

GOVERNMENT OF INDIA  
MINISTRY OF AGRICULTURE AND FARMERS WELFARE  
DEPARTMENT OF AGRICULTURE AND FARMERS WELFARE  
**LOK SABHA**

**UNSTARRED QUESTION NO. 1069**  
ANSWERED ON 13<sup>TH</sup> DECEMBER, 2022

**ADVERSE EFFECTS OF CHEMICALS AND FERTILIZERS**

1069. SHRI JUAL ORAM:  
SHRI GUMAN SINGH DAMOR:

Will the Minister of AGRICULTURE AND FARMERS WELFARE कृषि एवं किसान कल्याण मंत्री be pleased to state:-

- (a) whether any authentic study has been conducted in regard to the adverse effects of chemicals and fertilizers;
- (b) if so, the names of the research institutes working for the said purpose along with the findings of their research;
- (c) the names of the States in which the use of chemicals and fertilizers is maximum;
- (d) whether chemical fertilizers contaminate ground water and environment and if so, the details thereof;
- (e) the impact of excessive use of chemicals and fertilizers on the quality of groundwater and if so, the details thereof;
- (f) the details of steps taken to protect ground water and environment from chemical fertilizers; and
- (g) the policy of the Government to promote organic farming along with the details in this regard?

**ANSWER**

THE MINISTER OF AGRICULTURE AND FARMERS WELFARE  
कृषि एवं किसान कल्याण मंत्री (SHRI NARENDRA SINGH TOMAR)

(a), (b) & (d) to (g): The registration committee constituted under section (5) of the Insecticides Act, 1968 while registering the pesticides for use in the country evaluates their safety and efficacy based on the field trials conducted at State Agriculture Universities/ICAR institutes and lab studies conducted at NABL /ISO:17025/ and GLP accredited laboratories. Based on the studies, Registration Committee approves the details of doses, crops, precautionary measures, antidotes etc on Label and Leaflets. The registered pesticides if used as per Label and Leaflets do not pose any harm to human beings, animals, environment and living organisms other than pests.

Further, with the objective of educating, orienting and training of farming community about the judicious use of pesticides and their use as per the directions given in the label and leaflets, Central and State Governments through their field agencies ensure that farmers are provided right knowledge/ information about the recommended pesticide use. Further, Ministry of Agriculture and Farmers Welfare through its Central

Integrated Pest Management Centres located in 28 States and 2 UTs, KVKs, ICAR etc. is propagating the Integrated Pest Management approach.

For fertilizers, Soil Health & Fertility in RKVY scheme is being implemented to promote soil test based Integrated Nutrient Management (INM) through conjunctive use of chemical fertilizers, organic fertilizers and bio-fertilizers. Promotion of INM is expected to reduce consumption of chemical fertilizers and increase use of organic sources of plant nutrients, which in turn improve the soil fertility as well nutrient use efficiency. Under this scheme, State Governments/UTs are assisted to issue the soil health cards(SHC) to all farmers in the country. Soil Health Cards also advise them not to overuse and underuse fertilizer thus reducing the input cost and enhancing farmers' income. Apart from this, SHC recommendations also help farmers to apply appropriate quantum of amendments for the amelioration of problematic soils viz: Acidic and Salt affected Soils.

To promote use of organic fertilizer, Paramparagat Krishi Vikash Yojana (PKVY) scheme is being implemented in a cluster mode (with min 20 ha size). Financial assistance of Rs. 50,000 per ha. for 3 years is provided to farmers, out of which Rs.31,000 is given as incentive to farmers for organic inputs including organic fertilizers directly through DBT. Besides, Mission Organic Value Chain Development for North Eastern Region (MOVCDNER) Scheme is also being implemented to promote organic farming in the North Eastern Region.

(c): State Governments and Union Territories report data related to consumption of pesticides to the Central Government. As per the available data, the trend of consumption of chemical pesticides has varied from year to year and region to region. The consumption of pesticides has been found to be maximum in the State of Maharashtra for the year 2021-22. The state wise details on consumption of chemical pesticides and bio-pesticides are attached at Annexure-I and II respectively. The consumption of fertilizers in terms of nutrient (N+P+K) in kg/Ha is maximum in Punjab State for the year 2021-22. State wise consumption details of fertilizers (nutrient wise) are attached at Annexure-III.

## STATE-WISE CONSUMPTION OF CHEMICAL PESTICIDES

Quantity : Metric Ton (Tech. Grade)

S. No.	States/UTs	2017-18	2018-19	2019-20	2020-21	2021-22
1	Andhra Pradesh	1738	1689	1559	1559	1759
2	Bihar	840	850	850	995	995
3	Chhattisgarh	1685	1770	1672	1639	1740
4	Goa	24	25	30	30	32
5	Gujarat	1692	1608	1784	1573	1869
6	Haryana	4025	4015	4200	4050	4066
7	Himachal Pradesh	467	322	881	56	454
8	Jharkhand	619	646	681	1161	1195
9	Karnataka	1502	1524	1568	1930	1930
10	Kerala	1067	995	656	585	554
11	Madhya Pradesh	502	540	540	691	654
12	Maharashtra	15568	11746	12783	13243	13175
13	Orissa	1633	1609	1115	1158	1240
14	Punjab	5835	5543	4995	5193	NR
15	Rajasthan	2307	2290	2088	2330	2104
16	Tamil Nadu	1929	1901	2225	1834	1851
17	Telangana	4866	4894	4915	4986	5090
18	Uttar Pradesh	10824	11049	12217	11557	11688
19	Uttarakhand	210	195	224	135	114
20	West Bengal	2982	3190	3630	3630	3630
<b>Sub Total</b>		<b>60315</b>	<b>56401</b>	<b>58613</b>	<b>58336</b>	<b>54140</b>
<b>North-Eastern</b>						
21	Arunachal Pradesh	NR	5	5	2	3
22	Assam	241	256	410	420	428
23	Manipur	27	NR	25	46	NR
24	Meghalaya	Organic State	Organic State	Organic State	Organic State	Organic State
25	Mizoram	NR	26	27	NR	23
26	Nagaland	20	21	19	36	41
27	Sikkim	Organic State	Organic State	Organic State	Organic State	NR
28	Tripura	330	349	364	NR	NR
<b>Sub Total</b>		<b>618</b>	<b>657</b>	<b>850</b>	<b>503</b>	<b>494</b>
<b>Union Territories</b>						
29	Andaman & Nicobar	NR	NR	NR	1	NR
30	Chandigarh	NR	NR	NR	NR	NR
31	Dadra & Nagar Haveli and Daman & Diu	NR	NR	NR	NR	NR
32	Delhi	NR	110	NR	NR	NR
33	Jammu & Kashmi	2430	2459	2198	3352	4086
34	Ladakh	NR	NR	NR	NR	NR
35	Lakshadweep	NR	NR	NR	NR	NR
36	Pondicherry	43	42	40	NR	NR

<b>Sub Total</b>	<b>2473</b>	<b>2611</b>	<b>2238</b>	<b>3353</b>	<b>4086</b>
<b>Grand Total</b>	<b>63406</b>	<b>59669</b>	<b>61701</b>	<b>62193</b>	<b>58720</b>

Source: States/UTs Zonal Conferences on Inputs (Plant Protection) for Rabi & Kharif Seasons. NR- Inputs Not Reported.

Annexure-II

**STATE-WISE CONSUMPTION OF BIO-PESTICIDES**

Quantity : Metric Ton (Tech. Grade)

S. No.	States/UTs	2017-18	2018-19	2019-20	2020-21	2021-22
1	Andhra Pradesh	5.25	10.00	8.79	8.79	45.22
2	Bihar	320.00	350.00	360.00	360.00	360.00
3	Chhattisgarh	405.00	505.00	605.00	605.00	705.00
4	Goa	4.50	6.00	6.00	1.78	5.30
5	Gujarat	353.50	306.00	307.00	320.00	392.00
6	Haryana	390.00	410.00	400.00	430.00	440.00
7	Himachal Pradesh	1.45	1.50	4.20	18.04	5.02
8	Jharkhand	37.88	41.43	91.00	91.00	97.00
9	Karnataka	544.00	544.00	564.00	561.00	561.00
10	Kerala	717.28	861.74	778.64	757.69	607.80
11	Madhya Pradesh	326.00	322.00	322.00	346.00	349.00
12	Maharashtra	1271.46	1164.17	1082.14	934.41	934.44
13	Orissa	310.00	310.00	333.00	165.00	121.97
14	Punjab	259.00	246.00	219.00	210.00	NR
15	Rajasthan	10.00	15.00	929.00	1021.00	1268.00
16	Tamil Nadu	630.00	500.00	820.00	861.00	891.00
17	Telangana	77.00	84.00	329.80	496.00	522.00
18	Uttar Pradesh	46.22	46.85	47.73	47.94	50.88
19	Uttarakhand	50.14	51.68	154.58	111.23	231.03
20	West Bengal	951.00	997.00	1017.00	1017.00	1017.00
<b>Sub Total</b>		<b>6709.68</b>	<b>6772.37</b>	<b>8378.87</b>	<b>8362.88</b>	<b>8603.65</b>
<b>North-Eastern</b>						
21	Arunachal Pradesh	NR	17.25	18.05	18.05	18.00
22	Assam	217.10	233.50	242.85	247.85	256.85
23	Manipur	1.05	NR	0.85	1.43	NR
24	Meghalaya	75.10	NR	8.49	8.87	8.55
25	Mizoram	NR	NR	NR	NR	NR
26	Nagaland	14.00	17.50	19.00	4.40	8.12
27	Sikkim	NR	NR	NR	NR	NR
28	Tripura	141.96	137.58	167.28	NR	NR
<b>Sub Total</b>		<b>449.21</b>	<b>405.83</b>	<b>456.52</b>	<b>280.60</b>	<b>291.52</b>
<b>Union Territories</b>						
29	Andaman & Nicobar	NR	NR	NR	NR	NR
30	Chandigarh	NR	NR	NR	NR	NR
31	Dadra & Nagar Haveli and Daman & Diu	NR	NR	NR	NR	NR
33	Delhi	NR	12.60	NR	NR	NR
34	Jammu & Kashmir	1.40	1.60	1.63	3.67	3.75
35	Ladakh	NR	NR	NR	NR	NR
36	Lakshadweep	NR	NR	NR	NR	NR
37	Pondicherry	14.14	11.08	9.90	NR	NR
<b>Sub Total</b>		<b>15.54</b>	<b>25.28</b>	<b>11.53</b>	<b>3.67</b>	<b>3.75</b>

<b>Grand Total</b>	<b>7174.43</b>	<b>7203.48</b>	<b>8846.93</b>	<b>8647.14</b>	<b>8898.92</b>
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**Source:** States/UTs Zonal Conferences on Inputs (Plant Protection) for Rabi & Kharif Seasons. **NR-** Inputs Not Reported.

## Annexure-III

Per Hectare consumption of fertilizers (*State-wise, Nutrient-wise*) (kg/ha) during 2017-18 to 2021-22

S.No.	State/U.T.	2017-18				2018-19				2019-20				2020-21				2021-22			
		N	P	K	TOTAL	N	P	K	TOTAL	N	P	K	TOTAL	N	P	K	TOTAL	N	P	K	TOTAL
		1	Andhra Pradesh	123.53	56.87	29.68	210.08	127.37	58.83	27.47	213.67	114.11	57.04	24.64	195.79	130.75	70.97	30.71	232.43	118.53	59.51
2	Telangana	148.00	57.61	24.09	229.70	153.65	57.82	17.74	229.21	130.08	48.72	16.13	194.92	135.92	55.15	20.13	211.20	139.55	53.54	13.60	206.69
3	Karnataka	73.22	38.30	21.49	133.01	69.76	37.20	21.01	127.97	71.18	39.19	19.79	130.17	75.96	44.32	22.87	143.15	78.94	41.43	19.48	139.86
4	Kerala	53.58	16.78	23.44	93.80	26.70	12.78	22.10	61.58	16.02	6.82	12.49	35.33	17.44	7.52	14.87	39.83	15.41	6.25	11.06	32.72
5	Tamil Nadu	92.27	36.47	31.82	160.56	99.96	38.46	30.95	169.36	88.90	35.66	26.15	150.72	95.15	39.74	30.50	165.39	91.39	37.08	24.25	152.72
6	puducherry	291.11	57.76	52.75	401.62	263.14	46.04	40.43	349.60	174.32	47.05	23.40	244.77	217.44	55.38	39.74	312.56	217.07	49.66	26.62	293.36
7	A&N Islands	6.38	7.20	4.53	18.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	2.86	6.90	9.52	0.00	16.42
8	Lakshadweep	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9	Gujarat	105.49	34.05	11.16	150.70	96.57	28.61	10.17	135.35	94.61	27.85	8.29	130.75	93.80	32.72	9.52	136.04	84.61	26.64	7.10	118.35
10	Madhya Pradesh	50.29	26.08	3.91	80.27	62.72	33.27	4.38	100.37	63.69	34.04	4.42	102.15	60.09	35.40	4.86	100.35	57.32	31.33	4.67	93.32
11	Chattisgarh	59.58	30.50	9.27	99.36	80.76	37.81	10.18	128.75	68.33	34.27	9.44	112.04	80.03	41.46	11.36	132.85	69.17	35.71	10.44	115.32
12	Maharashtra	65.32	38.10	23.96	127.38	75.42	43.73	26.56	145.71	61.47	35.37	18.99	115.84	64.37	42.71	22.18	129.26	60.67	38.53	20.15	119.35
13	Rajasthan	34.40	12.63	1.00	48.03	43.33	15.88	1.02	60.23	43.69	17.19	0.75	61.63	47.24	19.38	0.94	67.55	42.66	15.16	1.10	58.92
14	Goa	10.92	8.62	6.25	25.80	11.48	9.01	6.34	26.83	13.54	8.82	10.21	32.57	19.20	10.09	10.41	39.71	15.85	7.72	9.72	33.29
15	Daman & Diu	53.40	0.00	0.00	53.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	D&N Haveli	12.88	9.01	0.00	21.89	6.03	3.51	0.00	9.54	19.07	11.22	0.00	30.29	28.79	19.93	0.00	48.73	16.02	7.18	0.00	23.20
17	Haryana	160.22	42.80	7.06	210.07	166.56	43.95	7.22	217.72	159.92	45.29	5.66	210.87	163.84	47.13	5.80	216.78	160.90	42.27	6.93	210.10
18	Punjab	170.23	38.42	6.60	215.25	187.95	45.19	5.81	238.95	191.40	46.33	5.49	243.22	190.78	48.82	7.07	246.67	200.87	45.42	7.65	253.95
19	Uttar Pradesh	120.02	44.36	8.90	173.28	122.57	37.64	6.45	166.65	145.12	47.60	7.99	200.71	142.45	51.28	8.57	202.30	131.42	43.40	6.54	181.37

20	Uttanchal	141.72	23.23	7.50	172.45	130.82	22.51	7.45	160.78	101.06	25.07	7.19	133.32	98.10	23.57	6.80	128.47	86.34	20.15	5.57	112.06
21	Himachal Pr.	39.90	10.66	12.20	62.75	40.90	10.66	10.02	61.57	41.96	11.38	10.90	64.24	41.27	12.30	11.22	64.78	41.77	10.02	9.32	61.11
22	J & K	69.86	26.25	19.47	115.58	62.11	20.35	14.06	96.51	26.30	8.71	5.79	40.80	59.69	19.65	15.09	94.43	44.68	11.32	6.82	62.82
23	Delhi	99.49	26.27	2.71	128.47	168.62	22.08	5.60	196.30	126.29	21.10	3.29	150.68	110.49	17.54	2.99	131.02	133.46	17.92	1.67	153.05
24	Chandigarh	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
25	Bihar	147.93	51.33	21.01	220.27	160.72	47.28	18.34	226.34	149.46	51.22	19.58	220.26	145.57	51.87	18.99	216.43	114.30	34.90	9.88	159.08
26	Jharkhand	45.52	34.73	7.20	87.45	69.66	21.47	2.72	93.86	43.98	15.06	1.53	60.58	39.15	15.82	1.55	56.52	38.76	14.53	1.82	55.10
27	Odisha	72.20	31.18	15.88	119.27	68.31	29.16	14.74	112.21	43.89	19.06	9.45	72.40	43.67	22.50	10.70	76.86	40.48	19.42	7.71	67.61
28	West Bengal	75.09	43.85	37.01	155.95	77.20	40.23	32.60	150.04	82.96	48.35	36.61	167.92	84.06	54.44	43.93	182.42	83.54	46.73	31.57	161.84
29	Assam	38.75	12.38	11.12	62.26	53.76	12.19	13.02	78.98	45.90	12.66	11.74	70.29	37.65	11.74	10.55	59.95	37.02	10.01	7.24	54.27
30	Tripura	18.84	6.64	6.80	32.27	25.26	9.08	2.94	37.27	17.04	10.97	10.31	38.32	14.10	11.98	5.02	31.10	22.36	12.31	3.60	38.27
31	Manipur	25.29	10.80	10.22	46.31	25.33	1.02	0.23	26.57	38.02	10.97	2.91	51.90	29.12	6.89	4.37	40.38	26.24	7.25	0.38	33.87
32	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA	NA	Na	NA
33	Nagaland	2.38	1.58	1.06	5.02	0.42	0.02	0.00	0.43	NA	NA	NA	NA	0.62	0.08	0.00	0.70	1.97	0.00	0.00	1.97
34	Arunachal Pr.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
35	Mizoram	24.97	0.00	0.00	24.97	32.58	0.48	0.05	33.12	29.62	1.65	0.71	31.97	7.76	1.02	0.00	8.78	9.72	0.16	0.00	9.87
36	Sikkim	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Na	NA	NA	NA	NA
37	ALL INDIA	84.79	34.27	13.89	132.96	90.72	34.75	12.82	138.29	86.51	34.70	11.81	133.02	88.60	38.99	13.69	141.28	83.42	33.60	10.85	127.87

Source:- Cropped area(Land Use till 2018-19, 2019-20 onwards State Government), NPK Cons. for 2018-19 onwards from iFMS Portal  
NA: Not Available.

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