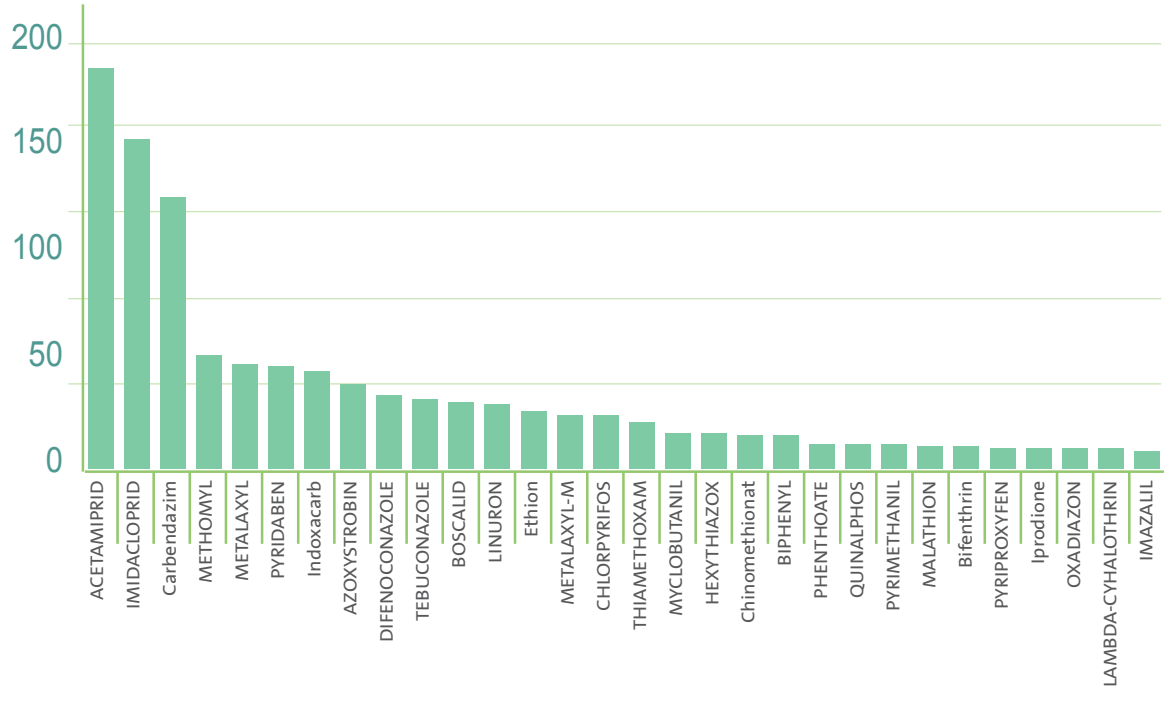
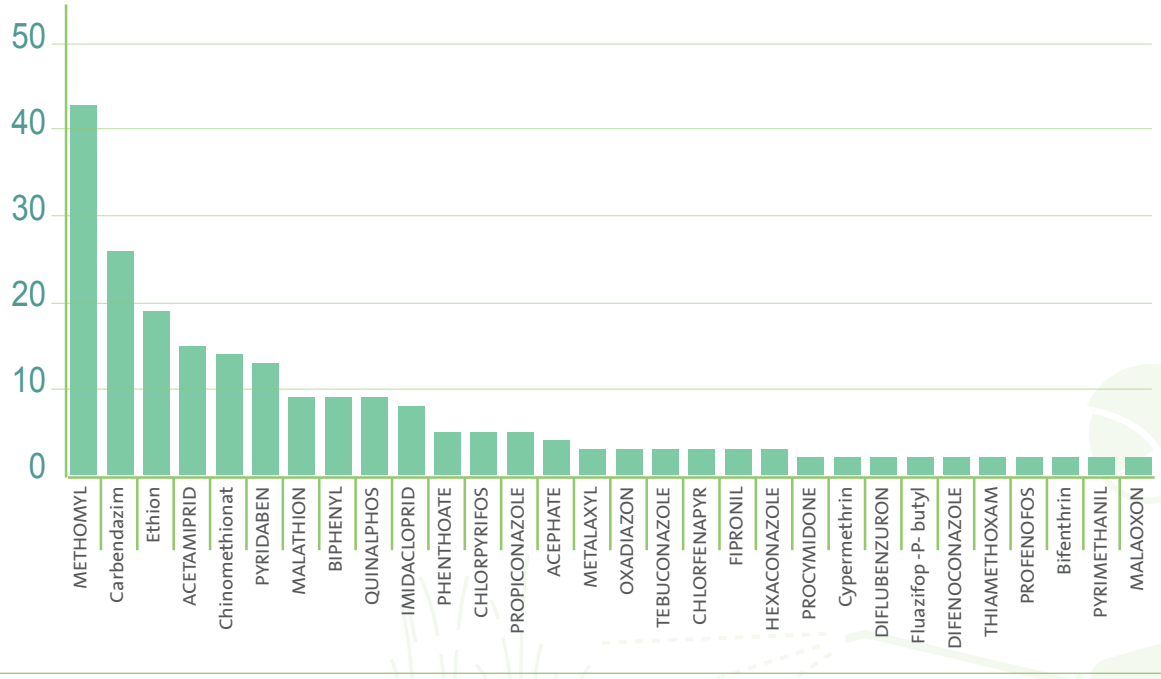
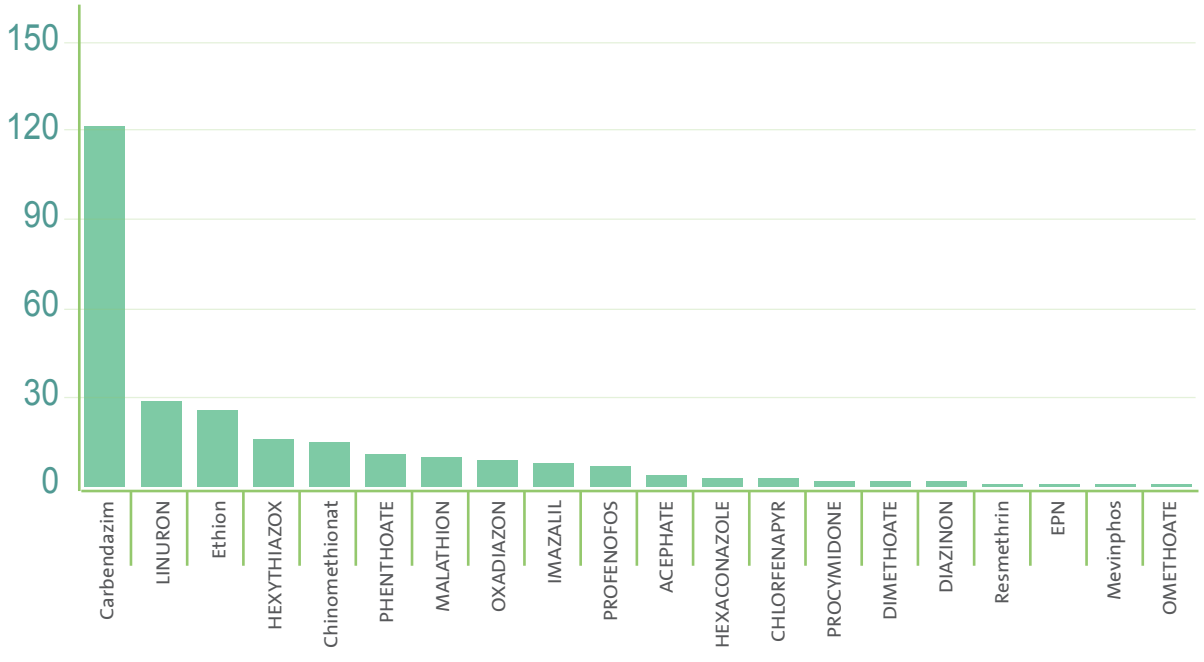


Fig 16: the top 30 pesticides in violation to MRLs detected in domestic samples



The results of analyses showed that among the total number (148) of food samples surveyed, 55 pesticides were in violation of the tolerance levels. METHOMYL was at top of the list, as it popped up 43 times in 148 samples, 13 and 12 times in Madiah and Riyadh respectively. Carbendazim came second on the list found in 26 samples.

Fig 16: prohibited pesticides detected in domestic samples

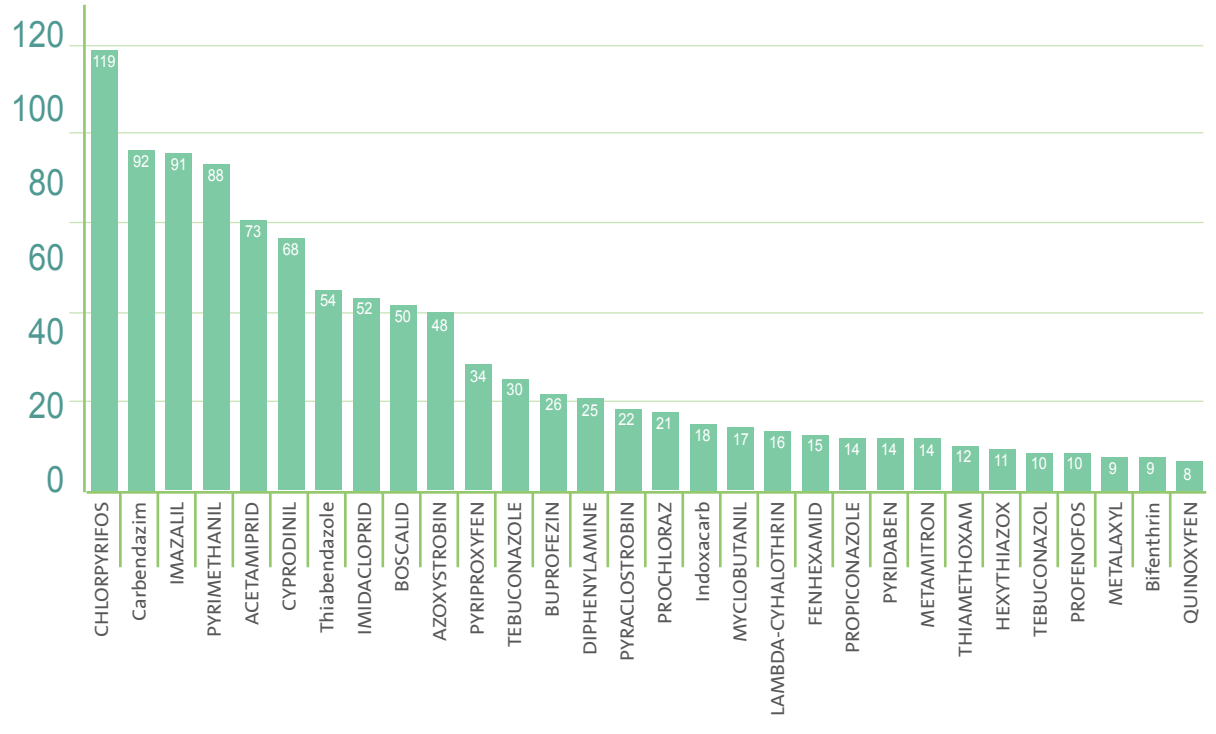


According to analyses, 20 banned pesticides were found in 273 samples of domestic origin, spearheaded by Carbendazim, which was detected 32 times in Riyadh alone. LINURON came second with a detection ratio of 12 samples out of 29 in Riyadh. Ethion was also detected in 26 food samples.

Pesticides Detected in Imported Samples

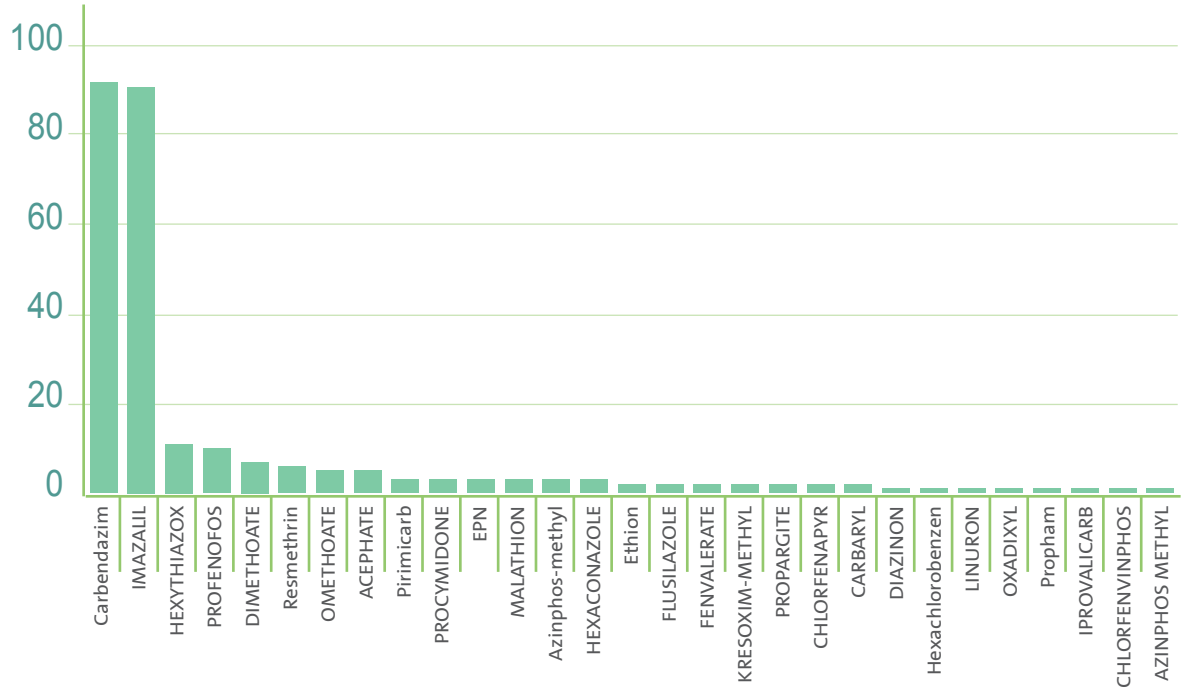
The sampling survey of foods originating in foreign countries showed the presence of 98 pesticides in 1376 samples. CHLORPYRIFOS was at the top of the list, showing up in 119 samples, of which 30 samples from Egypt, and 19 from Turkey. Carbendazim was the second on the list. It was found in 92 samples of which 22 were from Egypt. IMAZALIL came third as it was detected in 91samples of which 21 and 22 were found respectively in samples from Egypt and South Africa. In general, Turkey, Egypt and South Africa were countries with the highest detection rate for pesticide.

Fig 17: the top 30 pesticides detected in imported samples



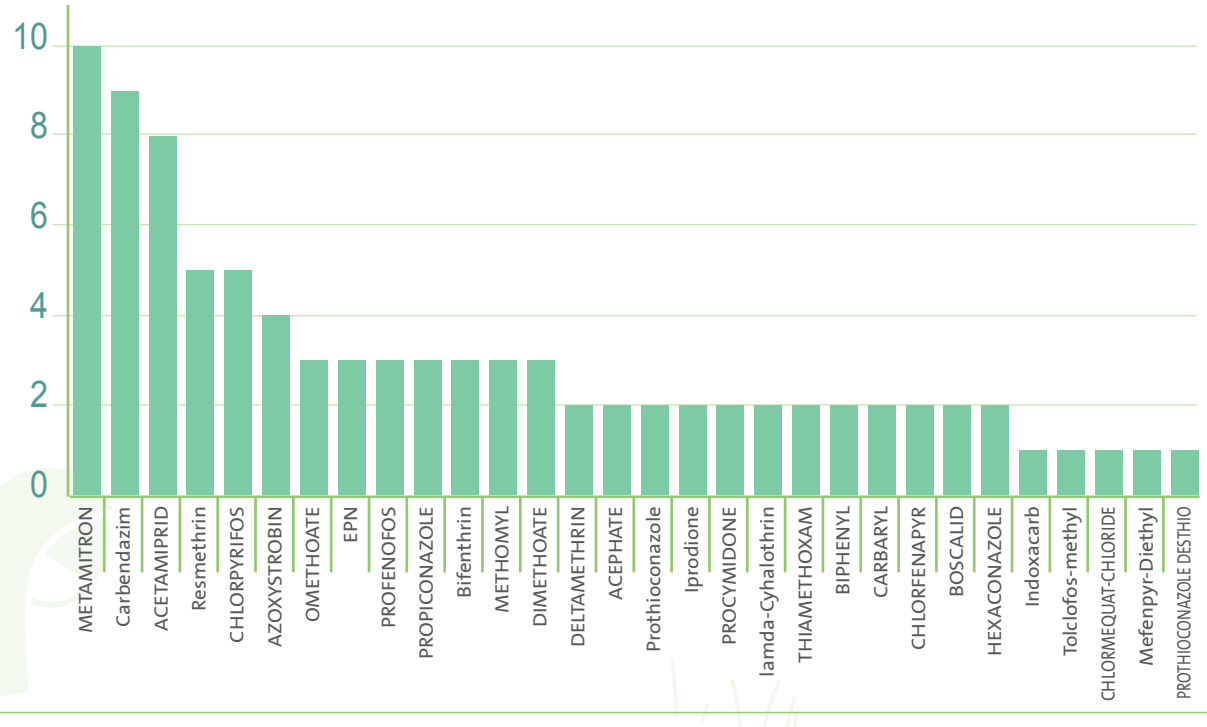
With regard to exceeding residue limits, the analyses indicated a noncompliance of 45 pesticides found in 52 samples. METAMITRON came on the top of the list with a frequency of detection in 10 food samples three of which were from Egypt. Carbendazim came second on the list as it was found in 9 samples six of which were from Egypt as well. ACETAMIPRID was next on the detection rate with 8 samples three of which were from Yemen.

Fig 18: the top 30 pesticides in violation to MRLs detected in imported samples



In addition, the sampling survey revealed the presence of 29 banned pesticides in 134 samples. Carbendazim was on the top of the list as it was found in 92 samples 22 of which were from Egypt. IMAZALIL was found in 91 samples (22, and 21 respectively from .Egypt and South Africa), thus holding a second place on the list

Fig 19: prohibited pesticides detected in imported samples



In general, the list of pesticides, which was detected in the program, contained 112 pesticides falling into two categories: banned vs registered. The first category included 8 pesticides: CARBENDAZIM, IMAZALIL, ETHION, HEXYTHIAZOX, MALATHION, PHENTHOATE, PROCYMIDONE AND PIRIMICARB. The aforementioned types of pesticides are banned in at least one international authority, whereas the remainder of the category are banned only in Saudi Arabia and must not exceed the maximum limits.

As for not banned pesticides in violation to the allowable levels, 57 pesticides were detected, (see table 42). Eight of these pesticides are banned in EU, including (Fluazifop -P- butyl) which is no longer in use and must be discarded altogether (Annex 43).

Fig 20: Pesticide Detection Status

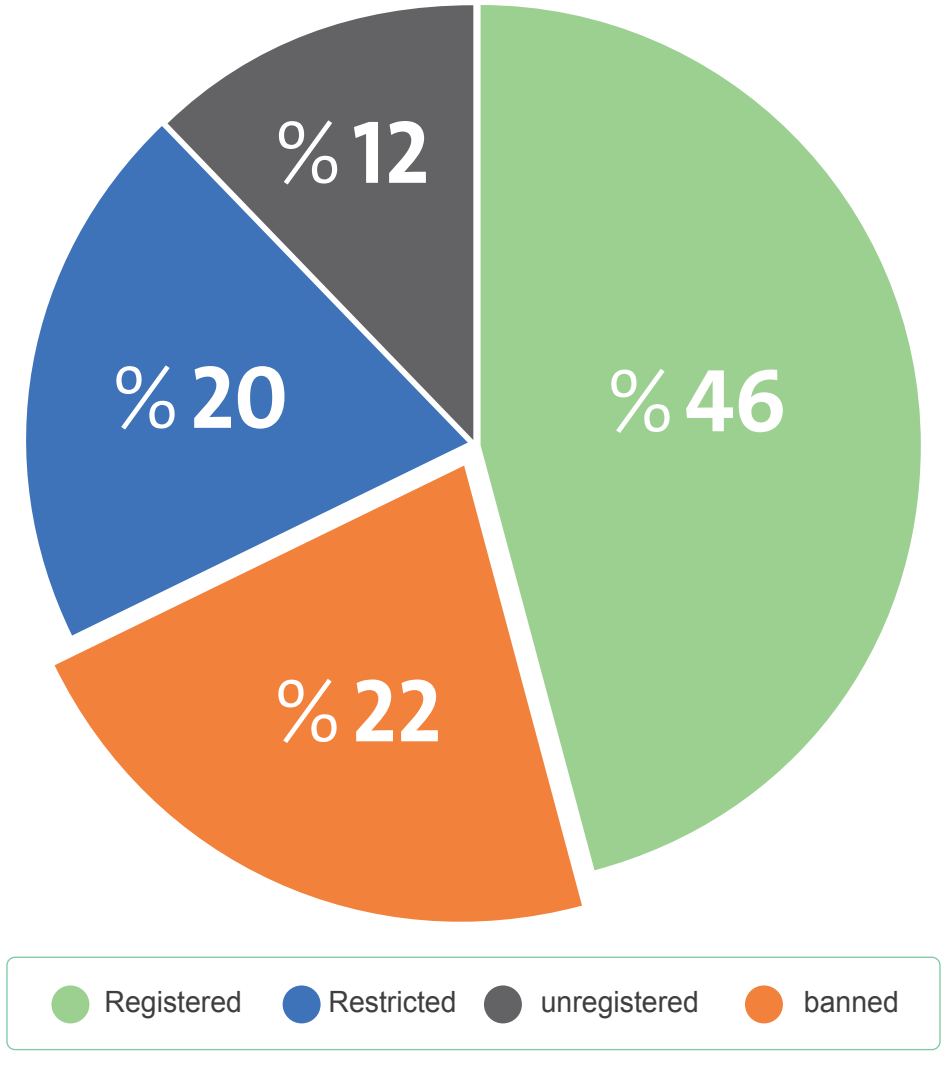


Table 33: Names of pesticides per country of origin and frequency of detection

Pesticide	Exported	Turkey	Egypt	South Africa	USA	Italy	India	Philippines	Jordan	Spain	Chile	Australia	Ecuador	Lebanon	Yemen	China	France	Ethiopia	Vietnam	Brazil	Ghana	Syria	Netherlands	Peru	Sri Lanka	Austria	Kenya	Pakistan	Morocco	Portugal	Total
CHLORPYRIFOS	21	19	30	10	2	1	4	8	4	1	1	5	5	2			2		3								1				119
Carbendazim	19	7	22	4	5	1	10	6	1		2	2		1	4	2	1	1	1	1					1	1					92
IMAZALIL	12	10	22	21	2	2		8		6		1	4								1								1	1	91
PYRIMETHANIL	33	9	4	13	12	7		1		1	5					1	2														88
ACETAMIPRID	10	15	4	1	12	6	2		5	1	3	1		1	5	2	1	1				1	1				1				73
CYPRODINIL	21	15	2	3	14	4			1	3	2			2				1													68
Thiabendazole	7	6	9	15	3	1		6		3			4																		54
IMIDACLOPRID	6	10	9	6	3	2	4		5	2	1	1			1	1							1								52
BOSCALID	5	9	4	2	7	6		1	1	1	3	3	1	2			1	1		1				2							50
AZOXYSTROBIN	7	5	3	11	4	3	6	1	3		1	1		1							2										48
PYRIPROXYFEN	9	11	6	6							1						1														34
TEBUCONAZOLE	7	9	1	1	2	3	1	1		2		1								1								1			30
BUPROFEZIN	6	5	5	8			1							1																	26
DIPHENYLAMINE	7			1	7	5	1				3						1														25
PYRACLOSTROBIN	3	1	3	8	2	1	1		1	1			1																		22
PROCHLORAZ	4	10	2					4													1										21
Indoxacarb	2	11		1	1									1	1	1															18
MYCLOBUTANIL			3	1	6		2		2		1			1			1														17
LAMBDA-CYHALOTHRIN	9	1	2	2							1	1																			16
FENHEXAMID	1	2	1	2	4	3								1		1															15

Table 33: Names of pesticides per country of origin and frequency of detection

Pesticide	Exported	Turkey	Egypt	South Africa	USA	Italy	India	Philippines	Jordan	Spain	Chile	Australia	Ecuador	Lebanon	Yemen	China	France	Ethiopia	Vietnam	Brazil	Ghana	Syria	Netherlands	Peru	Sri Lanka	Austria	Kenya	Pakistan	Morocco	Portugal	Total
PROPICONAZOLE	4	2	3		1		1	1		1									1												14
PYRIDABEN		9	1		1				2						1																14
METAMITRON	2	2	3	2	1			2					2																	1	14
THIAMETHOXAM		1	2		1	1	1		2					1		2						1									12
HEXYTHIAZOX	1	5	2				1											2													11
TEBUCONAZOL							8			2																					10
PROFENOFOS			5				1			1								1	1						1						10
METALAXYL	3	1	1		1	1	1																			1					9
Bifenthrin	1		2		3			1	1			1																			9
QUINOXYFEN				3	4	1																									8
DIFENOCONAZOLE		1	1	1			4																								7
DIMETHOATE	1		6																												7
METHOMYL	2		2		1					1		1																			7
CHLORPYRIFOS-METHYL	1	2	2							1																					6
Cypermethrin	1		1			1			1				1						1												6
Penconazole		1	2		1	2																									6
Iprodione	5															1															6
Resmethrin	1		2	2									1																		6
OMETHOATE	1		4																												5
ACEPHATE	2		1				1	1																							5

Table 33: Names of pesticides per country of origin and frequency of detection

Pesticide	Exported	Turkey	Egypt	South Africa	USA	Italy	India	Philippines	Jordan	Spain	Chile	Australia	Ecuador	Lebanon	Yemen	China	France	Ethiopia	Vietnam	Brazil	Ghana	Syria	Netherlands	Peru	Sri Lanka	Austria	Kenya	Pakistan	Morocco	Portugal	Total
TRIFLOXYSTROBIN	2			1	1																										4
CHLORMEQUAT-CHLORIDE	1			1			2																								4
lamda-Cyhalothrin	1	1		1											1																4
PHOSMET	2		1	1																											4
CYMOXANIL	1	1	1																												3
SPIROXAMINE						2												1													3
DELTAMETHRIN					1								1	1																	3
EPN	1		1	1																											3
DIFLUBENZURON		2															1														3
BUPIRIMATE		2		1																											3
Azinphos-methyl	2			1																											3
HEXACONAZOLE	1		1																	1											3
ETOFENPROX						2																1									3
Pirimicarb	1				1					1																					3
Tetraconazole	1			1	1																										3
PROCYMIDONE	1			1	1																										3
FENPROPATHRIN	1		1				1																								3
MALATHION		1			1										1																3
METALAXYL-M							1									1															2
CARBARYL	1			1																											2

Table 33: Names of pesticides per country of origin and frequency of detection

Pesticide	Exported	Turkey	Egypt	South Africa	USA	Italy	India	Philippines	Jordan	Spain	Chile	Australia	Ecuador	Lebanon	Yemen	China	France	Ethiopia	Vietnam	Brazil	Ghana	Syria	Netherlands	Peru	Sri Lanka	Austria	Kenya	Pakistan	Morocco	Portugal	Total
Clothianidin			1				1																								2
CYAZOFAMID						2																									2
Ethion									1						1																2
Prothioconazole	1	1																													2
Tolclofos-methyl			1		1																										2
CHLORFENAPYR		1																					1								2
FENAMIDONE					1					1																					2
KRESOXIM-METHYL									1											1											2
DIMETHOMORPH	1			1																											2
BIPHENYL		1		1																											2
Thiacloprid		1	1																												2
FENVALERATE				1			1																								2
METHIOCARB	1					1																									2
PROPARGITE			1																1												2
FLUSILAZOLE	1						1																								2
LINURON												1																			1
METHIOCARB-SULFOXIDE	1																														1
CLOFENTEZINE			1																												1
PACLOBUTRAZOL																			1												1
OXADIXYL			1																												1

Table 33: Names of pesticides per country of origin and frequency of detection

Pesticide	Exported	Turkey	Egypt	South Africa	USA	Italy	India	Philippines	Jordan	Spain	Chile	Australia	Ecuador	Lebanon	Yemen	China	France	Ethiopia	Vietnam	Brazil	Ghana	Syria	Netherlands	Peru	Sri Lanka	Austria	Kenya	Pakistan	Morocco	Portugal	Total
Hexachlorobenzen																1															1
Fenbuconazole		1																													1
AZACONAZOLE				1																											1
BROMOPROPYLATE				1																											1
DODINE						1																									1
AZINPHOS METHYL				1																											1
Chlorpyrifos-methyl	1																														1
Fenazaquin	1																														1
CLOFENTEZIN		1																													1
LUFENURON														1																	1
DIAZINON					1																										1
Mefenpyr-Diethyl			1																												1
Etoxazole																		1													1
CHLORFENVINPHOS												1																			1
Propham		1																													1
FIPRONIL				1																											1
IPROVALICARB	1																														1
FIPRONILSULFONE				1																											1
DICHLORVOS												1																			1
Triflumuron																						1									1

Table 33: Names of pesticides per country of origin and frequency of detection

Pesticide	Exported	Turkey	Egypt	South Africa	USA	Italy	India	Philippines	Jordan	Spain	Chile	Australia	Ecuador	Lebanon	Yemen	China	France	Ethiopia	Vietnam	Brazil	Ghana	Syria	Netherlands	Peru	Sri Lanka	Austria	Kenya	Pakistan	Morocco	Portugal	Total
PROTHIOCONAZOLE DESTHIO							1																								1
Fenamiphos-Sulfoxide												1																			1
2-Phenylphenol				1																											1
FURALAXYL				1																											1
Total	238	193	184	144	109	59	58	41	31	29	24	22	20	16	15	13	11	9	9	5	4	4	3	2	2	2	2	1	1	1	1252

Table 34: Violative pesticides detected per country of origin (imported)

Pesticide	Egypt	Exported	Turkey	India	South Africa	Ecuador	Yemen	China	USA	Jordan	Australia	Philippines	Pakistan	Peru	Lebanon	Netherlands	Brazil	Ethiopia	Kenya	Sri Lanka	Total
METAMITRON	3	1	1			2			1			2									10
Carbendazim	6			1			1			1											9
ACETAMIPRID	1		1				3	1			1								1		8
Resmethrin	2	1			1	1															5
CHLORPYRIFOS	2	2	1																		5
AZOXYSTROBIN				3					1												4
OMETHOATE	2	1																			3
EPN	1	1			1																3
PROFENOFOS	2																			1	3
PROPICONAZOLE				1					1			1									3
Bifenthrin	1									1	1										3
METHOMYL	1	1							1												3
DIMETHOATE	3																				3
DELTAMETHRIN						1									1						2
ACEPHATE		2																			2
Prothioconazole		1	1																		2
Iprodione		2																			2
PROCYMIDONE		1							1												2
lamda-Cyhalothrin		1					1														2
THIAMETHOXAM				1				1													2
BIPHENYL			1		1																2
CARBARYL		1			1																2
CHLORFENAPYR			1													1					2
BOSCALID			1											1							2
HEXACONAZOLE	1																1				2
Indoxacarb							1														1
Tolclofos-methyl	1																				1
CHLORMEQUAT-CHLORIDE				1																	1
Mefenpyr-Diethyl	1																				1
PROTHIOCONAZOLE DESTHIO				1																	1
METALAXYL-M								1													1
TEBUCONAZOLE													1								1
Ethion										1											1
Propham			1																		1
FENHEXAMID								1													1
DICHLORVOS											1										1
MYCLOBUTANIL	1																				1
PYRACLOSTROBIN						1															1
FENVALERATE					1																1
SPIROXAMINE																		1			1
OXADIXYL	1																				1
Cypermethrin						1															1
FIPRONIL					1																1
FIPRONILSULFONE					1																1
IMIDACLOPRID								1													1
الإجمالي	29	15	8	8	7	6	6	5	5	3	3	3	1	1	1	1	1	1	1	1	106

Table 35: Violative pesticides detected per country of origin (imported)

Pesticide	Egypt	Unidentified	South Africa	Turkey	Philippines	India	USA	Spain	Yemen	Australia	Ecuador	Ethiopia	Brazil	Vietnam	China	Jordan	Italy	Sri Lanka	Chile	Lebanon	Austria	Morocco	France	Ghana	Netherlands	Portugal	Total
Carbendazim	22	19	4	7	6	10	5		4	2		1	1	1	2	1	1	1	2	1	1		1				92
IMAZALIL	22	12	21	10	8		2	6		1	4						2					1		1		1	91
HEXYTHIAZOX	2	1		5		1						2															11
PROFENOFOS	5					1		1				1		1				1									10
DIMETHOATE	6	1																									7
Resmethrin	2	1	2								1																6
OMETHOATE	4	1																									5
ACEPHATE	1	2			1	1																					5
Pirimicarb		1					1	1																			3
PROCYMIDONE		1	1				1																				3
EPN	1	1	1																								3
MALATHION				1			1		1																		3
Azinphos-methyl		2	1																								3
HEXACONAZOLE	1	1											1														3
Ethion									1							1											2
FLUSILAZOLE		1				1																					2
FENVALERATE			1			1																					2
KRESOXIM-METHYL													1			1											2
PROPARGITE	1													1													2
CHLORFENAPYR				1																					1		2
CARBARYL		1	1																								2
DIAZINON							1																				1
Hexachlorobenzen															1												1
LINURON										1																	1
OXADIXYL	1																										1
Propham				1																							1
IPROVALICARB		1																									1
CHLORFENVINPHOS										1																	1
AZINPHOS METHYL			1																								1
Total	68	46	33	25	15	15	11	8	6	5	5	4	3	3	3	3	3	2	2	1	1	1	1	1	1	1	267

Table 36: Pesticides detected per city of origin (domestic)

Pesticide	Riyadh	Domestic	Al-Qassim	Asir	Madinah	Tabuk	Makkah	Najran	Ha'il	Eastern Province	Al-Baha	Al-Jouf	Gizan	Total
ACETAMIPRID	50	50	12	23	15	6	8	8	5	2	1			180
IMIDACLOPRID	41	42	12	6	13	6	6	3	7	8	1	3		148
Carbendazim	32	26	17	10	6	16	4	5	2	1	2		1	122
METHOMYL	14	9	4	5	14	2			1		1		1	51
METALAXYL	14	8	7	6	1	1	4	3			1	2		47
PYRIDABEN	14	10	4	1	11	3	1	2						46
Indoxacarb	14	9	7	4	5	3	2							44
AZOXYSTROBIN	12	5	4	6	2	2	2	3	1		1			38
DIFENOCONAZOLE	4	6	4	9	5		1	2	2					33
TEBUCONAZOLE	10	5	7	1	1		3		2		1	1		31
BOSCALID	10	7	5	4			2		1	1				30
LINURON	12	4	4	2			1		3	3				29
Ethion	6	10	4		2	2	1	1						26
METALAXYL-M	8	4	3	1		2	1	2	3					24
CHLORPYRIFOS	4	4		2	4	1	6	1	2					24
THIAMETHOXAM	5	5	1	1	1	4	1		1	1		1		21
MYCLOBUTANIL	1	3	3	2	1	4	1	1						16
HEXYTHIAZOX	10	1	1	1	2			1						16
Chinomethionat		12	2			1								15
BIPHENYL		6	5	1		2		1						15
PHENTHOATE	6	3		1	1									11
QUINALPHOS	5	4	2											11
PYRIMETHANIL	4	4	1				2							11
MALATHION	1	1	1	1	1	1	1			3				10
Bifenthrin	1	7				1	1							10
PYRIPROXYFEN	5		1	1			2							9
Iprodione	3	4		1	1									9
OXADIAZON	6	3												9
LAMBDA-CYHALOTHRIN	1	3			1	1	3							9
IMAZALIL	3		1			1	3							8
FENHEXAMID	2	1	3		1	1								8
DIPHENYLAMINE	1	7												8
PROPICONAZOLE	2	1		3		2								8
PROFENOFOS	4				1	1					1			7
BUPROFEZIN	4	2					1							7
CYPRODINIL	1	2			1		2							6
CYROMAZINE	3		1			1			1					6
Thiabendazole	2		1	1		1				1				6
Cypermethrin	1	4	1											6
DIFLUBENZURON	2	1				2						1		6

Table 36: Pesticides detected per city of origin (domestic)

Pesticide	Riyadh	Domestic	Al-Qassim	Asir	Madinah	Tabuk	Makkah	Najran	Ha'il	Eastern Province	Al-Baha	Al-Jouf	Gizan	Total
LUFENURON	4		1											5
OXAMYL	1	1	2											4
ACEPHATE	1	3												4
MALAOXON		1			3									4
TEBUCONAZOL	1	1		2										4
DELTAMETHRIN	1	1	1											3
CHLORFENAPYR	1	2												3
HEXACONAZOLE			2		1									3
FIPRONIL	1	1						1						3
Penconazole	1	1								1				3
METAMITRON	1	1												2
DIAZINON		1	1											2
DIMETHOATE	1								1					2
Clothianidin	1	1												2
PROCYMIDONE	1									1				2
Fluazifop -P- butyl		2												2
TEFLUBENZURON						1								1
Fenazaquin			1											1
FIPRONILSULFONE		1												1
Tolclofos-methyl		1												1
FENUORON	1													1
CYMOXANIL		1												1
EPN			1											1
Mevinphos		1												1
CYPERMETHRIN MIXED ISOMERS					1									1
FENAMIDONE	1													1
Resmethrin	1													1
OMETHOATE	1													1
PENCYCURON			1											1
PROTHIOCONAZOLE DESTHIO	1													1
Pendimethalin	1													1
PYRACLOSTROBIN			1											1
BROMOPROPYLATE			1											1
TRIFLOXYSTROBIN		1												1
Phoxim				1										1
PROCHLORAZ							1							1
Total	339	294	130	96	95	68	60	34	32	22	9	8	2	1189

Table 37: Violative pesticides detected per city of origin (Domestic)

Pesticide	Domestic	Riyadh	Madinah	Al-Qassim	Tabuk	Asir	Najran	Eastern Province	Ha'il	Al-Baha	Gizan	Total
METHOMYL	8	12	13	3	1	3			1	1	1	43
Carbendazim	7	3	2	4	4	4	1		1			26
Ethion	8	4	2	3	1		1					19
ACETAMIPRID	3	2	2	3		4	1					15
Chinomethionat	11			2	1							14
PYRIDABEN	1	3	8		1							13
MALATHION	1	1	1	1	1	1		3				9
BIPHENYL	4			4		1						9
QUINALPHOS	4	4		1								9
IMIDACLOPRID	2		6									8
PHENTHOATE	1	3	1									5
CHLORPYRIFOS	1	1	1		1		1					5
PROPICONAZOLE	1	1			1	2						5
ACEPHATE	3	1										4
METALAXYL	1	1		1								3
OXADIAZON		3										3
TEBUCONAZOLE		1		1					1			3
CHLORFENAPYR	2	1										3
FIPRONIL	1	1					1					3
HEXACONAZOLE			1	2								3
PROCYMIDONE		1						1				2
Cypermethrin	1			1								2
DIFLUBENZURON		1			1							2
Fluazifop -P- butyl	2											2
DIFENOCONAZOLE		1		1								2
THIAMETHOXAM		1			1							2
PROFENOFOS			1		1							2
Bifenthrin	1	1										2
PYRIMETHANIL	1			1								2
MALAOXON			2									2
METALAXYL-M	1	1										2

Table 37: Violative pesticides detected per city of origin (Domestic)

Pesticide	Domestic	Riyadh	Madinah	Al-Qassim	Tabuk	Asir	Najran	Eastern Province	Ha'il	Al-Baha	Gizan	Total
Iprodione	1											1
FENUORON		1										1
DIPHENYLAMINE	1											1
FIPRONILSULFONE	1											1
BUPROFEZIN		1										1
Fenazaquin				1								1
DIMETHOATE									1			1
CYROMAZINE		1										1
LINURON		1										1
EPN				1								1
Phoxim						1						1
Thiabendazole					1							1
Clothianidin		1										1
Mevinphos	1											1
PROTHIOCONAZOLE DESTHIO		1										1
MYCLOBUTANIL					1							1
LAMBDA-CYHALOTHRIN					1							1
OMETHOATE		1										1
Resmethrin		1										1
DIAZINON	1											1
Penconazole		1										1
BROMOPROPYLATE				1								1
DELTAMETHRIN				1								1
IMAZALIL					1							1
Total	70	57	40	32	18	16	5	4	4	1	1	248

Table 38: Banned pesticides found per city of origin (Domestic)

Pesticide	Riyadh	Domestic	Al-Qassim	Tabuk	Asir	Madeinah	Makkah	Eastern Province	Najran	Ha'il	Al-Baha	Gizan	Total
Carbendazim	32	26	17	16	10	6	4	1	5	2	2	1	122
LINURON	12	4	4		2		1	3		3			29
Ethion	6	10	4	2		2	1		1				26
HEXYTHIAZOX	10	1	1		1	2			1				16
Chinomethionat		12	2	1									15
PHENTHOATE	6	3			1	1							11
MALATHION	1	1	1	1	1	1	1	3					10
OXADIAZON	6	3											9
IMAZALIL	3		1	1			3						8
PROFENOFOS	4			1		1					1		7
ACEPHATE	1	3											4
HEXACONAZOLE			2			1							3
CHLORFENAPYR	1	2											3
PROCYMIDONE	1							1					2
DIMETHOATE	1									1			2
DIAZINON		1	1										2
Resmethrin	1												1
EPN			1										1
Mevinphos		1											1
OMETHOATE	1												1
Total	86	67	34	22	15	14	10	8	7	6	3	1	273

Table 39: Pesticides found in violation to MRLs per sample type (Domestic)

Pesticide	Parsley	Mint	Green Pepper	Eggplant	Jute Mallow	Coriander	Cucumber	Dates	Tomato	Spinach	Watercress	Potato	Beans	Okra	Lettuce	Onion	Zucchini	Peach	Pumpkin	Grapes	Lemon	Watermelon	Total
METHOMYL	7	15	3	3	1	4	2			3	1	1		1	1		1						43
Carbendazim	1				11		3	3		1	5		1	1									26
Ethion		2	6	2			2	5	2														19
ACETAMIPRID				2	2		4		5					1					1				15
Chinomethionat				9				3		1			1										14
PYRIDABEN	2	6	2				1			1			1										13
MALATHION	8					1																	9
BIPHENYL			1		1	3	1				1	2											9
QUINALPHOS	3	2				1			1	1					1								9
IMIDACLOPRID	1				2	3				2													8
PHENTHOATE	1	3					1																5
CHLORPYRIFOS	1		3																	1			5
PROPICONAZOLE	2		1										1				1						5
ACEPHATE		2				1							1										4
METALAXYL				1								1	1										3
OXADIAZON						1										2							3
TEBUCONAZOLE	1							1				1											3
CHLORFENAPYR			2				1																3
FIPRONIL			1					1	1														3
HEXACONAZOLE			3																				3
PROCYMIDONE									1													1	2
Cypermethrin				1					1														2
DIFLUBENZURON						1			1														2
Fluazifop -P- butyl	2																						2
DIFENOCONAZOLE		1								1													2
THIAMETHOXAM			1											1									2
PROFENOFOS		1	1																				2
Bifenthrin	1																	1					2
PYRIMETHANIL											1			1									2
MALAOXON	1	1																					2
METALAXYL-M												1							1				2

Table 39: Pesticides found in violation to MRLs per sample type (Domestic)

Pesticide	Parsley	Mint	Green Pepper	Eggplant	Jute Mallow	Coriander	Cucumber	Dates	Tomato	Spinach	Watercress	Potato	Beans	Okra	Lettuce	Onion	Zucchini	Peach	Pumpkin	Grapes	Lemon	Watermelon	Total
Iprodione							1																1
FENUORON								1															1
DIPHENYLAMINE	1																						1
FIPRONILSULFONE								1															1
BUPROFEZIN						1																	1
Fenazaquin			1																				1
DIMETHOATE															1								1
CYROMAZINE												1											1
LINURON						1																	1
EPN																					1		1
Phoxim									1														1
Thiabendazole				1																			1
Clothianidin			1																				1
Mevinphos					1																		1
PROTHIOCONAZOLE DESTHIO													1										1
MYCLOBUTANIL														1									1
LAMBDA-CYHALOTHRIN							1																1
OMETHOATE									1														1
Resmethrin																		1					1
DIAZINON	1																						1
Penconazole	1																						1
BROMOPROPYLATE								1															1
DELTAMETHRIN			1																				1
IMAZALIL				1																			1
Total	34	33	27	20	18	17	17	16	14	10	8	7	7	6	3	2	2	2	2	1	1	1	248

Table 40: Banned pesticides found per sample type (Domestic)

Pesticide	Tomato	Parsley	Green Pepper	Eggplant	Cucumber	Mint	Dates	Jute Mallow	Coriander	Beans	Watercress	Carrot	Lemon	Lettuce	Onion	Spinach	Peach	Cantaloupe	Okra	Watermelon	Apricot	Zucchini	Banana	Potato	Grapes	Orange	Strawberry	Total
Carbendazim	20	5	8	4	13	4	6	13	2	8	6			3	4	4	4	3	4	3	3	2		1	1		1	122
LINURON		9				4			7		2	6				1												29
Ethion	3	1	7	5	3	2	5																					26
HEXYTHIAZOX	4		5	1			3			1								1	1									16
Chinomethionat				10			3			1						1												15
PHENTHOATE	4	1			1	3								1								1						11
MALATHION		8				1			1																			10
OXADIAZON		1						2	1		2	1			2													9
IMAZALIL				1									5										1			1		8
PROFENOFOS		2	1	2		1								1														7
ACEPHATE						2			1	1																		4
HEXACONAZOLE			3																									3
CHLORFENAPYR			2		1																							3
PROCYMIDONE	1																			1								2
DIMETHOATE														1				1										2
DIAZINON		1							1																			2
Resmethrin																	1											1
EPN													1															1
Mevinphos								1																				1
OMETHOATE	1																											1
Total	33	28	26	23	18	17	17	16	13	11	10	7	6	6	6	6	5	5	5	4	3	3	1	1	1	1	1	273

Table 41: Pesticides found in violation to MRLs per sample type (imported)

Pesticide	Pomegranate	Guava	Lemon	Orange	Banana	Grapes	Apple	Strawberry	Peach	Green Pepper	Mango	Garlic	Carrot	Tomato	Apricot	Okra	Onion	Lettuce	Total
METAMITRON			2	3	4		1												10
Carbendazim	2	5							1		1								9
ACETAMIPRID	3	1				1					1	1	1						8
Resmethrin			1	3	1														5
CHLORPYRIFOS	1	2				1								1					5
AZOXYSTROBIN	3						1												4
OMETHOATE	1	1		1															3
EPN			3																3
PROFENOFOS		1	1	1															3
PROPICONAZOLE	1				1			1											3
Bifenthrin									2									1	3
METHOMYL		1				1		1											3
DIMETHOATE		3																	3
DELTAMETHRIN					1	1													2
ACEPHATE									1						1				2
Prothioconazole			1	1															2
Iprodione					1	1													2
PROCYMIDONE			1						1										2
lamda-Cyhalothrin	1					1													2
THIAMETHOXAM												1				1			2
BIPHENYL			2																2
CARBARYL							1	1											2
CHLORFENAPYR										1				1					2
BOSCALID	2																		2
HEXACONAZOLE						1				1									2
Indoxacarb	1																		1
Tolclofos-methyl								1											1
CHLORMEQUAT-CHLORIDE	1																		1
Mefenpyr-Diethyl				1															1
PROTHIOCONAZOLE DESTHIO	1																		1
METALAXYL-M												1							1
TEBUCONAZOLE											1								1
Ethion										1									1
Propham						1													1
FENHEXAMID							1												1
DICHLORVOS													1						1
MYCLOBUTANIL																	1		1
PYRACLOSTROBIN					1														1
FENVALERATE			1																1
SPIROXAMINE								1											1
OXADIXYL										1									1
Cypermethrin					1														1
FIPRONIL				1															1
FIPRONILSULFONE				1															1
IMIDACLOPRID							1												1
Total	17	14	12	12	10	8	5	5	5	4	3	3	2	2	1	1	1	1	106

Table 42: Banned pesticides found per sample type (imported)

Pesticide	Orange	Lemon	Banana	Pomegranate	Guava	Strawberry	Peach	Apricot	Apple	Grapes	Mango	Green Pepper	Cherry	Onion	Carrot	Okra	Tomato	Watermelon	Pumpkin	Total
Carbendazim	5	5	6	14	9	5	6	12	4	6	9		4	3	1	1		1	1	92
IMAZALIL	46	27	17						1											91
HEXYTHIAZOX		1		1		5			1		1	1					1			11
PROFENOFOS	1	4			1	2								1		1				10
DIMETHOATE	1			1	4		1													7
Resmethrin	4	1	1																	6
OMETHOATE	1			1	2		1													5
ACEPHATE			1			1	1	1								1				5
Pirimicarb									2				1							3
PROCYMIDONE		1					2													3
EPN		3																		3
MALATHION	1			1			1													3
Azinphos-methyl							3													3
HEXACONAZOLE				1						1		1								3
Ethion												1					1			2
FLUSILAZOLE										2										2
FENVALERATE		1		1																2
KRESOXIM-METHYL						1				1										2
PROPARGITE		1		1																2
CHLORFENAPYR												1					1			2
CARBARYL						1			1											2
DIAZINON									1											1
Hexachlorobenzen									1											1
LINURON															1					1
OXADIXYL												1								1
Propham										1										1
IPROVALICARB										1										1
CHLORFENVINPHOS															1					1
AZINPHOS METHYL									1											1
Total	59	44	25	21	16	15	15	13	12	12	10	5	5	4	3	3	3	1	1	267

Table 43: Pesticide classification according to several international bodies

Pesticide	WHO by hazardous	Toxicity by EPA	EFSA
ACETAMIPRID	-	Not Likely To Be	
METHOMYL	IB	Group E	
Cypermethrin	IB	Group C	
DICHLORVOS	Ib	Suggestive Evidence	not approved
METHIOCARB	Ib	Group D	
OXAMYL	Ib	Group E	
CHLORPYRIFOS	II	Group E	
IMIDACLOPRID	II	Group E	
PROPICONAZOLE	II	Group C	not approved
QUINALPHOS	II		not approved
PYRIDABEN	II	Group E	
Bifenthrin	II	Group C	
Indoxacarb	II	Not Likely To Be	
METAMITRON	II		
LAMBDA-CYHALOTHRIN	II		
METALAXYL-M	II		
TEBUCONAZOLE	II	-Group C	
MYCLOBUTANIL	II	Group E	
FIPRONIL	II	Group C	not approved
SPIROXAMINE	II	Not Likely To Be Carcinogenic	
METALAXYL	II	Group E--Evidence	
FENPROPATHRIN	II	Not Likely To Be	not approved
DODINE	II	Not Likely To Be	
DIFENOCONAZOLE	II	Suggestive Evidence Of	
AZACONAZOLE	II		
CYMOXANIL	II	Not Likely To Be	
TEBUCONAZOL	II	Group C	
Tetraconazole	II	Not Likely To Be	
PACLOBUTRAZOL	II	Group D	
Thiacloprid	II	Likely To Be	
Pendimethalin	II	Group C	
PROCHLORAZ	II	Group C	
PYRIMETHANIL	III	Not Likely To Be Carcinogenic	
Iprodione	III	Likely To Be Carcinogenic	not approved
CYROMAZINE	III	Group E	
BIPHENYL	III		not approved

Table 43: Pesticide classification according to several international bodies

Pesticide	WHO by hazardous	Toxicity by EPA	EFSA
Thiabendazole	III	Likely To Be Carcinogenic	
DIFLUBENZURON	III	Group E--Evidence	
CLOFENTEZIN	III	Group C	
BUPIRIMATE	III		
CHLORPYRIFOS-METHYL	III	Not Likely To Be	
Fenbuconazole	III	Group C	
2-Phenylphenol	III		
Penconazole	III		
BUPROFEZIN	III	Suggestive Evidence	
BOSCALID	U	Suggestive Evidence	
AZOXYSTROBIN	U	Not Likely To Be	
BROMOPROPYLATE	U		Not approved
PYRACLOSTROBIN		Not Likely To Be Carcinogenic	
CYPRODINIL		Not Likely To Be	
DIPHENYLAMINE		Not Likely To Be	not approved
FENHEXAMID	U	Not Likely To Be	
THIAMETHOXAM		Not Likely To Be	
TRIFLOXYSTROBIN	U	Not Likely To Be	
PYRIPROXYFEN	U	Group E	
Tolclofos-methyl	U	.(Not Required (Nonfood	
Clothianidin		Not Likely To Be	
CYAZOFAMID		Not Likely To Be	
DELTAMETHRIN		Not Likely To Be	
ETOFENPROX		Not Likely To Be Carcinoge	
FENAMIDONE		Not Likely To Be	
Fluazifop -P- butyl	Might be obsolete	Not Likely To Be	
Fenamiphos-Sulfoxide			
lamda-Cyhalothrin			
MALAOXON			
Mefenpyr-Diethyl			
FIPRONILSULFONE			
FENUORON			
LUFENURON			

EPA/ Group A: Human Carcinogen; Group B: Probable Human Carcinogen; Group C:Possible Human Carcinogen; Group D: Not Classifiable as to Human Carcinogenicity; Group E: Evidence of Non-Carcinogenicity for Humans. WHO/ Ia = Extremely hazardous; Ib = Highly hazardous; II = Moderately hazardous; III = slightly hazardous; U = Unlikely to present acute hazard in normal use; FM = Fumigant, not classified; O = Obsolete as pesticide, not classified.

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