

INVITED ARTICLE

Pesticide Management Bill, 2020: A Comprehensive Regulation for Pesticide Management, Comparative Study on Insecticide Act, 1968 Vis-À-Vis Pesticide Management Bill, 2020

Insecticide Act, 1968 and Insecticide Rules, 1971 regulate the Quality of Pesticides available in India through systematic procedures and methods. The Insecticide Inspectors draws the samples and sent to Testing Labs and based on the report obtained, the legal action will be initiated, if sample is misbranded. Stringent procedures and protocols are followed by CIB&RC in tune with the international guidelines for registration / recommendation of pesticide(s) on a crop against pest taking into consideration of chemistry, toxicity, bio-efficacy on target pest, effect on non-target organisms, pesticide dissipation and residues in raw agricultural commodities. However, in view of the concerns for environment, scope of the act, consumer rights, quality management and other issues, there was a need to revise the existing regulations of pesticides. In order to improve and strengthen the management of pesticide for helping the farming community and safe guarding the environment, the Government of India has brought a new legislation called The Pesticide Management Bill which replaces the present Insecticide Act and Insecticide Rules.

Pesticide Regulation in India: History

Pesticide can be a chemical or biological component used for crop protection in the field, food protection during the storage and control of domestic pests. In agriculture, during crop growth both in field and horticultural crops, various types of pesticides are being used for control or management of different pests such as insects, mites, nematodes, fungus, bacteria, virus, weed plants, rodents, birds, snails etc with an aim to increase the food production. In addition,



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Dr. Cherukuri completed his B. Sc (Ag) & M. Sc (Ag) from Agricultural College, Bapatla, and Ph.D from IARI, New Delhi. After short stint at Wockhardt at Bangalore as Manager, R & D, Joined in APAU (now ANGRAU) in 1998 as Scientist in All India Network Project on Pesticide Residues, and worked in the same Project till August 2015, in different positions (Scientist, Senior Scientist, Principal Scientist) leaving 2 ½ yrs service at Agricultural College, Jagtial during 2009-2011. He worked as Professor (Environmental Sciences) at Advanced PG Centre, Lam during 2015, and then got selected as Director, Pesticide Management, National Institute of Plant Health Management, Hyderabad, GOI and worked for 3 ½ yrs on deputation during 2016-2019. He worked as Professor (Entomology) at Agricultural College, Bapatla during 2019-2021, later as Director, Planning & Monitoring Cell, ANGRAU during 2021, and presently working as Professor (Entomology), P & M cell, ANGRAU.

Dr. Cherukuri has more than 20 years of research experience in the field of pesticide residues, food safety, risk assessment, and pesticide management. He is responsible for establishing state-of-the-art Pesticide Residue Laboratory, and is the first laboratory in University to get national accreditation as per ISO 17025. He has developed / validated multi-residue methods for different commodities, and also contributed for famous "Pesticide Residue Analysis Manual" published by ICAR during 2007. He has been an expert member in scientific various committee formulated by FSSAI, BIS and DAC in the field of pesticide residues and management. As Director, pesticide Management at NIPHM, he developed state-of-the-art Proficiency Testing Centre, and is the first public sector PT provider in the field of pesticide residues in India as per ISO 17043. He is presently a Technical Committee member of MPRNL project, and operating project of Monitoring of Pesticide Residues at National Level as PI of ANGRAU Centre.

State	Consumption of Chemical Pesticides					
	(MT Technical Grade)					
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Andhra Pradesh	4050	2713	2015	1738	1689	1559
Assam	190	185	306	241	256	410
Bihar	787	831	790	840	850	850
Chattisgarh	1589	1625	1660	1685	1770	1672
Gujarat	1730	1980	1713	1692	1608	1784
Haryana	4070	4100	4050	4025	4015	4200
Himachal Pradesh	379	450	341	467	322	881
Jammu & Kashmir	1921	2251	2188	2430	2459	2198
Jharkand	650	493	541	619	646	681
Karnataka	1793	1434	1288	1502	1524	1568
Kerala	910	1123	895	1067	995	656
Madhya Pradesh	696	732	694	502	540	540
Maharastra	8663	11665	13496	15568	11746	12783
Odisha	1278	994	1050	1633	1609	1115
Puducherry	42	43	43	43	42	40
Punjab	5689	5743	5843	5835	5543	4995
Rajasthan	2694	2475	2269	2307	2290	2088
Tamil Nadu	2096	2096	2092	1929	1901	2225
Telangana	2806	993	3436	4866	4894	4915
Tripura	346	293	298	330	349	364
Uttar Pradesh	9736	10457	10614	10824	11049	12217
Uttarakhand	172	217	198	210	195	224
West Bengal	3060	3712	2624	2982	3190	3630
INDIA	55456	56720	58634	63406	59669	61701

pesticides are also used for other purposes such as to protect the grains during storage, humans from nuisance / disease transmitting insects at home or offices. All over the world, pesticides have been the most important tool for food production, and In India, as well. The use of pesticides in India began in 1952 with the establishment of a manufacturing plant near Calcutta for the production of BHC. The data on pesticide consumption in India clearly indicate that India is one of the least used countries in the world during early 20th century, but the use increased over a period of time in view of increased food requirements. In spite of increase in use of pesticides,

India is still the lowest user of pesticide on per hectare basis due to increase in area under cultivation. Though the pesticides are being used in India during 1940's, 50's and 60's, there was no regulation on pesticide use.

In view of the challenges faced all over the world, with special reference to bad effects of pesticides on human, wild animals and environment, the countries have made efforts in preparing the regulations on pesticide use. In India, due to food poisoning with pesticides in the wheat imported and the subsequent concerns on use of pesticides, Government of India formulated an expert committee

State	Use of Chemical Pesticides (Grams active ingredient / hectare)						
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	Average
Andhra Pradesh	540	360	272	233	225	208	306
Assam	48	46	75	60	64	103	66
Bihar	105	110	103	112	112	112	109
Chattisgarh	284	288	293	301	316	299	297
Goa	77	306	142	158	161	194	173
Gujarat	150	172	149	147	140	155	152
Haryana	625	630	622	618	617	645	626
Himachal Pradesh	399	482	356	492	339	927	499
Jammu & Kashmir	1649	1942	1859	2086	2111	1887	1922
Jharkand	418	272	265	310	323	341	321
Karnataka	149	119	109	125	127	131	127
Kerala	350	427	344	410	383	252	361
Madhya Pradesh	29	31	29	20	23	23	26
Maharastra	370	497	577	665	502	546	526
Nagaland	40	40	38	38	42	38	39
Odisha	266	207	215	363	335	232	270
Puducherry	1615	1654	1654	1654	1615	1538	1622
Punjab	729	730	749	750	711	640	718
Rajasthan	106	99	87	92	90	82	93
Tamil Nadu	350	345	408	337	317	371	354
Telangana	528	187	576	774	789	793	608
Uttar Pradesh	374	399	394	416	425	470	413
Uttarakhand	164	200	183	198	184	211	190
West Bengal	309	376	273	300	322	367	324
INDIA	289	288	301	325	306	316	304

under the chairmanship of Dr. M. S. Thacker, and the committee studied the pesticide use and legislation during 1964-67. Based on the recommendations of the committee, a comprehensive Insecticide Act was passed in 1968 to “regulate the import, manufacture, sale, transport, distribution and use of insecticides in order to prevent risk to human beings or animals, and for matters connected therewith”. The enforcement of Act was transferred to the Ministry of Agriculture in the year 1970 by the Ministry of Health and family Planning. The department of Agriculture of this Ministry took immediate steps to frame the Rules and constituted Central insecticides Board and

Registration committee. The states were simultaneously advised to appoint all functionaries mentioned in the Act. After the stage was fully set, all the provisions of the Insecticides Act was brought into force with effect from 1st August, 1971. In the Act and the Rules framed there under, there is compulsory registration of the pesticides at the Central level and licence for their manufacture; formulation and sale are dealt with at the State level. With the enforcement of the Insecticides Act in the country pesticides of very high quality are made available to the farmers and general public for house-hold use, for protecting the agricultural crops from the ravages

of their pests, humans from diseases and nuisance caused by public health pests and the health hazards involved in their use have been minimised to a great extent. For the effective enforcement of the Insecticides Act, the two bodies have been constituted at the Central level *viz.* Central Insecticides Board and Registration Committee.

Pesticide Use in India: The recent statistics

In India, a total of 61,701 MT active ingredient pesticides are used during 2019-'20, where Maharashtra, Uttar Pradesh, Punjab and Haryana states uses major quantities of chemical pesticides, while Maharashtra and West Bengal consume major quantities of bio-pesticides.

The use of chemical pesticides (grams active ingredient per ha) is presented in the table below taking

into consideration of total quantity of pesticides used and total net crop area. The pesticide use in India is about 300 grams active ingredient per ha which is very less compared to any developed nations in the world.

Registered Uses of Pesticides

CIB&RC registers / recommends pesticides on different crops against pests based on the comprehensive database. A compilation is presented in the following table on list of pesticides recommended for use in few important crops. The information on other crops, pesticide-wise recommendations, dosages, pre-harvest intervals can be seen at <http://ppqs.gov.in/divisions/cib-rc/major-uses-of-pesticides>.

Registered Uses of Insecticides in important crops as per Insecticide Act, 1968 (updated upto June, 2021)	
Insecticide	Pest
PADDY	
Acephate 75.00% SP	Yellow stem borer, Leaf folder, Plant Hoppers, Green leaf hopper
Acephate 97.00% DF	Yellow stem borer, Leaf folder, Plant Hoppers, Green leaf hopper
Acephate 95.00% SG	Stem borer, Leaf folder, Brown plant hopper
Acetamiprid 20.00% SP	Brown plant hopper
Benfuracarb 03.00% GR	Stem borer, Leaf folder, Brown plant hopper
Bifenthrin 08.80% CS	Stem borer, Leaf folder
Bifenthrin 10.00% EC	Stem borer, Leaf folder, Green leaf hopper
Buprofezin 25.00% SC	Brown plant hopper, Green leaf hopper, White Back Plant Hopper
Buprofezin 70.00% DF	Brown plant hopper
Carbofuran 03.00% CG	Brown plant hopper Gall midge, Stem borer, Green leaf hopper, Hispa
Carbosulfan 06.00% Granules	Stem borer, Gall midge, Green leaf hopper, Leaf folder
Carbosulfan 25.00% EC	Green leaf hopper, White Back Plant Hopper, Brown plant hopper, Gall midge, Stem bore
Cartap Hydrochloride 04.00% G	Stem borer, Leaf folder, Whorl maggot
Cartap Hydrochloride 50.00% SP	Stem borer, Leaf folder
Cartap Hydrochloride 75.00% SG	Yellow stem borer, Leaf folder
Chlorantraniliprole 18.50% SC	Stem borer, Leaf folder
Chlorantraniliprole 00.40% GR	Yellow stem borer, Leaf folder
Chlorpyrifos 10.00% Granules	Stem borer, Leaf folder, Gall midge
Chlorpyrifos 75 % w/w WG	Yellow stem borer
Chlorpyrifos 20.00% EC	Hispa, Leaf folder, Gall midge, Stem borer, Whorl maggot

Chlorpyrifos 50.00% EC	Stem borer, Leaf folder
Chlorpyrifos 01.50% DP	Stem borer, Green leaf hopper, Brown plant hopper, Leaf folder, Gall midge, Grass hopper
Chromafenozide 80.00% WP	Leaf folder, Stem borer
Clothianidin 50.00% WDG	Brown plant hopper
Deltamethrin 11.00% w/w EC	Stem borer, Leaf folder, Green leaf hopper, Whorl maggot
Deltamethrin 01.80% EC	Stem borer, Leaf folder
Dinotefuran 20.00% SG	Brown plant hopper
Emamectin benzoate 01.90% EC	Leaf folder, Hispa
Ethofenprox 10.00% EC	Brown plant hopper, Green leaf hopper, Stem borer, Leaf folder, Gall midge, Whorl maggot, White backed plant hopper
Fenobucarb (BPMC) 50.00% EC	Brown plant hopper, Green leaf hopper
Fenpropathrin 30.00% EC	Yellow stem borer, Leaf folder
Fipronil 05.00% SC	Stem borer, Brown plant hopper, Green leaf hopper, Rice leaf hopper, Rice Gall midge, Whorl maggot, White backed plant hopper
Fipronil 00.30% GR	Stem borer, Brown plant hopper, Green leaf hopper Rice leaf hopper, Rice gall midge, Whorl maggot, White backed plant hopper
Fipronil 00.60% w/w GR	Stem borer & Leaf folder
Fipronil 80.00% WG	Stem borer, Leaf folder
Flonicamid 50.00% WG	Brown plant hopper, White backed plant hopper, Green leaf hopper
Flubendiamide 20.00% WG	Stem borer, Leaf folder
Flubendiamide 39.35% m/m SC	Stem borer, Leaf folder
Flubendiamide 00.70% GR	Stem borer
Imidacloprid 70.00% WG	Brown plant hoppers, White backed plant hoppers
Imidacloprid 48.00% FS	Thrips
Imidacloprid 30.50% m/m SC	Brown plant hopper, White backed plant hopper
Imidacloprid 17.80% SL	Brown plant hopper, White backed plant hopper, Green leaf hopper
Imidacloprid 00.30% GR	Stem borer
Indoxacarb 15.80% EC	Leaf folder, Green Semilooper, Stem fly
Lambda-cyhalothrin 04.90% CS	Stem borer, Leaf folder
Lambda-cyhalothrin 02.50% EC	Leaf folder, Stem borer, Green leaf hopper, Gall midge, Hispa, Thrips
Lambda-cyhalothrin 05.00% EC	Leaf folder, Stem borer, Green leaf hopper, Gall Midge, Rice hispa, Thrips
Malathion 05.00% DP	Rice hispa
Malathion 50.00% EC	Rice hispa
Monocrotophos 36.00% SL	Brown plant hopper, Yellow stem borer, Green leaf hopper, Leaf roller/folder
Oxydemeton-methyl 25.00% EC	Blue leaf hopper, White leaf hopper
Phenthoate 50.00% EC	Rice case worm
Pymetrozine 50.00% WG	Brown plant hopper
Quinalphos 25.00% Gel	Brown plant hopper, Leaf folder, Stem borer, Hispa
Quinalphos 05.00% Granules	Gall midge, Stem borer
Quinalphos 20.00% AF	Brown plant hopper, Green leaf hopper, Leaf folder, Stem borer
Quinalphos 25.00% EC	Brown plant hopper, Hispa/blue beetle, Leaf folder, Stem borer
Quinalphos 01.50% DP	Brown plant hopper
Thiacloprid 21.70% SC	Stem borer

Thiamethoxam 70.00% WS	Thrips, GLH
Thiamethoxam 75.00% w/w SG	GLH, BPH
Thiamethoxam 25.00% WG	Stem borer, Gall midge, Leaf folder, White backed plant hopper, Brown plant hopper, Green leaf hopper, Thrips
MAIZE	
Carbofuran 03.00% CG	Stem borer, Shoot fly, Thrips
Dimethoate 30.00% EC	Stem borer, Shoot fly
Imidacloprid 48.00% FS	Shoot fly
Monocrotophos 36.00% SL	Shoot fly
Oxydemeton-methyl 25.00% EC	Shoot fly
Thiamethoxam 30.00% FS	Stem fly
Thiamethoxam 70.00% WS	Shoot fly, Aphids
SORGHUM	
Carbofuran 03.00% CG	Shoot fly, Stem borer
Dimethoate 30.00% EC	Midge
Imidacloprid 70.00% WS	Shoot fly
Malathion 05.00% DP	Earhead midge
Malathion 50.00% EC	Earhead midge
Oxydemeton-methyl 25.00% EC	Shoot fly
Phenthoate 02.00% DP	Red spider mite, Pink mite, Purple mite, Scarlet mite
Phosalone 35.00% EC	Earhead midge
Phosalone 04.00% DP	Earhead midge
Quinalphos 05.00% Granules	Stem borer
Quinalphos 25.00% EC	Mite, Shoot fly
Quinalphos 01.50% DP	Earhead bug, Earhead midge
Thiamethoxam 30.00% FS	Shoot fly
COTTON	
Acephate 75.00% SP	Jassids & Boll worm complex
Acephate 97.00% DF	Jassids & Boll worm complex
Acephate 95.00% SG	Jassids
Acetamiprid 20.00% SP	Aphids, Jassids, Whiteflies
Afidopyropen 50 g/L DC	Whitefly, Jassids
Alphacypermethrin 10.00% EC	Bollworms
Alphacypermethrin 10.00% SC	Bollworms
Beta-cyfluthrin 02.45% SC	Bollworm
Bifenthrin 10.00% EC	Bollworms, Whitefly
Buprofezin 25.00% SC	Whitefly Aphids, Jassids, Thrips
Buprofezin 70.00% DF	Jassids, Whitefly
Carbosulfan 25.00% DS	Jassid, Aphids, Thrips
Chlorantraniliprole 18.50% SC	American bollworm, Spotted bollworm, Tobacco caterpillar
Chlorfluazuron 05.40% EC	American bollworm, Tobacco leaf eating caterpillar
Chlorpyrifos 20.00% EC	Aphid, Bollworm, Whitefly, Cut worm
Chlorpyrifos 50.00% EC	Bollworms
Clothianidin 50.00% WDG	Jassids, Whitefly

Cypermethrin 10.00% EC	Spotted bollworm, American bollworm, Pink bollworm
Cypermethrin 25.00% EC	Bollworms, Jassids, Thrips
Deltamethrin 11.00% w/w EC	Bollworms
Deltamethrin 25.00% Tablet	Bollworms
Deltamethrin 01.80% EC	Bollworms, Sucking insects
Deltamethrin 02.80% EC	Bollworms, Sucking insects
Dicofol 18.50% EC	Red spider mite
Diafenthiuron 47.80% SC	Whiteflies, Aphids, Thrips, Jassids
Diafenthiuron 50.00% WP	Whiteflies, Aphids, Thrips, Jassids
Diflubenzuron 25.00% WP	Tobacco caterpillar, Bollworms
Dinotefuran 20.00% SG	Whitefly, Jassids, Aphids & Thrips
Emamectin benzoate 05.00% SG	Bollworms
Emamectin benzoate 01.90% EC	Bollworms
Ethion 50.00% EC	Whitefly, Bollworms
Fenpropathrin 10.00% EC	Pink boll worm, Spotted boll worm, American boll worm
Fenpropathrin 30.00% EC	Pink boll worm, Spotted boll worm, American boll worm, White fly
Fenpyroximate 05.00% EC	Jassids, Mites
Fenvalerate 20.00% EC	Bollworms, Aphids, Jassids, Thrips
Fenvalerate 02.00% Conc.	Spotted & Spiny, Pink American, Egyptian boll worm
Fenvalerate 00.40% DP	Spotted Bollworm, Pink Bollworm
Fipronil 05.00% SC	Aphid, Jassid, Thrips, White fly, Bollworm
Fipronil 18.87% w/w SC	Thrips
Fonicamid 50.00% WG	Aphids, Jassids, Thrips & Whiteflies
Flubendiamide 20.00% WG	American bollworm
Flubendiamide 39.35% m/m SC	Bollworms (American and Spotted bollworms)
Fluvalinate 25.00% EC	Aphids, Jassids, Red cotton bug, Bollworm
Imidacloprid 70.00% WG	Jassids, Aphids, Thrips
Imidacloprid 48.00% FS	Aphids, Whitefly, Jassids, Thrips
Imidacloprid 70.00% WS	Aphids, Whitefly, Jassids, Thrips
Imidacloprid 30.50% m/m SC	Aphid, Jassids, Thrips
Imidacloprid 17.80% SL	Aphid, Whitefly, Jassid, Thrips
Indoxacarb 14.50% SC	Bollworms
Indoxacarb 15.80% EC	Bollworms
Lambda-cyhalothrin 04.90% CS	Bollworms
Lambda-cyhalothrin 02.50% EC	Bollworms, Jassids, Thrips
Lambda-cyhalothrin 05.00% EC	Bollworms, Jassids, Thrips
Lufenuron 05.40% EC	American bollworm
Methomyl 40.00% SP	Bollworms
Monocrotophos 15.00% SG	Aphids, Jassids, Thrips, Whiteflies
Monocrotophos 36.00% SL	Bollworms, Aphid, Leaf Hopper, Thrips, Grey weevil, White fly
Novaluron 10.00% EC	American bollworm
Novaluron 08.80% SC	American bollworm, Tobacco caterpillar
Oxydemeton-methyl 25.00% EC	Aphid, Jassid (leaf hopper)

Permethrin 25.00% EC	Bollworms
Profenofos 50.00% EC	Bollworms, Jassids, Aphids, Thrips, Whiteflies
Pyriproxyfen 10.00% EC	White fly
Pyridaben 20.00% w/w WP	White fly
Pyridalyl 10.00% EC	Bollworms
Quinalphos 20.00% AF	American bollworm, Pink Bollworm, Spotted bollworm
Quinalphos 01.50% DP	Aphid, Jassids, Thrips, Bollworms
Spinetoram 11.70% SC	Thrips, Tobacco caterpillar, Spotted boll worm
Spinosad 45.00% SC	American bollworm
Spiromesifen 22.90% SC	White fly, Mite
Thiacloprid 21.70% SC	Aphid, Thrips, Jassid, White fly
Thiodicarb 75.00% WP	Bollworms
Thiamethoxam 30.00% FS	Aphid, Thrips, Jassid,
Thiamethoxam 70.00% WS	Aphid, Thrips, Jassid, White fly
Thiamethoxam 75.00% w/w SG	Jassids, Thrips
Thiamethoxam 25.00% WG	Aphid, Thrips, Jassid, White fly
CHILLI	
Acephate 95.00% SG	Thrips, Fruit borer, Aphid
Acetamiprid 20.00% SP	Thrips
Buprofezin 25.00% SC	Yellow Mite
Carbofuran 03.00% CG	Aphid, Thrips
Carbosulfan 25.00% EC	Leaf folder, White aphid
Chlorantraniliprole 18.50% SC	Fruit borer
Chlorfenapyr 10.00% SC	Mites
Cyantraniliprole 10.26% OD	Thrips, Fruit borer, Tobacco caterpillar
Cyenoxyrafen 30.00% SC	Mite
Deltamethrin 11.00% w/w EC	Fruit borer
Deltamethrin 02.80% EC	Fruit borer
Diafenthiuron 50.00% WP	Mites
Dimethoate 30.00% EC	Thrips, Mites
Emamectin benzoate 05.00% SG	Fruit borer, Thrips
Emamectin benzoate 01.90% EC	Fruit borer, Thrips
Ethion 50.00% EC	Mites, Thrips
Fenazaquin 10.00% EC	Yellow mite
Fenpropathrin 30.00% EC	Thrips, Whitefly, Mites
Fenpyroximate 05.00% EC	Yellow mite
Fenpyroximate 05.00% SC	Yellow mite
Fipronil 05.00% SC	Thrips, Aphids, Fruit borers
Fipronil 80.00% WG	Thrips
Flubendiamide 20.00% WG	Fruit borer

Flubendiamide 39.35% m/m SC	Fruit borer
Hexythiazox 05.45% w/w EC	Yellow mite
Imidacloprid 70.00% WS	Jassids, Ahipds, Thrips
Imidacloprid 17.80% SL	Jassid, Aphid, Thrips
Indoxacarb 14.50% SC	Fruit borer
Lambda-cyhalothrin 04.90% CS	Thrips, Pod borer
Lambda-cyhalothrin 05.00% EC	Thrips , mite, pod borer
Lufenuron 05.40% EC	Fruit borer
Methomyl 40.00% SP	Pod borer, Thrips
Novaluron 10.00% EC	Fruit borer, Tobacco caterpillar
Oxydemeton-methyl 25.00% EC	Ahipds, Thrips, Mites
Propargite 57.00% EC	Mite
Pyriproxyfen 10.00% EC	Whitefly, Aphids
Quinalphos 25.00% Gel	Aphid
Quinalphos 25.00% EC	Aphid, Mite
Quinalphos 01.50% DP	Aphid
Spinetoram 11.70% SC	Thrips, Fruit borer, Tobacco caterpillar
Spinosad 45.00% SC	Fruit borer, Thrips
Spiromesifen 22.90% SC	Yellow mite
Spirotetramat 15.31% w/w OD	Thrips, Aphids
Thiacloprid 21.70% SC	Thrips
Thiodicarb 75.00% WP	Fruit borer
Thiamethoxam 30.00% FS	Thrips
PULSES	
Benfuracarb 40.00% EC	Pod borer
Chlorantraniliprole 18.50% SC	Pod borers
Chlorpyrifos 20.00% EC	Cut worm
Chlorpyrifos 01.50% DP	Pod borer
Deltamethrin 02.80% EC	Pod borer, Pod fly
Emamectin benzoate 05.00% SG	Pod borer
Emamectin benzoate 01.90% EC	Pod borer
Ethion 50.00% EC	Pod borer
Flubendiamide 20.00% WG	Pod borers
Flubendiamide 39.35% m/m SC	Pod borer
Indoxacarb 14.50% SC	Pod borer complex
Indoxacarb 15.80% EC	Pod borer complex
Lambda-cyhalothrin 05.00% EC	Pod borer, Pod fly
Lufenuron 05.40% EC	Pod borer, Pod fly

Methomyl 40.00% SP	Pod borer
Monocrotophos 36.00% SL	Pod borer, Pod fly, Plume moth,
Novaluron 10.00% EC	Pod borer
Quinalphos 20.00% AF	Pod borer
Quinalphos 25.00% EC	Pod borer, Pod fly, Stem fly, Bihar hairy caterpillar
Quinalphos 01.50% DP	Pod borer, Stem fly
Spinosad 45.00% SC	Pod borer
Thiodicarb 75.00% WP	Pod borer
GROUNDNUT	
Carbofuran 03.00% CG	Pod borer, White grub
Chlorpyrifos 20.00% EC	Aphid, Root grub
Flubendiamide 20.00% WG	<i>Spodoptera</i>
Imidacloprid 17.80% SL	Aphid, Jassid
Lambda-cyhalothrin 05.00% EC	Thrips, Leaf hopper, Leaf miner
Methomyl 40.00% SP	<i>Spodoptera</i>
Oxydemeton-methyl 25.00% EC	Aphid, Leaf minor
Phenthoate 50.00% EC	Leaf webber
Quinalphos 20.00% AF	<i>Spodoptera</i>
Quinalphos 25.00% EC	Leaf hopper, Thrips, Leaf minor
Quinalphos 01.50% DP	Thrips, Jassids, Red hairy caterpillar
Thiamethoxam 75.00% w/w SG	Termites

Pesticide Management Bill, 2020: Key features and Important Provisions



A bill to regulate pesticides, including their manufacture, import, packaging, labelling, pricing, storage, advertisement, sale, transport, distribution, use and disposal in order to ensure availability of safe and effective pesticides, and to strive to minimise risk to human beings, animals, living organisms other than pests, and the environment with an endeavour to promote pesticides that are biological and based on traditional knowledge and for matters connected therewith or incidental thereto.

The Pesticide Management Bill was introduced in Rajya Sabha on 23rd March, 2020, to replace the Insecticide Act, 1968. The bill was referred to Parliamentary Standing Committee on 3rd June, 2021, and the Standing Committee on Agriculture, Animal Husbandry and Food Processing (Chair: Mr. P.C. Gaddigoudar) tabled its report on the Pesticide Management Bill, 2020 on December 21, 2021.

The following are the major points under Pesticide Management Bill, 2020:

- “ The bill replaces insecticides with pesticides.
- “ The bill constitutes the additional regulations on packaging, labelling, pricing, advertisement, and disposal of pesticides, in addition to existing regulation on import, manufacturing, sale, transport, distribution and use of insecticides existing in IA, 1968.
- “ The bill ensures availability of safe and effective pesticides.
- “ The bill ensures to minimise risk to human beings, animals, living organisms other than pests, and the environment.
- “ The bill promotes pesticides that are biological and based on traditional knowledge.
- “ The bill constitutes The Central Pesticides Board (CPB) and Registration Committee (RC) in place of CIB&RC, which advises the central and state government on scientific and technical matters

arising out of the administration of the act and make decisions regarding grant of registration upon following specific conditions. The existing CIB&RC will be designated as CPB&RC as it deems to fit to perform such functions of a CIB&RC.

- “ The bill seeks to provide registration under the Insecticides Act, 1968, wherein the insecticides registered under the Act shall be deemed to be registered under the provisions of this Act for a maximum period of two years from the date of commencement of this Act.
- “ The Bill also seeks to provide licences granted under the Insecticides Act, 1968, shall remain in force for the period specified at the time of grant of such licence under that Act and after the expiry of licence an application for grant of fresh licence shall be made in accordance with the provision of this Act.
- “ The Bill seeks to provide for establishment of a Central Pesticides Laboratory (CPL) by the Central Government, which may, by notification, designate such other laboratory (existing Central Insecticide Laboratory-CIL at Faridabad) as it deems fit to perform such functions of a Central Pesticides Laboratory.
- “ The functions of the Pesticide Testing Laboratories (PTLs) shall be carried out by such other public institutions as directed by the Central or the State Government and also private laboratories having the standards may be recognised to carry out all or any of the functions of Pesticide Testing Laboratories upon behalf of the Central or State Government.

Standing Committee Report Summary

- “ The Committee note that such a broad definition of Pesticide may treat chemical pesticides (which require stringent regulation) at par with traditional

- pest control measures. It recommended that the definition should specify that these pesticides must be those as notified in the Schedule by the Registration Committee (which grants registration for use of pesticides) as having pesticidal properties.
- “ The Committee noted that the Central Pesticides Board (CPB) is merely an advisory body with all regulatory authority actually vested in the Registration Committee which is composed of a few technical persons. It recommended that the Board should be empowered to overlook the functioning of the Registration Committee. Further, the Registration Committee should regulate its procedure and conduct of business with the approval of the Board.
 - “ The Committee noted that registration must not be left open-ended. It recommended disposing application for registration of pesticide within two years.
 - “ The Committee recommend constituting a Review Committee consisting of bio-safety and agroecology experts to review pesticides.
 - “ The Committee noted that the Bill does not specifically provide for accountability of pesticide inspectors and analysts. Pesticide inspectors have been given sweeping powers without any checks and balances. It recommended setting up a grievance redressal mechanism against pesticide inspectors and analysts, who act vexatiously or without any reasonable ground under the Bill. An online portal should be created to receive complaints against such inspectors, and the enquiry completed within 30 days.
 - “ The Committee noted that a single Licensing Officer may not be able to cater to the whole state. It recommended appointing a Licensing Committee, comprising three to four persons to grant licenses. Further, the period to grant licenses be reduced to 60 days.
 - “ The Committee noted that the Bill does not specify the qualification of retailers and the persons dispensing pesticides at company outlets. It recommended that certain minimum qualification standards are necessary for sellers, dealers and stockists of pesticides as they deal with hazardous substances. Further, farmers buy pesticides as recommended by such retailers.
 - “ The Committee noted that cases of sale of spurious, counterfeit and sub-standard pesticides should be addressed in the law. It recommended: (i) creating an online portal to record details of samples collected for testing and publish the results of such tests online, and (ii) accreditation of all pesticide testing laboratories.
 - “ The Committee noted that the Bill does not contain provisions to promote IPM, which is a long-term strategy with a holistic approach for crop protection rather than simply eliminating pests. It recommended that IPM should be incorporated in the Bill.

Comparison between Insecticide Act, 1968 and Pesticide Management Bill, 2020

Topic	Insecticide Act, 1968	The Pesticide Management Bill,2020
Sections / clauses	38 sections	65 clauses
Pre-amble	An Act to regulate the import, manufacture, sale, transport, distribution and use of insecticides with a view to prevent risk to human beings or animals, and for matters connected therewith.	to regulate pesticides, including their manufacture, import, packaging, labelling, pricing, storage, advertisement, sale, transport, distribution, use and disposal in order to ensure availability of safe and effective pesticides, and to strive to minimise risk to human beings, animals, living organisms other than pests, and the environment with an endeavour to promote pesticides that are biological and based on traditional knowledge and for matters connected therewith or incidental thereto.
Definitions	Animals, board, central insecticide laboratory, import, insecticide, insecticide analyst, insecticide inspector, manufacture, misbranded, package, premises, prescribed, registered, sale, state government, worker	Animal, banned, batch, board, central pesticides laboratory, certificate of registration, dispose, distribution, environment, export, formulation, import, label, leaflet, licensing officer, manufacture, notification, ordinary use pesticide, other ingredients, package, person, pest, pesticide property, pesticide, pesticide analyst, pest control operator, pesticide inspector, pesticide testing laboratory, poisoning, premises, prescribed, registration committee, risk, sale, state government, stock, technical grade pesticide, worker
Pesticide definition	This act covers insecticides which mean any substance specified in the Schedule; or (ii) such other substances (including fungicides and weedicides) as the Central Government may, after consultation with the Board, by notification in the Official Gazette, include in the Schedule from time to time; or (iii) any preparation containing any one or more of such substances;	Any substance or mixture of substances, including a formulation of chemical or biological origin intended for preventing, destroying, attracting, repelling, mitigating or controlling any pest in agriculture, industry, pest control operations, public health, storage or for ordinary use, and includes any substance intended for use as a plant growth regulator, defoliant, desiccant, fruit thinning agent, or sprouting inhibitor and any substance applied to crops either before or after harvest to protect them from deterioration during storage and transport
Authority	Central Insecticide Board and Registration Committee (CIB&RC)	Central Pesticides Board and Registration Committee (CPB&RC)

Powers & functions of the Board	(1) to advise the Central Government and State Governments on technical matters arising out of the administration of this Act and to carry out the other functions assigned to the Board by or under this Act.	(a) to advise the Central Government and the State Governments on scientific and technical matters arising out of the administration of the Act and on any questions that may be referred to it by the Central Government and the State Governments;
	(2) The matters on which the Board may advise under sub-section (1) shall include matters relating to— (a) the risk to human beings or animals involved in the use of insecticides and the safety measures necessary to prevent such risk; (b) the manufacture, sale, storage, transport and distribution of insecticides with a view to ensure safety to human beings or animals.	(b) to advise the Central Government in making— (i) criteria for good manufacturing practices including processes for pesticide manufacturers; (ii) best practices for pest control operators; (iii) the procedure for the recall of pesticides; (iv) the criteria for the disposal of pesticides and packages in an environmentally sound manner; (v) standards to be observed by the Central Pesticides Laboratory and Pesticides Testing Laboratories; (vi) standards for training and working conditions for workers; (vii) standards for the advertisement of pesticides in all forms of
		(c) to frame model protocols to deal with occurrences of poisoning including the specification of standard operating procedures for
		(d) to research on:— (i) the development and availability of safer alternatives to existing pesticides, including agro-ecological practices; (ii) the safety, efficacy and toxicity of registered pesticides; (iii) best practices in the field of pesticide in other countries which may be adopted
		(e) to monitor pesticide residues;
		(f) to monitor global developments relating to
		(g) to review the status of applications for the registration of pesticides; and
		(h) to carry out any other function as may be prescribed by the Central Government

Powers & functions of the Registration Committee (RC)	(i) to register insecticides after scrutinising their formulae and verifying claims made by the importer or the manufacturer, as the case may be, as regards their efficacy and safety to human beings and animals; and	(a) make decisions regarding the application received by it for the registration of pesticides;
	(ii) to perform such other functions as are assigned to it by or under this Act.	(b) specify conditions subject to which a certificate of registration is granted;
		(c) periodically review the safety and efficacy of registered pesticides and amend or cancel certificates of registration;
		(d) review the registration of pesticides on behalf of which a reference is made, or that are prohibited by the Central Government or the State Government under section 35;
		(e) maintain a national register of pesticides;
		(f) notify substances having pesticidal properties; and
		(g) such other functions as may be prescribed by the Central Government
Decision regarding registration	--	Risk based:
		18 (5) The Registration Committee shall not register a pesticide if:—
		(a) the information submitted by the applicant for registration is false or misleading in any material particular;
		(b) it is satisfied that the pesticide does not meet the claims of safety or efficacy submitted by the applicant;
		(c) where applicable, maximum residue limits of the pesticide on crops and commodities have not been specified under the Food Safety and Standards Act, 2006.

Pesticide surveillance and fund	Not present	New Clause added (34) in Chapter V on pesticide poisoning surveillance and compensation fund
Prohibition	Section 18: prohibition of sale of certain insecticides	Clause 35: Prohibition on pesticides in public interest and ban on pesticides
Database	No section	Clause 36: on state-level data base on pesticides in digital form
Laboratory	Central insecticide laboratory (CIL)	Central pesticide laboratory (CPL)
Public institutions other than PTLs for pesticide testing	Not authorized	Clause 37 (2) The Central Government or the State Government may, by notification, direct that the functions of the Pesticide Testing Laboratory shall, to such extent as may be specified in the notification, be carried out by such other public institutions and thereupon, the functions of the Director of a Pesticides Testing Laboratory shall also be performed by the head of that institution
Private laboratories for pesticide testing	Not authorized	Clause 37 (3) The Central Government or the State Government authorised by it in this behalf, may recognise private laboratories to carry out all or any of the functions of Pesticide Testing Laboratory, on compliance of the standards as may be prescribed by the Central Government.
Inspectors and Analysts	Insecticide inspectors	Pesticide inspectors
	Insecticide analysts	Pesticide analysts
Procedure followed by Inspector	22 (3) : Where an Insecticide Inspector takes any sample of an insecticide, <i>he shall issue a receipt there for stating therein that the fair price of such sample shall be tendered if the sample, after test or analysis is not found to be misbranded</i> and the Insecticide Analyst has reported to that effect and on such price having been tendered may require a written acknowledgement therefor.	41. (1) Where a Pesticide Inspector takes any sample of a pesticide, <i>he shall pay the person from whom such sample is taken</i> , the price at which the pesticide is usually sold to the public, and may require a written acknowledgement to this effect

Number of samples & sub-sampling	<p>22 (5) Where an Insecticide Inspector takes a sample of an insecticide for the purpose of test or analysis, he shall intimate such purpose in writing in the prescribed form to the person from whom he takes it and, in the presence of such person unless he wilfully absents himself, <i>shall divide the sample into three portions and effectively seal and suitably mark the same and permit such person to add his own seal and mark to all or any of the portions so sealed and marked:</i> Provided that where the insecticide is made up in containers of small volume, instead of dividing a sample as aforesaid, the <i>Insecticide Inspector may, and if the insecticide be such that it is likely to deteriorate or be otherwise damaged by exposure shall, take three of the said containers after suitably marking the same</i> and, where necessary, sealing them. (6) The Insecticide Inspector shall restore one portion of a sample so divided or one container, as the case may be, to the person from whom he takes it and shall retain the remainder and dispose of the same as follows:— (i) one portion or container, he shall forthwith send to the Insecticide Analyst for test or analysis; and (ii) the second, he shall produce to the court before which proceedings, if any, are instituted in respect of the insecticide.</p>	<p>41 (10) The portion of the sample shall be placed in such containers and sealed and marked by the Pesticide Inspector and by the person from whom the sample is taken, in such manner as may be prescribed by the Central Government.</p>
Test reports	<p>24 (2) The Insecticide Inspector on receipt thereof shall deliver one copy of the report to the person from whom the sample was taken and shall retain the other copy for use in any prosecution in respect of the sample.</p>	<p>42 (2) On receipt of a report from the Pesticide Analyst, the Pesticide Inspector shall, within a period of ten days, deliver a copy of the report to:—</p> <p>(a) the manufacturer of the pesticide;</p> <p>(b) the person from whom the sample was taken, if such person is not the manufacturer;</p> <p>(c) the Plant Protection Advisor, where the Pesticide Inspector is appointed by the Central Government or the Director of Agriculture of a State, where the Pesticide Inspector is appointed by the State Government; and</p> <p>(d) retain the fourth copy with him</p>
Punishment for obstruction	Not mentioned	<p>43. Whoever obstructs an officer in exercising of powers or discharging of duties under this Act or the rules made thereunder <i>shall be punishable with fine which shall not be less than twenty-five thousand rupees but which may extend to fifty thousand rupees</i></p>
Punishment for violations of conditions of registration and licensing		<p>Not less than 50,000 rupees, which may extend to 2 lakh rupees</p>

Classification of pesticides based on quality	a) Technical grade	a) Technical grade (<i>purest form of the pesticide for commercial use prior to being formulated</i>)
	b) Misbranded (<i>If Presence of any statement or graphic representation which is misleading, No warning, Imitation or sold under the name of another pesticide If the pesticide is not registered, Toxicity is greater than the level prescribed.</i>)	b) Misbranded (<i>concerned with the leaflet or the label on the container of the pesticide, Presence of any statement or graphic representation which is misleading, No warning, Not labelled or packed as required, Date of manufacture and date of expiry vary with shelf life</i>)
		c) Sub standard (<i>if the pesticide doesn't confirm to the active ingredient test and the a.i. is within 5 % of the nominal value</i>)
		d) Spurious Pesticide (<i>if the pesticide is not registered or licensed in proper manner or if the active ingredient is higher or lower than the prescribed limits or the chemical composition approved is modified or the pesticide outlived the shelf life</i>).
Conditions for process of registration	This Act doesn't require MRL for pesticide residues to be specified.	MRL (<i>fssai</i> set up by Food Safety and Standards Act, 2006) have to be specified as condition for registration.
Report of Pesticide Analyst	Triplicate	Quadruplicate
	1) Manufacturer of the pesticide	1) Manufacturer of the pesticide
	2) Person from whom sample taken	2) Person from whom sample taken
	3) Pesticide inspector	3) Director of Agriculture of State Government or PPA
Compensation to affected persons	No compensation given to the affected persons	4) Pesticide inspector
		Claim compensation under Consumer Protection Act, 1986.
		· <i>If pesticide fail to provide expected performance</i> · <i>Cause any harm to human, animal or plant health</i> · <i>Damage to the environment by use of that pesticide.</i>
Disposal of pesticides and packages	No safety measures considered	Environmentally safe manner
Imprisonment	Ranges from 6 months to 3 years	Ranges from 6 months to 3 years
Penalty	Ranges from Rs. 1000 to 75,000.	Increased and ranges from Rs. 15000 to 50,00,000.

The key features are:

- “ The bill provides transparency and effective implementation of provisions;
- “ encourages indigenous manufacturing;
- “ promotes biological pesticides;
- “ apart from safety and efficacy other factors like necessity, end use, risk involved and availability of safer alternatives are also considered for registration of pesticide;
- “ fixation of maximum residue limits for pesticides have been made mandatory;
- “ offences have been categorised separately in terms of the degree of severity like ‘punishment for obstruction’, ‘punishment on violations of conditions of registration and licensing’, ‘punishment for activities related to import and export of pesticides’, ‘punishment for activities involving unregistered and unlicensed pesticides’, ‘punishment for activities involving falsified pesticides’, punishment for activities involving banned pesticides’, ‘punishment for causing hurt, grievous hurt or death’, etc.;
- “ Provision has been made to allow the Central Government to constitute a fund, for making *ex gratia* payments to persons or their legal heirs, who have suffered hurt, grievous hurt or have died in the course of poisoning due to occupational exposure to pesticide.

The Benefits:

- “ Expanded Pesticide definition and inclusion of other substances will bring all compounds used in agriculture under the bill.
- “ Maximum Residue Limits (MRLs) are prescribed for all registered pesticides / recommended for use on various crops.
- “ Misleading Information on Leaflet and label and also misleading propaganda / advertisements on pesticides will be scrutinized under misbranding,

and hence no such information will be available for misleading farmers / users.

- “ Claim compensation will benefit the farming community.
- “ Multi-dimensional management of pesticides.
- “ Risk based decision making for registration.
- “ Pesticide disposal mechanisms are in place.
- “ Promotes organic farming.
- “ Pesticide Surveillance
- “ Constitution of fund to utilise for *ex gratia* payment to persons who had suffered hurt, or died in the course of poisoning.
- “ The prescribed quality of pesticides is available, in view of stringent penalties.
- “ Safe pesticides will be promoted in view of more parameters for environmental safety considered for registration.

Points of Importance:**Price control on pesticides:**

Pesticide Formulation with the same composition prepared by various companies under different brand names is available with varied prices in the market, sometimes with lot of variation. As per the Insecticide Act, 1968 or The Pesticide Management Bill, the formulation prepared by any manufacturer should have the same quantity of the active ingredient as per the regulation. For Eg: In India, chlorpyrifos is approved as 20%EC, and if 10 manufacturers are producing and marketing chlorpyrifos 20%EC in different trade names, as per the Act / Bill, the chlorpyrifos should be 20% in all brands, it means the farmer can use any brand if he / she want to use chlorpyrifos 20%EC in farm. Hence, the price of similar pesticide formulation traded by various companies should be within certain range, but not with too much variation.

Compensation claims

The behaviour and efficacy of pesticide may vary based on the type of sprayer / quality of water / spraying methods / time of application / weather etc., and hence certain clear guidelines to be prepared for hassle-free claim of compensation by farmers.

Leaflet / Advertising Materials

The pictures of crop and pest on which the pesticide is registered / recommended for use should be added in the leaflet / advertising materials, to avoid misleading of farmers / users. The provision for verification of advertising material on household pesticides to be added.

Strengthening of testing laboratories

The provisions for strengthening of The Central Pesticide Laboratory and State Pesticide Testing Laboratories are to be clearly written in view of challenges in the testing the products under Pesticide Management Bill, as this activity requires not only three folds man power but also state-of-the-art laboratory facilities (both physical and analytical instruments).

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