Pesticide Research Report in Georgia

Tbilisi

2021

Table of Contents

ACRONYMS	
HHPs	Highly Hazardous Pesticides
WHO	World Health Organization
FAO	Food and Agriculture Organization
SAICM	Strategic Approach to International Chemicals Management
IPEN	International Pollutants Elimination Network
PAN	Pesticide Action Network
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
POPs	Persistent Organic Pollutants
GEF	Global Environment Facility
USAID	U.S.Agency for International Devlopment
IFOAM	The International Federation of Organic Agricultural Movements
FIBL	Research Institute of Organic Agriculture
IPM	Integrated Pest Management
PIC	The Prior Informed Consent
ISO	The International Organization for Standardization
DNA	Designated National Authority
EPA	Environment protection Agency

1. Introduction

The goal of the project is to obtain information on highly hazardous pesticides (HHPs) in Georgia, their management and phase-out in the country, as well as the use of alternative, non-chemical approaches (eg agroecology) in agriculture, which will help agricultural sector create conditions for food safety and take measures for integrated pest management.

In particular, the review focused on:

- An assessment of the use and management of pesticides, in the light of existing policy and the legal frameworks;
- Identification of existing alternatives for phasing out HHPs in Georgia, such as agroecology, organic agriculture and Integrated Pest Management (IPM);
- Raising awareness of the impact of HHPs and alternatives to them.

The research was carried out by the NGO EcoVision with the financial support of IPEN.

2. General information

As agriculture is considered a traditional and priority sector in Georgia, governments are trying to promote agricultural development, consequently, significant funds are being spent from the country's budget.

Due to the difficult socio-economic situation that was in the country in the first half of the 1990s, part of the population returned to the countryside to work in agriculture. In 1996, the share of agriculture in the country's economy was 34%, which gradually declined to 7.8% in 2018. In the 1990s, part of the population returned to agriculture for survival, but this situation still partially remains. About 41% of the population still depends on agriculture today, which is typical for poor countries.[1]

Many state programs have been implemented in the last 15 years for the development of agriculture, however, as data shows, these programs were mainly social in nature rather than intended to increase the economic efficiency of the sector.[1]

Agricultural products and processed food and beverages are the main export commodities for Georgia. This is another reason why this issue is interesting.

[1] **Source**: "Georgia's Agriculture Sector", February 2020, Key Trends for 2012-2019.

The term pesticide includes all of the following: herbicide, insecticide (which may include insect growth regulators, termiticed, etc.), herbicide, nematicide, molluscicide, piscicide, avicide, rodenticide, bactericide, insect repellent, animal repellent, antimicrobial, fungicide and lampricide. The term pesticide also includes related substances: Defoliants (Cause leaves or foliage to drop from a plant, usually to facilitate harvest), desiccants (Promote drying of living tissues—unwanted plant tops or insects, for example), insect growth regulators (Disrupt the action of insect hormones controlling molting, maturity from pupal stage to adult or other life processes) and plant growth regulators (Substances (excluding fertilizers or other plant nutrients) that alter the expected growth, flowering or reproduction rate of plants through hormonal rather than physical action). Most pesticides are intended to serve as plant protection products (also known as crop protection products), which in general, protect plants from weeds, fungi, or insects. In general, a pesticide is a chemical (such as carbamate) or biological agent (such as a virus, bacterium, or fungus) that deters, incapacitates, kills, or otherwise discourages pests.

The toxicity of a pesticide is its capacity or ability to cause injury or illness. The toxicity of a particular pesticide is determined by subjecting test animals to varying dosages of the active ingredient (a.i.) and each of its formulated products.The two types of toxicity are acute and chronic.Acute toxicity of a pesticide refers to the chemical's ability to cause injury to a person or animal from a single exposure, generally of short duration. The four routes of exposure are dermal (skin), inhalation (lungs), oral (mouth), and eyes. Acute toxicity is determined by examining the dermal toxicity, inhalation toxicity, and oral toxicity of test animals. In addition, eye and skin irritation are also examined.The chronic toxicity of a pesticide is determined by subjecting test animals to long-term exposure to the active ingredient.

It should be noted that there is no description of the amount of pesticides and fertilizers used in the country.

In 2021, 955 pesticides were registered in the country.

2.1. Approaches and methodology

In the process of preparing this report, information was collected from the official websites of government agencies responsible for pesticide regulation, annual reports, action plans and surveys conducted by various donors, as well as a literature review.

The study examined the legislative part related to pesticides. The advantages and disadvantages of the legislation were assessed. A comparison was made between the list of pesticides registered in Georgia and PAN international list of Highly Hazardous Pesticides.

Based on the information received, conclusions and recommendations were made.

2.2. Data analysis

In accordance with the purpose of the study, quantitative and qualitative data on pesticides registered in Georgia were collected, summarized and analyzed.The identification was relies on the International PAN List of HHPs created in 2009,which is updated periodically. The last edition was implemented in March 2021. A consolidated list of banned pesticides prepared by PAN is used in the analysis.

3. Research Results

3.1. General information about the Country[2]

Georgia is a country located at the intersection of Eastern Europe and Western Asia. It is a part of the Caucasus region, bounded to the west by the Black Sea, to the north and east by Russia, to the south by Turkey and Armenia, and to the southeast by Azerbaijan.

The area of the country is 69,700 sq. Km. Km, border length - 1771 km, including land - 1461 km (Armenia 164, Azerbaijan 322, Russia 723, Turkey 252) and sea - 310 km. According to the current territorial division, there are 2 autonomous republics in Georgia : Adjara and Abkhazia . The latter is occupied by Russia. The rest of the country is divided into conditional parties, which more or less coincide with the historical parts of Georgia, although the parties do not have legal status. According to the Constitution , the state-territorial arrangement of the country must be determined on the whole territory of Georgia after the restoration of the jurisdiction of the central government. There are 69 municipalities in the local self-government unit . The capital Tbilisi also has the status of a municipality.

The population of the territory of Georgia (excluding the occupied territories) is about 3,729,635 people (2021). The average density is 64 people per 1 km2.57.4% of the population lives in cities.

The ethnic composition of Georgia:86.8% - Georgians. Official language : Georgian, in the Autonomous Republic of Abkhazia - also Abkhazian. Religious composition- most of the population are Orthodox Christians- 84.00%, Per capita - $ 860; Currency - Georgian Lari (GEL).

[2]**Source:**https://en.wikipedia.org/wiki/Georgia_(country)

3.1.1. Overview of the agricultural sector of Georgia[3]

Natural climatic conditions in Georgia are favorable for agriculture, particularly in terms of tillage and animal husbandry. However, the majority of the Georgia land area is not suitable for agricultural purposes due to its terrain.
Agriculture is the fifth largest sector of the Georgian economy. It lags behind the trade, industry, construction and real estate activities. In 2018, about GEL 3 billion of agricultural output was produced in Georgia, which is 7.8% of the total economy.

More than 3 million hectares of the land in Georgia is agricultural. According to 2014 Agricultural Census, approximately one-fourth (788 thousand hectares) of the land is privatized, i.e. owned by agricultural holdings, while 99.65% of those holdings are households. According to the same census,14% of agricultural land owned by holdings is occupied by perennials, 38% are meadows and pastures, and almost half is arable land. However, a third of the holdings do not cultivate the arable land they own - more than 112 thousand hectares in total. That is, 30% of arable land owned by holdings is not cultivated.

In 2019, agricultural sector produced goods worth 4.7 billion GEL, while value added created by agriculture, forestry and fishing amounted to 3.1. billion GEL, equating to 7.2% of the total value added of the country.

As of January 1, 2019, there were approximately 1 539 000 persons living in rural areas of Georgia, which is 41.3% of the country's total population. The level of urbanization has been increasing over the last 7-8 years in Georgia.

In 2018, 39% of the total number of employees in the country worked in agriculture while this sector accounted for only 8.8% of the country's economy. This means that the labor productivity of workers in agriculture is very low. Among other sectors, agriculture is in the last place by average labor productivity and it is 2.5 times less productive than even the second –worst performer – the education sector.

The large workforce is not the only reason for low labor productivity in agriculture. The underdevelopment of agricultural technologies is another reason for that. In Georgia, for example, an average of 2.7 tonnes of wheat and corn are harvested per hectare, while in Belgium, the Netherlands and Ireland this number reaches 9 tones.

[3] **Source:** Agrarian farm. Challenges and opportunities. 2020 Sak. Business Association

3.1.2. Majoragriculturalcrops[4]

Crops can be divided into two main parts: a) annual crops and b) perennial crops. Annual crops include the production of grains and vegetables (including watermelon, melon and pumpkin).

Corn and wheat are the main grains in Georgia. Compared to 2012, in 2018, the wheat harvest increased by 33%, but it still was lagging behind the 2015-2016 figures. As for the corn yield, it decreased by 27% in 2018, compared to 2012.

Kakheti region produces 80% of Georgia's wheat and 33% of its corn. The share of Samegrelo (25%) and Imereti (17%) is also high in the production of corn.

In 2018, compared to 2012, the total crop area decreased by 20% and compared to 2014, the crop area still was contracted by 2% (68 thousand hectares). The largest reduction – 44% (65 thousand hectares) was in corn areas.

Perennial crops include fruits. In 2018, 513 thousand tonnes of fruits were harvested in Georgia. By weight, 88% of Georgia's fruit crops come from five sorts: grapes, apples, tangerines, peaches and nuts. Grapes are 51% of the total fruit crops. Shida Kartli region produces 87% of apples in Georgia. 72% of grapes and 79% of peaches come from Kakheti. Samegrelo has 56% of hazelnut crop and 73% of citrus is produces in Adjara.

The data on the land areas covered by perennial crops is available only for 2017, according to which, vineyards, orchards, citrus plantations and berries occupy a total of 121 000 hectares. Out of this area, orchards occupy 75 000 hectares and vineyards – 36 000 hectares.

3.2. Fundamentals of National Policy for Pesticide Registration and Control in Georgia

3.2.1. Review of National Legislation and Legal Instruments on pesticide management

Pesticide management in Georgia is regulated at the international and national levels.The legal grounds for the efficient use and safe application of pesticides and agrochemicals are the Constitution of Georgia, treaties and international agreements, the FAO International Code of Conduct on the Distribution and Use of Pesticides, the laws of Georgia on Food/Feed Safety, the Veterinary and Plant Protection Code, the laws on Soil Protection, on Health Care and on Environmental Protection, this Law and other normative acts.

[4]**Source:** Agriculture of Georgia. The main trends of 2012-2019. February 2020

The law "On Pesticides and Agrochemicals" is currently in force in the country, where the issues of effective and safe use of pesticides and agrochemicals are discussed in detail. Issues provided by law on expired and banned pesticides, neutralization of their utensils (containers), methods and recommendations of destruction and disposal developed in accordance with FAO guidelines.

Law on pesticides and agrochemicals regulates relations that arise in relation to state governance of the efficient use and safe application of agricultural chemicals and biological material, and of the development, registration, production, labelling, packaging, selling, storing, and the transportation, use, decontamination, placement, and exchange of information, and the export and import, of pesticides and agrochemicals.

Notwithstanding the above, the current chemicals management system in Georgia is rather weak. An incomplete legal basis (except for the legislation related to pesticides and agrochemicals) and a lack of data are among the major challenges hindering the introduction of European practice of chemicals management in Georgia. For the implementation of the Georgia-EU AA and the National CBRN Threat Reduction Action Plan, the relevant legislation in the field of chemicals management has to be developed and approved. Since the EU has implemented the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS), the relevant amendments, reflecting GHS have to be made to the national legislation also.
It is worth mentioning that chemicals pose a particularly high risk to the environment and human health in the case of industrial accidents. To minimize these risks, the necessary legal framework must be developed and the appropriate capacities must be strengthened in the state agencies. Georgia has undertaken the obligation to implement certain provisions of the EU Seveso II Directive on industrial accidents by the EU AA as well. Therefore, the implementation of an integrated inspection system for dangerous industrial facilities is foreseen.

3.2.2. Authorities responsible for the registration of pesticides, the role of various ministries of Georgia

Chemical management at the national level is divided between various ministries and governmental agencies. Specifically, the Ministry of Environmental Protection and Agriculture (MEPA) of Georgia issues permits for the production of chemicals and the construction of storage facilities for toxic and other hazardous substances. The MEPA also issues permits for the transboundary transportation of substances regulated by the Montreal Protocol on Ozone Depleting Substances – (ODS) and implements a procedure of prior informed consent in the case of the import of chemical substances

specified in the Rotterdam Convention (on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade). The functions of the Ministry include the control of the import, labeling, storage, production (packaging), transportation, selling and safe usage of pesticides and agrochemicals; the control of the quality of pesticides and agrochemicals for sale; the uncovering and control of violations during trade with chemicals and pesticides. The MEPA is responsible for overseeing the compliance with permit conditions. The ministry is also in charge of ensuring the coordination of the implementation of the National Action Plan for the implementation of the Stockholm Convention on Persistent Organic Pollutants and for the inventory, assessment and management of persistent organic pollutants in the country. The MEPA is also involved in the development process of the legislation related to chemicals management and is authorized to conclude the appropriate international agreements. The LEPL National Food Agency of the Ministry is responsible for the registration of agrochemicals and pesticides and production of the State Catalog of Registered Pesticides and Agrochemicals.

The Ministry of Labor, Health, and Social Affairs (MLHSA) of Georgia, within its competence, is responsible for the classification of chemical substances and setting rules for assigning toxicity and hazard classes to chemicals, as well as determining the requirements for packaging and labeling. The MLHSA is also responsible for setting tolerances for pesticides and other agrochemical residues in food and drinking water, establishing the hygienic norms of harmful chemical content in ambient air and in the air of the working environment and soil, setting rules and norms for the use of disinfectants and supervising their implementation.

The Customs Department of the MoF of Georgia is responsible for the regulation and control of the transboundary transportation of chemicals. The special state entity - Emergency Management Service (EMS) is responsible for assessing all potential threats posed by chemicals and for ensuring emergency responses on the whole territory of the country, The EMA is also involved in the control over the management of chemicals. This Service also carries out the initial assessment for the identification of potential hazardous substances and ensures the evacuation of affected people and isolation/localization of contaminated sites.

Moreover, the Interagency Coordinating Council for Countering Chemical, Biological, Radiological and Nuclear (CBRN) Threats has been established under the State Security Service of Georgia to ensure better coordination on matters related to chemicals (and other fields that pose risks). The competences of the Council include the periodical revision and update of the National Chemical, Biological, Radiological and Nuclear (CBRN) Threat Reduction Strategy, development of the Action Plan for the implementation of the strategy, revision and update of the Action Plan as appropriate and overseeing its implementation, coordination of activities carried out by different agencies in the chemical, biological, radiological and nuclear field.

Along with the state agencies, the accredited scientific-research laboratories, identifying chemical substances and determining their concentrations in food and the environment, are also involved in the management of chemicals if requested.

3.3. International obligations of Georgia in relation to Chemical Conventions

The management of chemicals in Georgia is being implemented in accordance with the requirements of the national legislation and commitments undertaken by the country through a number ofinternational treatiy. Specifically, Georgia is a party of the following environmental conventions: TheRotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicalsand Pesticides in International Trade (the PIC Procedure), the Vienna Convention for the Protectionof the Ozone Layer and the Stockholm Convention on Persistent Organic Pollutants.

In the field of chemicals management in Georgia, the following international agreements are in force:

3.3.1. The Stockholm Convention on Persistent Organic Pollutants

The Stockholm Convention on Persistent Organic Pollutants is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment.

Exposure to Persistent Organic Pollutants (POPs) can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to disease and damages to the central and peripheral nervous systems.

Given their long range transport, no one government acting alone can protect its citizens or its environment from POPs.

In response to this global problem, the Stockholm Convention, which was adopted in 2001 and entered into force in 2004, requires its parties to take measures to eliminate or reduce the release of POPs into the environment.

On April 24, 2011, the Government of Georgia developed the First National Plan under Article 7 of the Stockholm Convention on Persistent Organic Pollutants. On May 23, 2018; the Government of the Republic approved the updated National ActionPlan (2018-2022) for the implementation of the Stockholm Convention.

Status:"The Stockholm Convention on Persistent Organic Pollutants". The Convention was signed on 22 May 2001 and ratified on 11 April 2006.

3.3.2. Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

The objectives of the Convention are:

- to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm;
- to contribute to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.

To achieve its objectives the Convention includes two key provisions, namely the Prior Informed Consent (PIC) Procedure and Information Exchange.

The Prior Informed Consent (PIC) procedure – The PIC procedure is a mechanism for formally obtaining and disseminating the decisions of importing Parties as to whether they wish to receive future shipments of those chemicals listed in Annex III of the Convention and for ensuring compliance with these decisions by exporting Parties.

Information Exchange - The Convention facilitates information exchange among Parties for a very broad range of potentially hazardous chemicals. The Convention requires each Party to notify the Secretariat when taking a domestic regulatory action to ban or severely restrict a chemical.

Parties are countries or regional economic integration organizations that have ratified, accepted, approved or acceded to the Convention. Each Party must designate one or more national authorities, which are the primary contact points for matters related to the operation of the Convention and are authorized to perform the administrative functions required by the Convention.

The Convention regulates the international trade of 47 hazardous chemicals. In brief, the prior notification and consent of the receiving country is required prior to international shipments of the listed substances.

Status: Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade was adopted in Rotterdam on 10 September 1998 and entered into force on 24 February 2004.Georgia became a party to the Convention on February 27, 2007.

Accession to the Convention was carried out on the basis of the Resolution # 3817 of the Parliament of Georgia (December 1, 2006).

3.3.3. The Montreal Protocol on Substances that Deplete the Ozone Layer

The Montreal Protocol on Substances that Deplete the Ozone Layer is a global agreement, made in September 16, 1987, to protect the Earth's ozone layer by phasing out the chemicals that deplete it. It was designed to stop the production and import of ozone depleting substances and reduce their concentration in the atmosphere to help protect the earth's ozone layer.

Georgia is a country operating under Article 5 of the Montreal Protocol.In particular, Any Party that is a developing country and whose annual calculated level of consumption of the controlled substances is less than 0.3 kilograms per capita shall, in order to meet its basic domestic needs, be entitled to delay for ten years its compliance with the control measures. This means that, for developing countries has been established a softer, preferential schedule for the removal of ozone-depleting substances. Also, a special fund has been set up for these countries to assist in these activities.

Status:The Montreal Protocol on Substances that Deplete the Ozone Layer entered into force on 1 January 1989. The Protocol contains five amendments: the first - adopted in London(1990), the second - in Copenhagen (1992), the third - in Montreal (1997), the fourth- in Beijing (1999) and the fifth – in Kigali (2016), which entered into force on 1 January 2019.

Georgia became a party to the Montreal Protocol on March 21, 1996;

3.3.4. National body of international conventions

The Ministry of Environment Protection and Agriculture of Georgia is the national body designated to comply with the listed conventions and protocols.

4. Status of pesticide use in Georgia

4.1. List of pesticides registered in Georgia

There are permitted and registered 955 pesticides in Georgia by 2021 (see Annex 1). List of registered pesticides and information about them is inputted in the periodically updated "State Catalog of Pesticides Permitted for Use in Georgia" (Order No.2-29 of January 14, 2020 of Minister of

Environmental Protection and Agriculture of Georgia on approval of the State Catalog of Pesticides Permitted for Use in Georgia). The law prohibits the import and circulation of pesticides that are not included in the state catalog of pesticides and agrochemicals.

4.2. Highly Hazardous Pesticides

The definition of HHPs in the new Code of Conduct on Pesticide Management (adopted by FAO and WHO in 2013) and in the Guidelines on Highly Hazardous Pesticides, adopted in 2016) is: "Highly Hazardous Pesticides means pesticides that are acknowledged to present particularly high levels of acute or chronic hazards to health or environment according to internationally accepted classification systems such as WHO or GHS or their listing in relevant binding international agreements or conventions. In addition, pesticides that appear to cause severe or irreversible harm to health or the environment under conditions of use in a country may be considered to be and treated as highly hazardous."

The Code also contains a definition of the term 'hazard': "Hazard means the inherent property of a substance, agent or situation having the potential to cause undesirable consequences (e.g. properties that can cause adverse effects or damage to health, the environment or property)."

In October 2007, the FAO/WHO Joint Meeting on Pesticide Management (JMPM) discussed the so-called thought starter paper "Addressing Highly Toxic Pesticides (HTPs)". As a first step, this paper focuses on options for defining highly hazardous pesticides." Based on this thought starter, in 2007 the JMPM developed the following criteria for highly hazardous pesticides:

Criteria**1**: Pesticide formulations that meet the criteria of classes Ia or Ib of the WHO Recommended Classification of Pesticides by Hazard; or

Criteria **2:**Pesticide active ingredients and their formulations that meet the criteria of carcinogenicity Categories 1A and 1B of the Globally Harmonized System on Classification and Labelling of Chemicals (GHS); or

Criteria **3:** Pesticide active ingredients and their formulations that meet the criteria of mutagenicity Categories 1A and 1B of the Globally Harmonized System on Classification and Labelling of Chemicals (GHS); or

Criteria **4:** Pesticide active ingredients and their formulations that meet the criteria of reproductive toxicity Categories 1A and 1B of the Globally Harmonized System on Classification and Labelling of Chemicals (GHS); or

Criteria **5:** Pesticide active ingredients listed by the Stockholm Convention in its Annexes A and B, and those meeting all the criteria in paragraph 1 of Annex D of the Convention; or

Criteria **6:** Pesticide active ingredients and formulations listed by the Rotterdam Convention in its Annex III; or

Criteria **7:** Pesticides listed under the Montreal Protocol; or

Criteria **8:** Pesticide active ingredients and formulations that have shown a high incidence of severe or irreversible adverse effects on human health or the environment.

For criteria 1-7 there are reference lists and related guidance that can be found on the internet. Assessment as to whether an active ingredient or formulation would fall under Criterion 8 is more complex as this depends on the actual situation in individual countries.

In recent years, the term "HaighlyHazardous Pesticides" (HHPs) has expanded to include not only pesticides with severe toxic effects, but also pesticides that have serious chronic impact on human health.

The following Table 4.2.1 shows the criteria and sources used by PAN to identify pesticides considered to be highly hazardous according to PAN.

Table 4.2.1

1High acute toxicity
'Extremely hazardous' (Class Ia) according to WHO Recommended Classification of Pesticides by Hazard or
'Highly hazardous' (Class Ib) according to WHO Recommended Classification of Pesticides by Hazard or
'Fatal if inhaled' (H330) according to the EU or the Japan Globally Harmonized System (GHS) or
2. **Long term toxic effects**
Carcinogenic to humans according to IARC or US EPA or
'Known or presumed human carcinogens' (Category I) according to the EU or the Japan Globally Harmonized System (GHS) or
Probable/likely carcinogenic to humans according to IARC, US EPA or
Likely to be Carcinogenic to Humans: At High Doses according to EPA or
'Substances known to induce heritable mutations or to be regarded as if they induce heritable mutations in the germ cells of humans', 'Substances known to induce heritable mutations in the germ cells of humans' (Category I) according to the EU or the Japan Globally Harmonized System (GHS) or
'Known or Presumed human reproductive toxicant' (Category I) according to the EU or the Japan Globally Harmonized System (GHS) or
3. Endocrine disruptor
EU interim criteria as laid down in Reg. (EC) No 1107/2009 'Suspected human reproductive toxicant' (Category 2) AND 'Suspected human carcinogen' (Category 2) according to the EU or the Japan Globally Harmonized System (GHS) or
Pesticides identified as endocrine disrupters in the EU according to Reg. (EU) 2018/605
4. High environmental concern

Pesticides listed in Annex A & B of the Stockholm Convention or meeting the Conventions' criteria or Ozone depleting pesticides according to the Montreal Protocol or
5. High environmental concern – where two of the three following criteria are met:
P = 'Very persistent' half-life > 60 days in marine- or freshwater or half-life > 180 days in soil ('typical' half-life), marine or freshwater sediment) (Indicators and thresholds according to the Stockholm Convention) AND/OR
B = 'Very bioaccumulative' (BCF >5000) or Kow logP > 5 (existing BCF data supersede Kow log P data) (Indicators and thresholds according to the Stockholm Convention) AND/OR
T = Very toxic to aquatic organisms (LC/EC 50 [48h] for Daphnia spp. < 0,1 mg/l)
6. Hazard to ecosystem services
'Highly toxic for bees' according to U.S. EPA (LD50, µg/bee < 2) or
7. Known to cause a high incidence of severe or irreversible adverse effects
Pesticides listed in Annex III of the Rotterdam Convention or meeting the Conventions' criteria

4.2.1. Active Ingredients

PAN International List of Highly Hazardous Pesticides, updated in March 2021, was used to identify highly hazardous pesticides in Georgia.Research has been conducted on the active ingredients.

The active ingredients of HHPs, registered in Georgia,are presented in Table 4.2.1.1.

Table 4.2.1.1

№	Active Ingredient(AI)	№	Active Ingredient(AI)
Insecticide and Acaricide			
1	Cypermethrin, alpha	17	Malathion
2	Abamectin	18	Pyridaben
3	Bifenthrin	19	Pirimiphos-methyl
4	Deltamethrin	20	Pymetrozine
5	Dimethoate	21	Sulfoxaflor
6	Dinotefuran	22	Spirodiclofen
7	Esfenvalerate	23	Tefluthrin

8	Emamectin benzoate	24	Tau-fluvalinate
9	Zeta-Cypermethrin	25	Fenpyroximate
10	Thiacloprid	26	Flubendiamide
11	Thiamethoxam	27	Flupyradifurone
12	Imidacloprid	28	Chlorpyrifos
13	Indoxacarb	29	Chlorpyrifos-methyl
14	Clothianidin	30	Chlorantraniliprole
15	Lambda-cyhalothrin	31	Cypermethrin
16	Methomyl	32	Hexythiazox
fungicide			
33	Amisulbrom	46	Metiram
34	Benthiavalicarb-isopropyl	47	Propineb
35	Dodine	48	Propiconazole
36	Epoxiconazole	49	Copper (II) hydroxide
37	Ziram	50	Tebuconazole
38	Thiophanate-methyl	51	Tetraconazole
39	Thiabendazole	52	Triadimenol
40	Iprovalicarb	53	Folpet
41	Iprodione	54	Fluazinam
42	Isopyrazam	55	Fenhexamid
43	Captan	56	Chlorothalonil
44	Kresoxim-methyl	57	Cyproconazole
45	Mancozeb		

Herbicide			
59	Glufosinate-ammonium	64	Pendimethalin
60	Bromoxynil-octanoate	65	Pyraflufen-ethyl
61	Glyphosate	66	Flumioxazin
62	Metribuzin	67	2,4-D
63	Oxyfluorfen		
Nematocide			
68	Carbendazim	70	Oxamyl
69	Metam-sodium	71	Fenamiphos
Rodenticide			
72	Zinc phosphide		

According to the results of the study, 72 active ingredients were identified, on the basis of which 470 (49.2%) highly hazardous pesticides (955 in total) were selected from the general list, in particular:

- The group of insecticides - acaricides includes a total of 241preparations, of which 188 are HHPs;
- The group of fungicides includes 375permittedpreparations, of which 178 belong to the HHPs;
- The group of herbicides includes 218 permitted preparations, of which 81 are HHPs;
- The group of rodenticides-nematicides includes6preparationsand all of them are highly hazardous;
- From the 27seed treatmentpreparations – 22 are HHPs;
- From the 32 bioactive pesticides – 2 are HHPs.

The list of HHPs active ingredients, registered and permitted in Georgia, was compared to the WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification (2019). According this classification: Ia = Extremely hazardous; Ib = Highly hazardous; II =Moderately hazardous; III = Slightly hazardous; U = Unlikely to present acute hazard in normal use;

Table 4.2.1.2

№	Active substance	CAS number	Hazard class
1	2,4-D	94-75-7	II
2	Abamectin	71751-41-2	Ib
3	Amisulbrom	348635-87-0	U
4	Aluminium phosphide*	20859-73-8	FM*
5	Benthiavalicarb-isopropyl	177406-68-7	-**
6	Bifenthrin	82657-04-3	II
7	Bromoxynil-octanoate	1689-99-2	II
8	Captan	133-06-2	U
9	Carbendazim	10605-21-7	U
10	Chlorantraniliprole	500008-45-7	U
11	Chlorothalonil	1897-45-6	U
12	Chlorpyrifos	2921-88-2	II
13	Chlorpyrifos-methyl	5598-13-0	III
14	Clothianidin	210880-92-5	II
15	Copper (II) hydroxide	20427-59-2	II
16	Cypermethrin	52315-07-8	II
17	Cypermethrin, alpha	67375-30-8	II
18	Cyproconazole	94361-06-5	II
19	Deltamethrin	52918-63-5	II
20	Dimethoate	60-51-5	II
21	Dinotefuran	165252-70-0	III
22	Dodine	2439-10-3	II
23	Emamectin benzoate	155569-91-8	II
24	Epoxiconazole	133855-98-8	II

25	Esfenvalerate	66230-04-4	II
26	Fenamiphos	22224-92-6	Ib
27	Fenhexamid	126833-17-8	U
28	Fenpyroximate	134098-61-6	II
29	Fluazinam	79622-59-6	-**
30	Flubendiamide	272451-65-7	III
31	Flumioxazin	103361-09-7	III
32	Flupyradifurone	951659-40-8	II
33	Folpet	133-07-3	U
34	Glufosinate-ammonium	77182-82-2	II
35	Glyphosate	1071-83-6	III
36	Hexythiazox	78587-05-0	U
37	Imidacloprid	138261-41-3	II
38	Indoxacarb	173584-44-6	II
39	Iprodione	36734-19-7	III
40	Iprovalicarb	140923-17-7	U
41	Isopyrazam	881685-58-1	II
42	Kresoxim-methyl	143390-89-0	III
43	Lambda-cyhalothrin	91465-08-6	II
44	Malathion	121-75-5	III
45	Mancozeb	8018-01-7	U
46	Metam-sodium	137-42-8	II
47	Methomyl	16752-77-5	Ib
48	Metiram	9006-42-2	U
49	Metribuzin	21087-64-9	II

50	Oxamyl	23135-22-0	Ia
51	Oxyfluorfen	42874-03-3	U
52	Pendimethalin	40487-42-1	II
53	Pirimiphos-methyl	29232-93-7	II
54	Propiconazole	60207-90-1	II
55	Propineb	12071-83-9	U
56	Pymetrozine	123312-89-0	III
57	Pyraflufen-ethyl	129630-19-9	II
58	Pyridaben	96489-71-3	II
59	Spirodiclofen	148477-71-8	III
60	Sulfoxaflor	946578-00-3	II
61	Tau-fluvalinate	102851-06-9	III
62	Tebuconazole	107534-96-3	II
63	Tefluthrin	79538-32-2	Ib
64	Tetraconazole	112281-77-3	II
65	Thiabendazole	148-79-8	III
66	Thiacloprid	111988-49-9	II
67	Thiamethoxam	153719-23-4	II
68	Thiophanate-methyl	23564-05-8	U
69	Triadimenol	55219-65-3	II
70	Zeta-Cypermethrin	52315-07-8z	II
71	Zinc phosphide	1314-84-7	Ib
72	Ziram	137-30-4	II

Notes:

FM* - Aluminium phosphide is used in the form of solid pellets, which release phosphine gas following exposure to moisture (including exposure to air or following ingestion). Solid aluminium phosphide is classified as fatal if swallowed. A high case fatality has been reported in poisoning cases with aluminium phosphide (Dawson et al, 2010).

** - Not searched in the WHO classification.

Analysis of 72 active ingredients showed that 6 of them belong to the I hazard class, one of them belongs to the Ia category (especially dangerous) and 5 - to the Ib category (very dangerous); 37 active ingredients belong to the II class of "moderately dangerous" pesticides, and 12 - to the class of "less dangerous" pesticides.14 active ingredients are in the U category.

4.2.2. Agricultural crops for which HHPs are used in Georgia

HHPs are used for a variety of crops in the agricultural sector of Georgia in the form of insecticides, herbicides, fungicides, acaricides and rodenticides. Table 4.2.2.1 Provides specific information on which crops are used dangerous chemicals. In the tableare listedtheir active ingredients.

Table 4.2.2.1

1	**2,4-D** - Corn, wheat, millet, sorghum, citrus fruits, berries, small fruits, potatoes, nuts, pears, etc.	37	**Malathion -** Fruits (stone-fruits and seed-fruits), asparagus, blueberries, citrus fruits, cucumbers, grapes, corn, peppers, spinach, onions, tomatoes, cereals, cabbage, tea, orchards, legumes, tobacco, mushrooms, Peanuts, carrots, potatoes.
2	**Cypermethrin, alpha** - Wheat, barley, vine, apples, pears, cherries, wild cherries, potatoes, vegetables, sugar beets, peas, beans, rapeseed, tobacco, pastures, wild vegetation.	38	**Metam-sodium -** Melons, peppers, tomatoes, potatoes, strawberries, citrus, grapes, almonds, briar, carrots, lettuce, spinach, pumpkin.
3	**Abamectin** - Pears, apples, tomatoes, cucumbers, eggplants, peppers, strawberries, ornamental plants, citrus, nuts, potatoes, cabbage, etc.	39	**Methomyl**- Grapes, Stone-fruits and seed- fruits, citrus fruits, vegetables (except tomatoes), pumpkin, legumes, potatoes, onions, tomatoes, cabbage, peppers, barley, asparagus, grain.
4	**Amisulbrom -** Grapes, potatoes, tomatoes, cucumbers.	40	**Metiram -** Vine, apples, pears, citruses, tomatoes, potatoes, cucumbers.
5	**Aluminium phosphide -** Cereals: Sunflower, wheat, proso millet,rice, soy.	41	**Oxamyl** - Tomatoes, cucumbers, sugar beets, peanuts, potatoes, carrots, melons, peppers, citrus fruits.
6	**Benthiavalicarb-isopropyl**–Potatoes.	42	**Oxyfluorfen** -Seed-fruits, onion, sunflower.

7	**Bromoxynil-octanoate** - Corn, wheat.	43	**Pendimethalin** -Soy, Garlic, Tobaccos, Tomatoes, Cucumbers, Onions, Cabbages, Sunflowers, Carrots.
8	**Bifenthrin** - Tomatoes, eggplant, cucumbers, cabbage.	44	**Pirimiphos-methyl** - Berries, common mushroom, melon, pepper, eggplant, sugar beets, cabbage, stone-fruits, grapes, tea, potatoes, carrots, tobacco, tomatoes, cucumber, grain.
9	**Glyphosate** - Fruits, citrus, vegetables, potatoes, mushrooms, grapes, berries, watermelon, sunflower, corn.	45	**Propiconazole -** Apples, pears, vine, vegetable, wheat, barley, oats, rose, medicinal plants, ryegrass, black currant.
10	**Glufosinate-ammonium -** Fruits (stone-fruits),citrus, vine.	46	**Propineb**- Vine, cucumber, pumpkin, watermelon, melon.
11	**Deltamethrin** - Vine, sunflowers, stone-fruits, grapes, berries, citrus, rose, potatoes, horticultural crops,orchard crop, legumes, pastures, cross flowering crops,, medicinal plants, alfalfa, deciduous and coniferous forest species.	47	**Pymetrozine**- Rapeseed, tomatoes, cucumbers, potatoes.
12	**Dimethoate** - Apples, pears, plums, peaches, potatoes, wheat, rye, barley, oats, legumes, sugar beets, Table beets,red beet**,** vines, vegetables.	48	**Pyraflufen-ethyl** - Fruits (stone-fruits and seed-fruits), nuts, walnuts, kiwi, grapes, potatoes.
13	**Dinotefuran -** Apples, peaches, citrus, kiwi, nuts, tomatoes, cucumbers, watermelon, corn, vines.	49	**Pyridaben -** Apples, vines, citrus fruits, tomatoes.
14	**Dodine–**Fruits (stone-fruits and seed- fruits).	50	**Copper (II) hydroxide -** Potatoes, Stone-fruits and seed- fruits, tomatoes, berries, grapes, sugar beets, cucumbers, onions, vegetables, orchards, citrus fruits.
15	**Emamectin benzoate -** Apples, pears, vine, cabbage, tomatoes, cucumbers, corn, eggplant, peppers.	51	**Spirodiclofen -** Apples, Pears, Peaches, Vine, nectarine, oranges, Tangerines, Tomatoes, Cucumbers, Watermelons, Roses.
16	**Epoxiconazole-** Grain, sugar beets.	52	**Sulfoxaflor** - Apples, nuts, citrus fruits.
17	**Esfenvalerate -** Corn, sunflower, soy, sugar beet, potatoes, grapes, pea,seed-fruits, grain,cabbage.	53	**Tau-fluvalinate**–Fruits (stone-fruits and seed-fruits), cucumbers, grapes, grain, soy, potatoes, tomatoes.
18	**Zeta-Cypermethrin -** Grain, citrus fruits, tea, eggplant, peppers, grapes, vegetables (leafy), onions, legumes (except soybeans and peas).	54	**Tebuconazole-** Spring and autumn wheat, barley, oats.
19	**Ziram -** Apples, pears, vine, apricots, cherries, wild cherries, peaches, walnuts, blueberries, rose, almonds, tomatoes.	55	**Tefluthrin**- Sugar beets, corn, potatoes.

20	**Thiamethoxam -** Potatoes, tomatoes, eggplants, cucumbers, rose, ornamental flowers, wheat, barley, legumes.	56	**Tetraconazole** - Grain, sugar beets.
21	**Zinc phosphide -** Sowing of winter wheat, perennial grasses, uncultivated lands, pastures, meadows, fields, orchards,hazelnut, citrus and forest plants, berries, vegetables, agricultural and household buildings, warehouses.	57	**Triadimenol -**Apples, pears, vine.
22	**Thiabendazole -** Grain, corn, peas, sunflower, tomatoes, potatoes, citrus fruits, mushrooms.	58	**Fenamiphos** - Apples, melons, bananas, cabbage (Brussels and Savoycabbages)
23	**Thiacloprid -** Seed-fruits, grapes, potatoes, berries, etc., small fruits, cucumbers, pumpkin, tomatoes, eggplant, kiwi, melons, watermelon, peppers, wheat.	59	**Fenhexamid**- Peaches, plums, cherries, raspberries, carrots, grapes, strawberries, kiwi,tomatoes.
24	**Thiophanate-methyl -** Sugar beet, persimmon, feijoa, cucumber, fruits (stone-fruits and seed-fruits), grapes, currant, grain.	60	**Fenpyroximate -** Soybeans, grapes, seed- fruits, oranges.
25	**Imidaclopride** - Vine, apple, peach, citrus, tomato, cucumber, watermelon, rose, potatoes.	61	**Fluazinam**–Potatoes.
26	**Iprodione -** Stone-fruits (plum, peach, nectarine, almond, apricot, cherry, wild cherry), seed- fruits (apples, pears, quinces), berries (red and black currants, gooseberries, blackberries, raspberries), strawberries, grapes, bulb plants (onions, garlic, leeks), lettuce, sunflower, beans, peas, tomatoes, cucumbers, peppers, watermelon, melons, vegetables, carrots, cabbage, eggplant, parsley.	62	**Flubendiamide** - Grapes, fruits (stone-fruits and seed- fruits), nuts, vegetables (zucchini, cucumbers), melons, watermelons, pumpkin, lettuce, spinach, cabbage (all kinds), tomatoes, peppers, eggplant, corn.
27	**Indoxacarb -** Grapes, seed-fruits, pears, peppers, potatoes, onions, cauliflower, eggplant, pumpkin, tomatoes.	63	**Flumioxazin** - Sunflower, soybean.
28	**Iprovalicarb–**Grapes.	64	**Flupyradifurone** - Apples, pears, grapes.
29	**Isopyrazam -** Apples, pears.	65	**Folpet -** Vine, mulberry.
30	**Kresoxim-methyl** - Seed-fruits, berries, cucumbers, tomatoes, grapes, oranges, wheat, barley.	66	**Chlorantraniliprole –** Fruits (Stone-fruits and seed-fruits), potatoes, grapes, citrus fruits, cucumbers, eggplants, tomatoes, peppers, pumpkin, watermelon, melons, nuts, walnuts, grain, leafy vegetables, cabbage (all species), medicinal plants.
31	**Carbendazim -** Potatoes, vines, tomatoes, apples.	67	**Chlorothalonil**- Cucumbers, tomatoes, seed-fruits, grapes, potatoes, grain, cabbage, carrots, onions, peaches, cherries, melons, pumpkin, sugar beets, peppers.

32	**Captan -** Apples, pears, quinces, vines, peaches, apricots, plums, citrus fruits, tomatoes, potatoes, vegetables, onions, lettuce, carnation.	68	**Chlorpyrifos -** Pastures, plots inhabited by locusts, wild vegetation, apples, peaches, vines.
33	**Lambda-cyhalothrin** - Fruits (stone-fruits and seed-fruits), potatoes, corn, cabbage, tomatoes, peas, cereals, carrots, sugar beets, onions, grapes, citrus.	69	**Chlorpyrifos-methyl**- Citrus, eggplant, grapes, peppers, fruits (stone-fruits and seed-fruits), tomatoes, potatoes, strawberries.
34	**Clothianidin–**potatoes.	70	**Cypermethrin-** Grain, citrus fruits, tea, cabbage, eggplant, peppers, grapes, vegetables, edible tubers and roots (except sugar beet, carrots and potatoes), onions, legumes (except soybeans and peas), sunflower, common mushroom, pumpkin, etc.
35	**Mancozeb -** Potatoes, vine, tomatoes, cucumbers, onions.	71	**Cyproconazole -** Grain, seed - fruits, grapes..
36	**Metribuzin**- Soy**,** potatoes.	72	**Hexythiazox** - Citrus fruits, grapes, musk strawberry, black plum, vegetables, pumpkin,eggplant, tomatos.

4.3. General data on the volume of consumption of HHP in agriculture

Available information on the use of chemicals, is very limited in Georgia. An integrated database (register) of chemicals imported, used and exported is lacking.Therefore the information on the types and amounts of chemicals Imported and/or used in Georgiais missing.Common information on the observation of chemical safety requirements is not availableeither.

Generally, the following types of chemicals are currently in use in Georgia: agrochemicals (fertilizers, pesticides and herbicides.), disinfectants, pest control chemicals and other chemicals.

4.3.1. Number of pesticides imported to Georgia in 2014-2021

According to statistics, especially in recent years, with the growth of the agricultural sector in Georgia, the consumption of chemicals and pesticides is increasing. The use of fertilizers and pesticides has a positive effect on yields and the sector as a whole, but the dangers associated with the mishandling of obsolete pesticides and chemical fertilizers are unfamiliar to farmers.

According to the National Statistics Office (GeoStat), the amount of imported pesticides has almost doubled in recent years.The number of imported pesticides in 2014 was 3081.1 tons, in 2015 - 3044.82 tons, in 2019 - 5460.24 tons, in 2020 - 5917.57 tons, and this year (until August 2021) - 3842.22 tons.[5]

4.3.2. General data on non-agricultural use of HHPs (household and health care)

Today, pesticides are most widely used in agriculture. However, they are also used for other purposes, for example, in everyday life: remedies for cockroaches, rodents, lice and ticks, mosquito or antifungal drugs, disinfectants for the kitchen and bathroom.

Generally, the following types of chemicals are currently in use in Georgia: agrochemicals (fertilizers, pesticides and herbicides.), disinfectants, pest control chemicals, petroleum products, detergents, glues, solvents, paints and other chemicals for household use. It shall be noted that two significant environmentally sensitive groups of chemicals – Ozone Depleting Substances (ODS) and Persistent Organic Pollutants (POPs) are not produced in Georgia and their import and transit are either prohibited or strictly regulated.[8]

4.4. HHPs - banned in other countries, but permitted in Georgia

From the total list of pesticides, registered in Georgia (955 in total), 52 active ingredients are prohibited or not approved for use in other countries. A list of these pesticides is shown in Table 4.4.1.

Table 4.4.1

№	CAS No	Pesticide (Active ingredient)	Number of countries
1	20859-73-8	aluminium phosphide	1
2	82657-04-3	bifenthrin	29
3	1689-99-2	bromoxynil octanoate	2
4	133-06-2	captan	6
5	10605-21-7	carbendazim	32

[5]**Source:**" Third National Environmental Action Programme of Georgia", 2017-2021.

6	1897-45-6	chlorothalonil	32
7	2921-88-2	chlorpyrifos	35
8	74115-24-5	clofentezine	1
9	210880-92-5	clothianidin	28
10	533-74-4	dazomet	1
11	13684-56-5	desmedipham	28
12	119446-68-3	difenoconazole	1
13	60-51-5	dimethoate	33
14	165252-70-0*	Dinotefuran*	28*
15	133855-98-8	epoxiconazole	29
16	161326-34-7	fenamidone	28
17	22224-92-6	fenamiphos	34
18	51630-58-1	fenvalerate	29
19	69806-50-4	fluazifop-P-butyl	1
20	79622-59-6	fluazinam	1
21	239110-15-7	fluopicolide	1
22	133-07-3	folpet	2
23	1071-83-6	glyphosate	3
24	138261-41-3	imidacloprid	28
25	36734-19-7	iprodione	30
26	121-75-5	malathion	32
27	8018-01-7	mancozeb	29
28	57837-19-1	metalaxyl	1
29	108-62-3; 9002-91-9	metaldehyde	1
30	2032-65-7	methomyl	42
31	74223-64-6	metsulfuron-methyl	1
32	23135-22-0	oxamyl	3
33	42874-03-3	oxyfluorfen	1

34	40487-42-1	pendimethalin	1
35	13684-63-4	phenmedipham	1
36	67747-09-5	prochloraz	1
37	60207-90-1	propiconazole	28
38	12071-83-9	propineb	29
39	123312-89-0	pymetrozine	30
40	148477-71-8	spirodiclofen	28
41	107534-96-3	tebuconazole	1
42	79538-32-2	tefluthrin	1
43	148-79-8	thiabendazole	1
44	111988-49-9	thiacloprid	28
45	153719-23-4	thiamethoxam	28
46	23564-05-8	thiophanate-methyl	28
47	137-26-8	thiram	28
48	55219-65-3	triadimenol	28
49	82097-50-5	triasulfuron	29
50	64628-44-0	triflumuron	1
51	1314-847	zinc phosphide	2
52	137-30-4	ziram	2

Note: Blue - HHPs not approved in the EU and UK but not bannes anywhere.

4.5. Impact of HHPs on health and the environment

4.5.1. Impact of HHPs on health

December 3 is the anniversary of the worst peacetime chemical disaster in history. Twenty-seven tons of lethal gases leaked from Union Carbide's pesticide factory in Bhopal, India on this date in 1984, immediately killing thousands of people and poisoning half a million others.

Pesticide Action Network (PAN) International is a global organization with five regional centers around the world. PAN honors the memory of the Bhopal victims every year with an international "Day of No Pesticide Use," an annual reminder that agricultural chemicals are harming communities around the world every day.

Highly hazardous pesticides (HHPs) may have acute or chronic toxic effects, posing particular risk to children, and are recognized as an issue of global concern. Their widespread use has caused health problems and fatalities in many parts of the world, often as a result of occupational exposure and accidental or intentional poisonings. Environmental contamination can also result in human exposure through consumption of residues of pesticides in food as well as possibly drinking-water.

The greatest exposure to HHPs is for agricultural and public health workers during handling, dilution, mixing and application. Exposure is mainly by the dermal route for preparation of sprays and by the dermal and inhalation routes during application. Ingestion might occur through consumption of contaminated food during or following work or through oral contact with contaminated hands.

Children are particularly at risk of being exposed to HHPs because of their behavior (particularly hand to mouth behavior) and may be more sensitive to effects associated with such exposures because of their potential for a greater intake on a body weight basis and because exposure may occur during crucial periods of development. Young children playing may be exposed to pesticide containers, to residues on surfaces, and through ingestion of contaminated soil. Exposure of children may also occur through their mothers via breastfeeding or in utero.

It should be noted health effects:

Unintentional and self-inflicted (suicides) acute poisonings by pesticides are a serious public health problem in many parts of the world, with ingestion of pesticides being one of the most common methods of suicide deaths and suicide attempts.

The acute hazard is highly variable depending on the pesticide and includes peripheral and central neurotoxicity and reduced blood clotting capacity. The specific pesticide formulation can significantly affect both exposure and toxicity. Short-term exposure can cause harmful effects on the liver, kidneys, blood, lungs, nervous system, immune system and gastrointestinal tract.

Chronic exposure to HHPs can result in effects on the skin, eyes, nervous system, cardiovascular system, gastrointestinal tract, liver, kidneys, reproductive system, endocrine system, immune system

and blood. Some HHPs may cause cancer, including childhood cancer.

Children are more vulnerable to the effects of pesticides due to their smaller size and hence greater exposure (on a milligram per kilogram body weight basis), different metabolism, and still developing internal organs.

Studies have shown that introduction of regulations to ban the use of HHPs has saved lives.

No cases of pesticide poisoning have been registered on the official website of the National Center for Disease Control and Public Health in Georgia and also are not reflected in the statistical reference books provided by them.

4.5.2. The impact of Highly Hazardous Pesticides on the environment[6]

Non-regulated use of pesticides has led the environment into disastrous consequences. HHPs are not only toxic to people related to agriculture, but they also cause toxicity in industries and public health work places. Depending upon the target species, HHPs can cause toxicities in natural flora, natural fauna and aquatic life.

Pesticides promise the effective mitigation of harmful bugs, but unfortunately, the risks associated with their use have surpassed their beneficial effects. Nonselective pesticides kill non-target plants and animals along with the targeted ones. Moreover, with the passage of time, some pests also develop genetic resistance to pesticides.

The pesticide label is a key source of information on pesticide safety, dosage and use. Under the Law of Phytosanitary, pesticide labels provide information on the effects of a pesticide on non-target organisms.However, farmers and farm workers have difficulty reading or understanding the label.Pesticides are often repackaged and sometimes sold in small, unlabeled containers or may have counterfeit labels. This is usually due to the label being missing or damaged, or the label being in a foreign language. The high probability of user poisoning with pesticides and agrochemicals, as well as contamination of the agricultural products with these substances, is the reason for the low level of awareness among users of pesticides and agrochemicals.

Pesticides are known to be one of the extremely useful and beneficial agents for preventing losses of crops as well as diseases in humans. Based on the action, pesticides can be classified as destroying, repelling and mitigating agents. Recently pesticides have been developed which target multiple species. On the level of population, the effects of pesticides depend on exposure and toxicity, as well as on different factors like life history, characteristics, timing of application, population structure and landscape structure. Worldwide pesticides are divided into different categories depending upon their

[6]**Source:**Chemical profile2009

target. Some of these categories include herbicides, insecticides, fungicides, rodenticides, molluscicides, nematicides and plant growth regulators.

Pesticides are widely used throughout the developing world, and pesticide demand is increasing due to the current system of crop production, which prioritizes high agricultural yields.

The threats associated with the use of uncontrolled use of these toxins cannot be overlooked. It is the need of the hour to consider the pesticide impact on populations of aquatic and terrestrial plants, animals and birds. Accumulation of pesticides in the food chains is of greatest concern as it directly affects the predators and raptors. But, indirectly, pesticides can also reduce the quantity of weeds, shrubs and insects on which higher orders feed. Spraying of insecticides, herbicides and fungicide have also been linked to declines in the population of rare species of animals and birds. Additionally, their long term and frequent usage lead to bioaccumulation.

In 80-ies Georgia was part of USSR and as everywhere is USSR the treatment of agricultural lands was undertaken on planned basis. For these purpose about 37 thousand tons of pesticides were imported annually. According to the official data of 2000-2004, the annual import and consumption of pesticides in Georgia amounted to 1000-2500 tons, which is significantly lower than the indicator of the 1980s. However, there are a number of problems that pose a threat of environmental pollution from pesticides: Technical means of pesticide application (spraying, dusting, incorporation into the soil) often do not meet the requirements; on farms there are no specially organized areas for the preparation of a working mixture of pesticides; the sprayer and technical means (equipment, containers, overalls) are not treated, the environment (soil, water, air) is not monitored for pesticides, act..

In 2003 Georgia accomplished the program "Development of National Action Plan for Implementation of Stockholm Convention on Persistent Organic Pollutants in Georgia." The Program was financed by the Global Environment Facility (GEF) and implemented by Ministry of Environment Protection and Natural Resources of Georgia in partnership with the United Nations Development Program (UNDP). Persistent organic pollutants (including pesticides) were inventoried in the framework of this program in the years 2003-2004. In total 214 sites were identified, in 46 of them the pesticide wastes were actually found. Also, special disposal site for outdated pesticide burial was functioning in Eastern Georgia (Marneuli region, Mount Ielguji). Approximately 2,700 tons of various types of chemicals (supposedly, high amount of chlorine containing pesticides) were buried in this site. Condition of the burial is not satisfactory – territory is not fenced and cattle can use it as a pasture. Packing tar of the pesticides (sacks, barrels) are partially visible on the surface. Pesticides are being washed out and uncontrolled pollution of environment takes place. Part of expired pesticides were collected and safely disposed in 2007-2008.

We have no information on the current state of storage sites for expired pesticides.In this regard, we wrote to the Ministry of Environment Protection and Agriculture of Georgia, but received incomplete information – "In accordance with the Stockholm Convention, several projects have been implemented

in Georgia concerning expired mod-pesticides.Within the framework of these projects, expired pesticides were collected, packaged and temporarily safely placed on the territory of Georgia, after which (2014-2016) a total of 438 tonnes of expired pesticides were exported to France and Belgium for the treatment of this waste".

4.6. Companies / organizations representing the pesticide industry in Georgia (import and sale of pesticides)

Georgia is an importer of chemicals. The country does not have its own production. Currently, there are 335 registered objects of sale and 174 wholesale objects of pesticides and agrochemicals in Georgia.Currently, more than 30 companies on the Georgian market are engaged in the import and sale of fertilizers and plant protection products.

4.7. The Initiatives for gradually taking out the HHPs

4.7.1. PDP phased projects, programs and campaigns

The Ministry of Agriculture in 2014 announced that during 5 years the Georgian Legislation would be harmonized with EU Legislation regarding the sustainable development of pesticides. There is no significant tangible changes done after this announcement for 7 years, except the increased number of the used pesticides and agrochemicals

To harmonize Georgian legislation with the EU, to implement existed legislation and regulations and generally, to solve the problem, at first it is necessary to inform the farmers about the dangerous causes of the mismanagement of the pesticides.

4.7.2. Main Challenges regarding taking out gradually of the particularly dangerous pesticides

Despite the existed laws and regulations, the current situation in the country is out of control, there is no information regarding the utilization of expired pesticides or agrochemicals. Moreover, there is no database of expired pesticides or chemical fertilizers, taking out of them and utilization, there is no suitable infrastructure, equipment to utilize the hazardous substances, which are harmful to environment and health.

The situation is unclear regarding the pesticide usage control, accordingly, there is no information about the facts of erroneous use and consumption, for this reason, and there is no data about the risks and losses. Taking into account the above-mentioned there are two problems identified. In one case, there is no supervision of the implementation and monitoring of the law, in another case, there is no suitable infrastructure and equipment for utilization of the expired pesticides and agrochemical substances in the country.

Georgia does not have the requisite potential and strategy in effectively assisting the agricultural sector the farmers in keeping the productivity level high without the usage of, particularly hazardous pesticides. Present there is policy and legislation for the regulation of the pesticides, but there are no provisions for effective coordination and implementation, including the public awareness, consultation and health services, according to the recommendations of the WHO and FAO. In general, factors such as local needs, social and economic conditions, the education level, climate, the availability of individual protective equipment and appropriate use of the pesticides are not fully addressed by the government, agrochemical manufacturers and the ones who are importing them.

Even though there are policy frameworks for the pesticides registration system, the registration scheme works malfunction, because of a lack of human and financial resources. There is a lack of knowledge in usage of the pesticides and coming risks, as well as their alternatives.

There is no clear policy, which restricts the use of PDP in the country, defines the customer (for example: only certified costumers, who have been trained and have proper personal protective equipment, input devices, etc.) and areas of usage (for example only seed poisoning or spraying; restriction in using in air and etc.), or crop types (only crops (for certain crop combinations/pests, under strictly controlled environment, and etc.).

5. Alternatives

5.1. The National Policy of IPM

The integrated pest management is to use all existed methods and techniques for plant protection in compliance with safety measures. It also includes prevention measures of increasing the pest population, plant protection products and usage of other forms of intervention within the economic and environmental expectable boundaries. Moreover, additional measures should be taken to minimize the potential risks to human health and the environment. “The Integrated Pest Management” underlines the importance to increase healthy crops yield with minimal disruption of agro-ecosystems and helps to stimulate the natural control of pests.

Integrated Pest Management is based on the farmers’ deep knowledge of the agro-ecological ongoing processes in the agricultural environment. Such farmers showing their readiness to receive the solutions with clear arguments about the most suitable pests control strategies. Furthermore, the Integrated Pest Management is an approach, which solves problems beyond pest control. This approach offers ways to improve the whole agriculture production. It can be successfully achieved through IPM

national policies and institutional support. Since pest-related problems are often a symptom of environmental imbalances, a policy of the country should ensure that the ecosystems are planned and managed, in such a way that is allowing avoiding the organisms from becoming pests.

The Government of Georgia on May 13, 2021, adopted №215 Resolution - "On Approval of Measures to Achieve Sustainable Use of Pesticides". The resolution aims to take measures to reduce the risks and adverse effects of pesticide use on human health and the environment. Also the use of approaches and techniques such as non-chemical alternatives to pesticides. The project will entered into force in January 1, 2024.

The adoption of the project will allow improving the placement of pesticides on the market, which will be the basis for the effective use of plant protection products, human health and the environment. Particular importance will be given to informing the consumer and the public about the effectiveness of the pesticide and the measures to reduce its adverse effects on human health and the environment by all persons involved in the Registrant/Manufacturer, Importer and Supply Chain.

The United States Agency for International Development (USAID) financed “the Growth” Project, in 2018. The five-year project aims to promote sustainable economic development in the target regions. One of its main goals is to promote the production of high-quality fruits and vegetables in the field of agriculture. The project also improves market access for farmers and other entities involved in the production chain.

Hazelnut farms use good agricultural practices such as pheromone belts as a measure against a new pest identified in western Georgia, the Asian Tortoise Beetle.

Despite all, currently, there is no specific policy or strategy of the Government of Georgia to promote integrated pest management.

An integrated pesticide management system offers farmers choice working methods, which will minimize the risks to human health and the environment. According to IPM principles, pesticides should be consumed only when alternative approaches are impossible or ineffective.

There are the following problems for integrated management of the pest:

- A product received after using IPM is not advertised and it is not labelled as an IPM product.
- There is no political basis has been developed for IPM;
- Lack of consumer awareness and consequently lack of demand for IPM products.
- There is no alternative production of plant protection products in Georgia.

The development and implementation of IPM approaches will significantly contribute to the growth of safe food production in the country, create a favourablephytosanitary situation and reduce the dangerous effects of pesticides on human health and the environment.

5.2. Organic agriculture[7]

"Organic agriculture is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system" (FAO/WHO Codex Alimentarius Commission, 1999).

The basic rules of organic production are that natural inputs are approved and synthetic inputs are prohibited. But there are exceptions in both cases. Certain natural inputs determined by the various certification programs to be harmful to human health or the environment are prohibited (e.g. arsenic). As well, certain synthetic inputs determined to be essential and consistent with organic farming philosophy, are allowed (e.g. insect pheromones). Lists of specific approved synthetic inputs and prohibited natural inputs are maintained by all certification programs and such a list is under negotiation in Codex. Many certification programs require additional environmental protection measures in addition to these two requirements. While many farmers in the developing world do not use synthetic inputs, this alone is not sufficient to classify their operations as organic.

Organic agriculture can be traced back to the early 20th century, initiated by the Austrian spiritual philosopher Rudolf Steiner. It was later diversified by a number of key people, and more recent versions are guided by principles issued by the International Federation of Organic Agricultural Movements (IFOAM), founded in 1972. Later, the German physician and microbiologist Hans-Peter Rusch together with the Swiss biologists Hans and Maria Müller, focused on applying natural principles in agriculture, driven by the conviction that nature is our master and always superior. Even though these early ideas have been abandoned or modified in modern organic agriculture, the principle of the founders regarding exclusion of synthetic compounds (fertilizers and pesticides) is still the main driver for choosing crops and pest control methods.

The fact that traditional agriculture today gives us negative results, no one disputes (Damage to soil structure, disruption of the soil fertility as a result of the use of artificial fertilizers and chemical compounds; disruption of food quality, etc.), but this is still not a sufficient prerequisite for the transition to organic agriculture, despite lower working capital costs and much higher prices for organic products on the world market.

The International Federation of Organic Agriculture Movements (IFOAM), which adopted and established the IFOAM Basic Standards for Organic Production and Processing, plays a special role in the development of organic agriculture. IFOAM is an international umbrella organization of organic agriculture movements worldwide with more than 750 members in over 108 countries. Its members include the complete spectrum of all stakeholders. Its main function is coordinating the organic

[7] **Source:** http://www.fao.org/3/X0075e/X0075e.htm

movement around the world, through numerous international, continental and regional conferences, through its publications and, especially through the development of a universal standard for organic agriculture.

The results of the IFOAM and FIBL studies are presented in table 5.2.1, which shows several countries and the land areas on which they produce organic products.

Table 5.2.1. *Farms producing organic products in 2017.*

Country	Land areas (ha)
Germany	1 373 157
Italy	1 908 653
France	1 744 420
Spain	2 082 173
China	3 023 000
Ukraine	289 000
Poland	494 979
Azerbaijan	37 630
Armenia	1 430
Russia	656 933
Georgia	1 452

The data show that in this respect Georgia is lagging behind not only developed but also developing and neighboring countries.

Rich countries consume organic food the most.In this regard, the world market is estimated at about $ 25 billion, half of which is in North America, about half in European countries, only 3% is distributed to other countries.

According to FIBL, sales of organic products in Europe in 2017 amounted to 37.3 billion Euros. Germany is the leader in this respect, with sales exceeding 10 billion.

5.2.1. Principles of organic farming

Organic Farming is based on principles of agro-ecology. These include:

On a general level

- Improvement and maintenance of agro-ecosystem based on conservation of soil, water and biodiversity

- Preventing exploitation and pollution of natural resources
- Reduction in consumption of non-renewable energy
- Production of nutritious and high quality products
- Conservation of indigenous knowledge and traditional farming systems
- Protection of freedom and independence of farmers with respect to seed sovernity and other inputs and markets
- Diversity
- Decentralisation

On a practical level

- Conservation of soil
- Maintenance of soil fertility
- Natural nutrient mobilisation
- Pest management through biological pest control
- Increase in biodiversity genetic base
- No use of synthetic and agrochemicals
- Prohibition of Genetic Engineering and related products
- Usage of farm manures and crop residues
- Biologically active soil life

Essential characteristics of Organic Farming

- Sustainable use of local resources
- Ensuring basic biological functions of soil-water-nutrient-humus-continuum
- Maintenance of diversity of plants
- Maintenance of nutrient cycle within the farm
- Stability due to diversification
- Optimum input output ratio

5.2.2. Ecological agriculture in Georgia[8]

The development of the agricultural sector was not a high priority for the past Georgian governments. According to the European Union, numerous problems and challenges faced by Georgia such as capital

[8]**Source:**The Organic Guarantee System The need and strategy for harmonisation and equivalence Christina Westermayer and Bernward Geier (Eds.)

disinvestment, absence of a functioning agricultural research-education-extension system, lack of a well functioning land market, poor condition of irrigation systems and other infrastructures, and widespread impact of livestock diseases have resulted in the reduction of agricultural production by 20 per cent since 2005.

However, from the geographical point of view, the country has a high agricultural potential: abundance of rivers, rich and fertile land, a very favorable climate for cultivation and livestock. Georgia is a mountainous country of rich agrarian heritage, which is known for its agricultural traditions and diversity of cultural flora. The country's diverse natural conditions favor the cultivation of different crops and plants here. To this advantageous geographical context, we can add a millennium of agricultural traditions in various fields related to certain regions: wine, tea, nuts, cereals, fruits, vegetables etc. Finally, we must call to mind the Georgian culinary tradition, Georgians' love for food and food quality.

Georgia is well known for the quality products it produces, such as wine, fruits and vegetables. However, complex mountainous landscape and land fragmentation often do not allow Georgian farmers to benefit from economies of scale or compete in global commodity markets.

Organic agriculture in Georgia was conceived in the early 1990s and is associated with the activities of the Biological Farming Association Elkana. Elkana is an association of farmers and people engaged in agribusiness that was founded in 1994. It is aimed at promoting the improvement of the socio-economic state of Georgian population and environmental protection by development of sustainable bio-farms and self-activation of rural population.

In 1996 Elkana became a member of the International Federation of Organic Agricultural Movements (IFOAM). In compliance with IFOAM standards and European Union regulations, the Association has developed and officially registered a bio-production standard, which has been subsequently updated several times. However, since 2009, based on the process of harmonization of Georgian legislation with the EU regulations, the organization has been guided by the standard defined by the EU regulations. The placing of the member farmers' products on the market with a respective status ('bio') required the establishment of a relevant legislative base and certification system. Thanks to active cooperation with the Ministry of Agriculture of Georgia and other competent authorities, a Law of Georgia on Biological Agro-production entered into force in 2006.

The regulatory framework can be considered completed by August 2014 upon enactment of the regulation on labeling, notwithstanding the fact that no relevant technical regulations/standards were developed. Georgia recognizes international organic agro-production standards.Georgian Standard for Organic Farming is under development,the list of substances allowed for use in organic farming has been approved,it is planned to develop rules for the certification of organic products.

5.2.3. The Market for Bioproducts in Georgia

Improving the efficiency of bio-production is a priority for the development of the country. In the production of organic products, the use of biologically pure fertilizers in the production process should be considered.

According to data of 2017, only 1,452 hectares of land were selected for organic production in Georgia, which is a very low rate both in the world and in the region. Georgia is only ahead of Armenia in this data within the neighbouring countries. About 405 tons of organic products were exported from Georgia in 2016. Moreover, it should be noted that the main market for Georgian organic products in Germany.

Unfortunately, Georgian farmers do not have information on the benefits of organic farming. Even though that the Georgian legislation is directed to stimulate organic production. Georgian organic producers have the opportunity to obtain a certificate, which is recognized abroad and is quite cheap compared to world prices. For example, it is possible to have a certificate of the company "Kavkassert" in the range of about 1500-2000 dollars, while foreign companies issue the certificates ten times or more expensive (e.g. GlobalGap).

The high quality of organic products is of particular importance for export and local markets. For achieving the quality of the organic production standards, it is necessary to stimulate and control the effective agricultural practice and quality management system.

It is possible to out several agricultural sectors in Georgia, which are distinguished by particular prospects. Georgia is a country of traditional winemaking and can produce the highest quality wine and supply markets of Europe and others.

Bio-tea production is noteworthy for organic production. Several decades ago, Georgia was among the top four tea producers in the world. Back in that period, more tea was harvested only in China, India and Sri Lanka. Recently, Georgian tea has been in the spotlight again.

Due to the favourable soil-climatic conditions, the tea-harvesting season lasts 6 months in Georgia. According to industry experts, high-quality raw materials and competitive prices are the main advantages of Georgian tea.

The Georgian Association of Agricultural Organic Producers, a non-profit (non-commercial) legal entity, was established in Georgia in December 2017, which promotes organic production methods within the country; their assignment is to develop the production of bio-agricultural products in Georgia. The association is a member of several companies: "Poultry Georgia" Ltd; "Khareba Winery" Ltd; "Gaagro" Ltd; Anapaa Ltd; Biomart Ltd; MJM Agro Ltd.

Examples of organic farming in Georgia:

The enterprise “Manna” was opened, in 2017 in Georgia, which is equipped with modern technologies, for processing and packaging of agricultural products. The company owns a factory equipped with modern infrastructure and equipment in the village of Saguramo.

Manna is focused on the production of ecologically clean and organic products that do not contain harmful substances and additives. During the production process, the “ISO 22000” and “HACPP” standards are observed. The company has also obtained the internationally recognized "Kavkassert" (organic production) and the “Kosher” certificates.

"Manna" enterprise is financed within the framework of the unified agro project of the Ministry of Agriculture and with the funds invested by the founders. Marketing and consulting support is co-sponsored by the United States Agency for International Development (USAID) project.

The first Georgian organic dairy product has already appeared on the market. Bio-milk is the healthiest dairy product on the Georgian market.

The farm is located in the village of Archiloskalo, Shirak Valley, in Kakheti. Half a hectare is cultivated and arranged according to the appropriate standards, where an average of 10 sq.m. isallocated per one cattle. More than 200 cattle are not tied up and are in an open space that is constantly ventilated. Bio standards are followed on the farm.

In the processing of milk - the production of bio-milk involves the prohibition of impurities such as preservatives, stabilizers, pigments, flavourings and flavour enhancers.

It is important to comply with sanitary-hygienic requirements and monitor the waste of detergents.

6. Conclusion and Recommendations

The following conclusions and recommendations were developed based on “The Pesticide ResearchReport in Georgia”.

6.1. Conclusions

General Information

- Highly hazardous pesticides (HHPs) - are pesticides that pose a particularly high threat to health or the environment under-recognized international classification systems. The definition of " HighlyHazardous Pesticides" was developed by FAO and WHO;
- The growth of the agricultural sector in Georgia is increasing consumption of chemicals and pesticides, especially in recent years, according to the National Statistics Office. The rate of imported pesticides has almost doubled during the past years.

Legislation

- The Law on Pesticides and Agrochemicals is in force in the country. The law discusses the effective and safe use of pesticides and agrochemicals issues in detail. Topics provided in the methods and recommendations for the utilization and storing of the expired and prohibited pesticides, including their containers, are developed according to FAO guidelines;
- The main challenges that hinder the implementation of European chemicals management practices in Georgia are incomplete legal framework (except the pesticide and agrochemicals management legislation) and lack of information;
- Management of chemicals in Georgia is carried out according to the requirements of national legislation and under the obligations of international agreements;
- Georgia is a part of the following conventions: the Basel Convention on the Control of Transboundary Movments of Hazerdous Wastes and their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade; The Vienna Convention for the Protection of the Ozone Layer; and the Stockholm Convention on persistent organic pollutants (POPs).

Pesticide hazards

- In case of industrial accidents the chemicals substances are a particular threat to the environment and human health;
- Highly hazardous pesticides, insecticides, herbicides, fungicides, acaricides or rodenticides are used for more than 50 crops in the country. The carcinogens or suspected carcinogens belong to the first-class hazardous pesticides. The issue is especially noteworthy, because of the growth

of the oncological disease, while the consumption of pesticides in the country is increasing every year;
- The use of fertilizers and pesticides has a positive effect on yields and the sector as a whole, but the dangers associated with the mishandling of obsolete pesticides and chemical fertilizers are unfamiliar to farmers.

Responsibility for Pesticide Management

- Several ministries are responsible for the management of chemicals in Georgia;
- Despite the existed laws and regulations, there is no information on the utilization of expired pesticides or agrochemicals in the country. Furthermore, there is no registration of expired pesticides or chemical fertilizers in the country and their utilization. The country does not have the appropriate infrastructure and equipment for utilization hazardous substances that are harmful to the environment and health;
- The Ministry of Environment Protection and Natural Resources of Georgia carried out the pesticide inventory in 2003, totally of 3,057 tons of chemicals were found, of which 2,700 tons were stored in Iaghluji pesticide landfills and the remaining 357 tons in chemical warehouses throughout the country;
- Several projects related to the expired mod-pesticides have been implemented in Georgia according to the Stockholm Convention. Within the framework of the mentioned projects, expired pesticides were collected, packaged and temporarily safely placed in Georgia, after which (2014-2016) a total of 438 tons of expired pesticides were exported to France and Belgium for their utilization;
- The control over the use of pesticides is unclear, therefore there is no information on the risks and losses caused by improper use and consumption;
- The data of the chemicals are minor in Georgia, there is no united database (register) of imported, consumed and exported chemicals and, consequently, detailed information on the types and quantities of chemicals produced and/or consumed in Georgia. It is also unknown whether safety standards related to chemicals are being met.

Organic Agriculture

- The country does not have the necessary potential and strategy to effectively assist farmers in changing agricultural production practices to maintain high yields without the use of pesticides at present;

- Even though there is no strong agroecological movement in Georgia, a complete agroecological legal framework has not been created; the organic agriculture is still carried out and developed in the country.

Researchresults

- The results of research on highly hazardous pesticides have shown that they are widely used in the agricultural sector of Georgia. 955 pesticides are permitted and registered for use by 2021 in Georgia. 49.2% of pesticides allowed for usage by national law are highly hazardous pesticides;
- There is no description of the number of pesticides and fertilizers used in the country. Statistics are incomplete;
- In 2021, The International List of HHPs was updated by PAN, which was used to identify highlyhazardous pesticides in Georgia. Research has been conducted on the active ingredients;
- The list of active ingredients of HHPspermitted and registered in Georgia was compared with the WHO recommended classification of pesticides by hazard and guidelines to classification (2019). The research identified 72 active ingredients, and on their basis 470 (49.2%) highly hazardous pesticides were identified from the registered list (totally 955);
- From the total list of pesticides registered in Georgia (955 in total), 52 active ingredients are pesticides that are prohibited or not approved for use in other countries.

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6.2. Recommendation

Recommendation for legislation

- The implementation of the Georgia-EU Association Agreement and the National Action Plan for the Reduction of Chemical, Biological, Radiation and Nuclear (CBRN) Threats (2015-2019) requires the development and adoption of legislation in the field of chemicals management;
- Considering that the European Union started using the UN Global Harmonized System for the Classification and Labeling of Chemicals (GHS), it is necessary to make relevant changes in the legislation of Georgia;
- The active participation of various sectors (namely, healthcare, agriculture and environment) in the development of national pesticide management policies and regulations;
- Improving and/or enforcing pesticide legislation, especially to prevent the import, trade and use of dangerous pesticides;
- The Georgian government should adopt a law on "organic agriculture", the Ministry of Agriculture should establish an "organic agriculture unit", or at least a relevant department, which will guide the development of organic agriculture in the country.

Recommendations for the introduction of alternative methods

- Provide economic incentives for agro-ecological control alternatives and other, for using less hazardous alternatives proposed by agricultural research;
- Carry out market inspections to identify the products that are fraudulently sold as "organic" products;
- Agitate/lobby the registration of products that have low risk if such alternatives are feasible and available to facilitate the use of biological controls;
- Develop a national program to promote agroecological alternatives for pest, weed and disease control;
- Register effective, alternative for plant protection measures to change HHPs;
- Management of government programs to support organic agriculture in Georgia, such as subsidy programs, potential development programs, etc.;
- Relations with international organizations and other counties governments on issues related to organic agriculture in the country;
- Facilitate cooperation at all levels, especially in the field of hazardous pesticides and exchanging of information and experience in the field of alternative practices.

Recommendations for public awareness

- First of all it is necessary to inform the farmers about the dangers caused by the mismanagement of pesticides for getting closer to the European Commission regulations, for implementing the existing legislation and regulations and for solving the problem in general;
- Develop and implement training programs for pesticide retailers and consumers on choosing the correct products (including particularly hazardous ones) and their proper use, as well as methods of using protective equipment, low concentrations or various formulations;
- Expand the public awareness, especially to reduce risks associated with HHPs;
- Raising the qualification of farmers: Farmers must have sufficient knowledge and qualifications, also should have complete information about organic farming, organic products, be able to determine what prospects this field has and how to transfer the farm to organic, etc.;
- It is important to motivate farmers to produce environmentally friendly products that are beneficial to health and the environment, as well as to raise consumer awareness of the benefits of these products and to build trust in organic producers, as any new concept.

The recommendation on phase-out of HHPs

- Develop a national plan for the reduction and phase-out of HHPs. The plan should include pesticide reduction targets that can be assessed and controlled at local and state levels; The HHPs, especially those forbidden by WHO, international organizations and conventions, should be banned and replaced with alternative plant protection products;
- Implement the National Register of Certified Organic Operators in Georgia;
- Promoting the development of professional certified services for the use of pesticides to avoid individual farmer services;
- Carrying out continuous monitoring after registration of pesticides, including their quality and use;
- Enhance periodic review of registered pesticides and starting the registration process when high risks are indicated by monitoring, field surveillance, new scientific information, or new information from suppliers, such as relatively large number of adverse events, changes in formulation, packaging, or use require registration changes;
- Control of compliance of pesticide labelling in the country with national regulations and international standards;
- Regulate the sale of the minimum amount of pesticides packaged for small farms at the state level and set packaging standards for major importers, taking into account small-volume packaging;
- Improving inter-governmental cooperation, especially the role of the health sector in regulating the use of pesticides, their rational use and risk reduction.

The recommendations for control of pesticide wastes

- It is necessary to assess the current state of historically removed and stored chemicals, arrange locations and conduct monitoring. also, the phytoremediation of soils where these pesticides have been stored during the years should be carried out;
- In addition to old waste, the rules for disposal and utilization of pesticide wastes and containers should be developed.

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8. Annex 1- List of pesticides registered in Georgia

Formulation codes			
BR	Briquette	**P**	Powder

CS	Capsule suspension	**RB**	Bait
DC	Dispersible Concentrate	**SE**	Suspo-emulsion
DS	Powder for dry seed treatment	**SL**	Soluble concentrate
DP	Dustable powder	**SC**	Suspension Concentrate
DP	Dustable powder	**SP**	Water soluble powder
EC	Emulsifiable Concentrate	**SG**	Water soluble granule
EO	Emulsion, water in oil	**TB**	Tablet
EW	Emulsion, oil in water	**UL**	Ultra-low volume liquid
FS	Flowable concentrate for seed treatment	**ULV**	Ultra- low volume suspension
G	Granules	**VP**	Vapour releasing product
GR	Granule	**WG**	Water dispersible granule
OD	Oil dispersion	**WS**	Water dispersible powder for slurry treatment
OP	Oil dispersible powder	**WP**	Wettable powder
LS	Solution for seed treatment	**ZC**	A mixed formulation of CS and SC

Product Name	Active Ingredient (AI)	Concentration	Formulation
Acaricide			
Pyranica	**Tebufenpyrad**	**200g/kg**	**WP**
Oberon 240	**Spiromesifen**	**240 g/l**	**SC**
Oberon Rapid 240	**Spiromesifen + Abamectin**	**228.6 g/l + 11.4 g/l**	**SC**
Acramite 480	**Bifenazate**	**480 g/l**	**SC**

Insecticide			
Nurelle D	Chlorpyriphos + Cypermethrine	500 g/l +50 g/l	EC
Karate Zeon 050	Lambda-cyhalothrin	50 g/l	CS
Cypersan	Cypermethrin	250 g/l	EC
Kaiso	Lambda cyhalothrin	50g/kg	WG
Pyrinex Super	Chlorpyrifos + Bifenthrin	400 g/l +20 g/l	EC
Delta 12,5	Deltamethrin	125 g/l	EC
Talstar 10	Bifenthrin	100 g/l	EC
Avaunt	Indoxacarb	150 g/l	EC
Fastac	Alpha-cypermethrin	100 g/l	EC
Actellic 500	Pirimiphos-methyl	500 g/l	EC
Karate 050	Lambda cyhalothrin	50 g/l	EC
KUNG-FU	Lambda cyhalothrin	50 G/L	EC
Proteus 110	Thiacloprid + Deltamethrin	100 g/l +10 g/l	OD
Calypso 480	Thiacloprid	480 g/l	SC
Dingo 40	Dimethoate	400 g/l	EC
Valsaciper	Cypermethrin	250 g/l	EC
Imidor Max	Imidacloprid	700 g/kg	WG
Alpac 100	Alpha-cypermethrin	100 g/l	EC
Pyrinex	Chlorpyrifos	480 g/l	EC
ACE	Acetamiprid	200 g/kg	SP
Ultratox	Thiacloprid	480 g/l	SC
Malafos	Malathion	500 g/l	EC
Zinc Phosphide	Zinc Phosphide	800 g/kg	P
Actara 25	Thiamethoxam	250 g/kg	WG
Proclaim 05	Emamectin benzoate	50 g/kg	SG
Confidor Maxi 70	Imidacloprid	700 g/kg	WG
Valsarel	Chlorpyrifos + Cypermethrin	500 g/l+50 g/l	EC
Valsamba	Lambda- cyhalothrin	50 g/l	EC
Lannate 20	Methomyl	200 g/l	SL
Mavrik	Tau-fluvalinate	240 g/l	EW
Sipcamol E	Paraffin oil	80 %	EO
Talav 20	Tebufenpyrad	200 g/kg	WP
Super Hektametrin 100	Alfa-cypermethrin	100 g/l	EC
Force 1,5 G	Tefluthrin	15 g/kg	GR
CYRUX 25	Cypermethrin	250 g/l	EC
Nomolt	Teflubenzuron	150 g/l	SC
Confidor 200	Imidacloprid	200 g/kg	SL
Algamek 1,8	Abamectin	18 g/l	EC
Best Alfa 100	Alpha-cypermethrin	100 g/l	EC
EFDAL ALFATRIN 100	Alpha-cypermethrin	100 G/L	EC
EFDAL FOSETRINE 500	Chlorpyrifos + Cypermethrin	500 G/L +50 G/L	EC
Decis Fluxx 25	Deltamethrin	25 g/l	EC
Antihrusch 200	Bifentrin + Imidaclopride	100 g/l +100 g/l	SC
Pirifos 48	Chlorpyrifos	480 g/l	EC
Perfecto 17,5	Imidacloprid + Lambda Cyhalothrin	125 g/l +50 g/l	SC
Herold	Diflubenzuron	240 g/l	SC

Chlorpirivit –Agro	Chlorpyrifos + Cypermethrin	500 g/l +50 g/l	EC
Antikolorad	Imidacloprid + Lambda-cyhalothrin	150 g/l +50 g/l	SC
Dimevit	Dimethoate	400 g/l	EC
Brend D 550	Chlorpyrifos + Cypermethrin	500 g/l +250 g/l	EC
Hektas Priban 240	Chlorpyrifos	240 g/l	ULV
EFDAL LAMTORIN 5	Lambda- cyhalothrin	50 G/L	EC
Belt 480	Flubendiamide	480 g/l	SC
Hektas Deltharin 12,5	Deltamethrin	12,5 g/l	ULV
Movento 100	Spirotetramat	100 g/l	SC
Yongphos	Aluminium phosphide	570 g/kg	TB
Alban 25	Chlorpyrifos	250 g/kg	WP
Alpgor	Dimethoate	400 g/l	EC
Goldplan 20	Acetamiprid	200 g/kg	SP
EFDAL AFITRID 20	Acetamiprid	200 g/kg	SP
EFDAL DELMETRIN 25	Deltamethrin	25 G/L	EC
Insectoil Key	Paraffin oil	79 %	EC
Coragen	Chlorantraniliprole	200 g/l	SC
Ampligo 150	Chlorantraniliprole + Lambda-cyhalothrin	100 g/l +50 g/l	ZC
EFDAL KIMETRIN 25	Cypermethrin	250 G/L	EC
EKO OIL SPRAY	Paraffin mineral oil	820 g/l	EW
Alarm	Alpha-Cypermethrin	100 g/l	EC
Ahead	Acetamiprid + Cypermethrin	16 g/l +72 g/l	EC
Vento	Pyriproxyphen	100 g/l	EC
Kaiser	Indoxacarb	150 g/l	SC
PASCAL 20	Acetamiprid	200 g/kg	SP
Armor	Acetamiprid + Lambda-Cyhalothrin	200 g/l +150 g/l	SC
Matador 250	Cypermethrin	250 g/l	EC
Rocket 20	Acetamiprid	200 g/kg	SP
Arvilmec	Abamectin	18 g/l	EC
Alsystin 480	Triflumuron	480 g/l	SC
Applaud 25	Buprofezin	250 g/l	SC
Best Siper 25	Cypermethrin	250 g/l	EC
Phostoxin, Palletes	Aluminium Phosphide	560 g/kg	TB
Nuprid 200	Imidacloprid	200 g/l	SL
Sipcamol E	Paraffin oil	80 %	EO
Bestgol 20	Esfenvalerat	200 gl	EC
Mensban 4	Chlorpyrifos-ethyl	480 g/l	EC
Sivanto Prime 200	Flupyradifurone	200 g/l	SL
Antiklesch Max	Pirimiphos-methyl + Pyridaben + Acetamiprid	200 g/l +150 g/l+50 g/l	EC
FAS	Alpha-cypermethrin	100 g/l	SC
Kral 250	Cypermethrin	250 g/l	EC
Sarban 24	Chlorpyrifos	240 g/l	ULV
Lambda - CY	Lambda-cyhalothrin	50 g/l	EC
Renova 25	Thiamethoxam	250 g/kg	WG
Plenum 50	Pymetrozine	500 g/kg	WG

Petra 5	Lambda-cyhalothrin	50 g/l	EC
CYRUX 25	Cypermethrin	250 g/l	EC
Sitrin	Cypermethrin	500 g/l	EC
Delfos 5	Chlorpirifos	50 g/kg	GR
Demetra	Dimethoate	400 g/l	EC
temp 20	Acetamiprid	200 g/kg	wp
Spray Oil 11 E	Paraffin Oil	848 g/l	EC
Tezkarp 150	Indoxacarb	150 g/l	SC
Habla 100	Bifenthrin	100 g/l	EC
Nivathion 60	Malathion	650 g/l	EC
Imidor D	Imidacloprid	700 g/kg	WG
Malathion EM % 65	Malathion	650 g/l	EC
Ballista	Alpha-cypermethrin	100 g/l	EC
Buffalo	Chlorpyrifos + Bifentrin	400 g/l +20 g/l	EC
Alfamilin 17.6	Alpha-cypermethrin + Diflubenzuron	80 g/l +96 g/l	SC
Belt Expert 480	Flubendiamide + Thiacloprid	240 g/l +240 g/l	SC
Starkle	Dinotefuran	200 g/kg	SG
Alban 4	Chlorpyrifos-ethyl	480 g/l	EC
D66	Deltamethrin	25 g/l	EC
BI 58 Top	Dimethoate	400 g/l	EC
Kura Kura	Bifenthrin	100 g/l	EC
Battalion 100	Bifenthrin	100 g/l	EC
Locslay 240	Chlorpirifos	240 g/l	ULV
Fendi	Bifenthrin	100 g/l	EC
Fury 10	Zeta-cypermethrin	100 g/l	EW
Awacant	Indoxacarb	150 g/l	SC
Polimethrin 10	Alpha-cypermethrin	10 g/l	ULV
Jetsis 2,5	Deltamethrine	25 g/l	EC
Degesh Magtoxin	Magnesium Phosphide	66%	TB
Degesch Plate	Magnesium Phosphide	56%	TB
Tenchant Plus	Chlorpyrifos + Bifentrine	400 g/l +20 g/l	EC
Medal Gold	Thiamethoxam+ Lambda cyhalothrin	141 g/l +106 g/l	SC
Lamdex	Lambda-cyhalothrin	50 g/l	SC
Seizer	Bifenthrin	100 g/l	EC
Ovipron 2000	Paraffin mineral oil	800 g/l	EC
Ritmus	Deltamethrin	25 g/l	EC
Bermectine	Abamectin	18 g/l	EC
Trinol-2	Paraffin Mineral oil	700 g/l	EW
Ciprin	Cypermethrin	250 g/l	EC
Rivomethrin 25,	Cypermethrin	250 g/l	EC
Priban 4.	Chlorpyiriphos-methyl	480 g/l	EC
Deltharin 2,5	Delthamethrin	25 g/l	EC
Borey Neo	Alpha-cypermethrin + Imidacloprid + Clothianidin	125 g/l +100 g/l +50 g/l	SC
Insectoil Key	Paraffin oil	79 %	EC

Sumi-Alpha 5	Esfenvalerate	50 g/l	EC
BEKCHI 5	Emamectin benzoate	50 g/kg	SG
Hypnose 05	Emamectin benzoate	50 g/kg	SG
Mgphos AL 56%	Aluminium phosphide	560 g/kg	TB
CALIBRI	Alpha-cypermethrin	100 g/l	EC
SPODHEL	Emamectin benzoate	50 G/KG	SG
GLADIUS	Bifentrin	100 g/l	EC
EFDAL EMABEN 5	Emamectin benzoate	50 g/kg	SG
Komfidridi	Imidacloprid	700 g/kg	WG
Hero 70	Imidacloprid	700 g/kg	WG
Saheb	Clorpyrifos +Cypermethrin	500 g/l +50 g/l	EC
Mist	Thiamethoxam	250 g/kg	WG
Lock-5	Lambda-Cyhalothrin	50 g/l	EC
Klip	Emamectin benzoate	50 g/kg	WG
Alfa-Life	Alpha-Cypermethrin	100 g/l	EC
Byte	Bifenthrin	100 g/l	EC
Eforia 247	Lambda- cyhalothrin +Thiamethoxam	106 g/l +141 g/l	ZC
TUNCHII 150	Indoxacarb	150 G/L	SC
POTEGON 20	Acetamiprid	200 g/kg	SP
Rockypso	Thiacloprid	240 g/l	OD
Mosetam 20	Acetamiprid	200 g/kg	SP
KUPPON 800	Parafin oil	800 G/L	EC
Integral 5	Lambda-Cyhalotrin	50 g/l	EC
Menspan	Chlorpyrifos	500 g/l	EC
OLEOLUQ	Parafin oil	830 G/L	EC
Dursban	Chlorpyriphos	480 g/l	EC
Pyroelectra 48	Chlorpyrifos	480 g/l	EC
Grand 5	Lambda - cyhalothrin	50 g/l	EC
Dekagard 25	Deltamethrine	25 G/L	EC
Hektas Deltharin 25	Deltamethrin	25 g/l	ULV
Boycott	Chlorpyrifos + Cypermethrin	500 g/l +50 g/l	EC
lorcan	Cypermethrin	250 g/l	EC
Fibula	Metaldehyde	60 g/kg	GR
Siltac	Polyalkyleneoxide modifided heptamethyltrisiloxane	70-90 %	EC
Boldist Delux 2,5	Deltamethrin	25 g/l	EC
Porselen	Emamectin Benzoate	50 g/kg	SG
Abamet	Abamectin	18 g/l	EC
Dicaprion	Abamectin	18 g/l	EC
Brandon	Emamectin benzoate	50 g/kg	SG
Sniper	Spirodiclofen	240 g/l	SC
Orion	Emamectin benzoate + Indoxacarb	53 g/l +106 g/l	SC
Pyrate	Tebufenpyrad	200 g/kg	WP
Demetrina 25	Deltamethrin	25 g/l	EC
TOP GUN 5	Emamectin benzoate	50 g/kg	SG
Kornilofos 50	Pirimiphos-methyl	500 g/l	EC

Shenphos	Aluminium phosphide	570 g/kg	TB
Contest	Abamectin	18 G/L	EC
Ancora 5	Lambda-cyhalothrine	50 g/l	EC
Surrender 5	Emamectin benzoate	50 g/kg	SG
Wanguard	Dazomet	970 g/kg	GR
Alopec	Abamectin	18 g/l	EC
Imidamex	Imidacloprid	700 g/kg	WG
Trebon	Etofenprox	287.5 g/l	EC
ABC Super	Abamectin	50 g/kg	WG
Star-20	Acetamiprid	200 g/kg	SP
Sultan	Imidacloprid	200 g/l	SL
Deltadog	Deltamethrine	25 G/L	EC
Chemol	Paraffin mineral oil	800 g/l	EC
Transform	Sulfoxaflor	500 g/l	WG
Tabu	Imidacloprid	500 g/l	SC
AA Altac	Alpha-cypermethrin	100 g/l	EC
Bronx	Mineral Oil	980 g/l	EC
Indox 30	Indoxacarb	300 g/kg	WG
Imidashans	Imidacloprid	200 g/l	SL
Karatoshans	Lambda-Cyhalothrin	50 g/l	EC
Shansilin	Diflubenzuron	800 g/kg	WG
Exirel	Cyantraniliprole	100 g/l	SE
Agroplan 20	Acetamiprid	200 g/kg	SP
Devaplan 20	Acetamiprid	200 g/kg	SP
Surround	Calcined kaolin – calcined aluminium silicate	950 g/kg	WP
AA TEBU 20	Tebufenpyrad	200g/kg	WP
Astral	Abamectin	50 g/l	EC
Aldex	Alpha-cypermethrin	100 g/l	SC
Actek, Miticide	Tebufenpyrad	200 g/kg	WP
Insecticide - Acaricide			
Sammaite	Pyridaben	200 g/kg	WP
MAIT KILLER	Pyridaben	200 g/kg	WP
Rhamses 20	Pyridaben	200 g/kg	WP
Enigma 20	Pyridaben	200 g/kg	WP
ORDUS 5%	Fenpiroximate	50 G/L	SC
Apollo	Clofentezine	500 g/l	SC
Fos-Bi	Dimethoate	400 g/l	EC
Seldony 20	Tebufenpyrad	200 g/kg	WP
Hektolineum	Mineral oil	700 g/l	OE
Poligor	Dimethoate	400g/l	EC
Takeoff 100	Bifenthrine	100 g/l	EC
Exitox	Hexythiazox	100 g/kg	WP
Contier	Spirodiclofen	240 g/l	SC
Zonder 100	Bifenthrine	100 g/l	EC
EFDAL TEBUSAI	Tebufenpyrad	200 g/kg	WS
Efedor-Oil	Imidacloprid + Mineral oil	4 g/l+704 g/l	SC

EFDAL PIRDEN 20	Pyridaben	200 g/kg	WP
EFDAL KEMIDON	Dimethoate	400 G/L	EC
EFDAL SUNOL 70, SUMMER OIL	Mineral oil	700 G/L	EO
Vertimec 018	Abamectin	18 g/l	EC
Ortus 5	Fenpyroximate	51,2 g/l	SC
Vertek	Abamectin	18 g/l	EC
Tina	Abamectin	18 g/l	EC
Vertamectin Forte 50	Abamectin	50 g/kg	WG
Biological preparations (insecticide, fungicide, acaricide)			
Lepidin	Bacillus thuringiensis, var. kurstaki, strain BA1-351, spore-crystalline complex	BA-2000 a.u/mg	SC
Bactofit, BA 10000 IU/ml	Bacillus substilis strain IPM-215	Titer no less 2 bn spore/ml	SC
Phytosporin -M	BBacillus subtilis strain 26 Д	no less 2 bn spores and cells/g	P
Trianum G	Trichoderma harzianum	T-22, 1,5x 10^8 CRU/g	GR
Nemycel	Steinernema feltiae	100g/kg, 2x10^5 nematodes/g	P
Nostalgist BL	Beauveria bassiana strain	Bb -1, 1.5% , 1x10^8 CFU/ml.min	SL
Spintor	accinomycetes Saccharopolyspora spinosa	240 g/l	SC
Serenade ASO 1.34%	Bacillus Amyloliquefaciens, strain QST 713	Minimum of 1x10^9 CFU /g	SC
Bitoksibacillin	Bacillus thuringiensis, var. thuringiensis spore-crystalline complex & Exotoxin	0.6-1%	P
BIOinsect 2	Beauveria bassiana strain 71666,10%	1×10^9, CFU spores/ml	SC
Nimbecidine	Azadirachtin	0,3 g/l	EC
Ovnier	Ampelomyces quisqualis. Strain Aq 1	1.5%, 2x10^6 CFU	SL
Cedriks	Pseudomonas florescenss. Strain Pf-1 MTCC 5671	1.5% 1X10^8 CFU	SL
PMV-01	Pepino mosaic virus, strain CH2	Isolate 1906>5x10^5virus particles /per µL PMV-01	SC
Bover-Ge	Beauveria bassiana strain N-024 (IMI 501797)	5.5x10^{10} CFU/g	SC
Lepidocide	Bacillus thuringiensis var. kurstaki (spore crystalline complex)	Bioactivity 2000 IU/mg	SC
Biocatena	Trichoderma Koningii strain B-7 MDI	5x 10^9 spore/ml	SC

TERRA NEEM OIL	AZADIRACHTINE (NEEM OIL)	0,3 ML/L	WS
Miticide, Bio-Die®	Agremonine + Berberine + Ricinine; a-Terthienil 3,50 %	3,5 %+2,20 %+2,8 %	AE
Prograniс® Neemacar Miticide	Neem extrac azadirachta indica + Cinnamon extract Cinnamonum zeylanicum	55 % + 15 %	CE
Prograniс® Gamma	Garlic extract - allium sativum + Chilly pepper extrac +Cinnamon extract - Cinnamonum zeylanicum	25 % +25 % +10 %	SL
Prograniс® Mega	Creosote Bush Extract- Larrea triddentata	95 %	SL
Prowet®Ovi-Die	Dioctyl sulfosuccinate sodium salt	Potassium salts of fatty acids from neem 70 %	SL
Timorex Gold	Tea Tree Oil, Extract of Melaleuca Alternifolia,	23,8 %	EC
Agrocatena	Bacillus subtilis, strain B-12 AS, Bioactivity-10000 IU/ml	Titerno less 2 bn spore , CFU/ m	SC
Turingen	Bacillus thuringiensis var. thuringiensis BA 2, BA 1500 IU/mg	Titerno less 20 bn spore/gr, exotoxin content 0.6– 1.0 %	SC
Beltirul	Bacillus thuringiensis, var. Kurstaki, strain PB-54, 32%)	$32*10^6$ IU/g	WP
Antario KAB	Bacillus thuringiensis, var Kurstaki +Abamectin	1,4 % + 0,1 %	WP
Elan	Emamectin Benzoate	57 g/kg	WG
Target 1,5 %	Pyrethrin, Chrysanthemum cinerariifolium	1,5%	EW
Phytoverm	Aversectin C	50 g/l	EC
Raptor	Azadirachtin (Neem Azadirachta indica seed extract)	3%	EC
Plant Growth Regulator			
GibGro 20%	Gibberelic Acid	200 g/kg	TB
Regalis	Prohexadione Ca	100 g/kg	WG
EFDAL BLUEGIB 20	Gibberelic Acid	20 G/L	SL
Zerebra Agro	Colloidal silver +Polyhexamethylene guanidine hydrochloride	500 mg/l +100 mg/l	SL
MEGAFILL TABLET	Gibberelic Acid	1 G/TAB	TB
ABG SUNN	Methylciclopropen	3,3 %	VP
Regalis Plus	Prohexadione Ca	100 g/kg	WG
Gibb 3	Gibberelic Acid	100 g/kg	TB
Gold Gibb	Gibberellic acide	20 g/l	SC
Atonik	Sodium p-Nitrophenolate +Sodium o-Nitrophenolate +Sodium 5-Nitroguaiacolate	3g/l +2 g/l +1 g/l	SL
Bonzi 004	Paclobutrazol	4 g/l	SC

Agro Gibb	Gibberellic Acid	45 g/l	SL
Novosil	Tri terpene acids	10 %	SL
Giberkey	Gibberellic Acid	45 g/l	TB
Kudos	Prohexadione- Calcium	100 g/kg	WG
Pheromone			
Ipsowit®	Ipsdienol+2-Methyl-3-buten-2-ol		RB
Acuwit®	Ipsdienol + Cis-Verbenol		RB
Sexovit®	Ipsenol+2-Methyl-3buten-2-ol		RB
Tomowit®	Alpha-pinene+P-Hydroxybenzoic Acid+Ethanol		RB
Tutabs, 990 g/kg	EZZ-3,8,11-Tetradecatrienyl Acetate + EZ-3,8-Tetradecadienyl acetate	95 % +5%	RB
Pherodis , Dispenser	E,Z,Z-3.8.11Tetradecatrien-1-yl acetate+E,Z-3.8Tetradecadien-1yl acetate	0.071%, 0,5 mg/ per bait luring, 714 mg/kg	RB
Shin-Etsu MD LTT, Dispenser	(E,Z)-7,9-Dodecadien-1-yl acetate	792 g/kg	RB
Shin-Etsu MD CTT, Dispenser	(E,E)-8,10-Dodecadien-1-ol +1-Dodecanol + 1-Tetradecanol	573 g/kg +297 g/kg +71 g/kg	RB
Halhal	Methyl (E,E,Z)-2,4,6-decatrienoate +Murgantiol	75% +25%	RB
HERCON®LURETAPE®BMSB 2- Component Lure	Ethyl (E,E,Z)-2,4,6-decatrienoate +Murgantiol	125 mg/Lure +10 mg/Lure	RB
PHEROCON®BMSB KIT	Methyl (E,E,Z)-2,4,6-decatrienoate +Murgantiol	10 g/kg +2.94 g/kg	RB
Cydawit®	(E)-11-Hxadecenal + (Z)-11-Hxadecenal, 0,7 g/dispenser	0,003 g/lure	RB
TUTABS	EEZ-3,8,11-Tetradecatrienyl Acetate + EZ-3,8-Tetradecadienyl Acetate	95% +5%	RB
Halhal	Methyl (E,E,Z)-2,4,6-decatrienoate +Murgantiol	240 mg per lure +80 mg per lure	RB
P588-Combo Halyomorpha halys (BMSB Combo)	Methyl (E,E,Z)-2,4,6-decatrienoate + Murgantiol	80 mg/Lure +5 mg/Lure	RB
Qlure-GRM	(Z)-8-dodecen-1-ol acetate, (E)-8- dodecen-1-ol acetate, (Z)-8-dodecen-1-ol	2,001 g/kg, 0,276 g/kg, 0,023 g/kg	RB
Qlure HAH	Ethyl (E,E,Z)-2,4,6-decatrienoate +Murgantiol	125 mg/Lure +10 mg/Lure	RB
Ipsacu-Tripheron	Ipsenol-2-methyl-6-methylene-7-octen-4-ol + cis-Verbenol (1S,2S) -4.6.6-Trimethylbicyclo [3,1,1] hept -3-en-2-ol + Ipsdienol -2-Methyl-6-methylen-2,7-octadien-4-ol	50mg/lure +50 mg/lure+50 mg/lure	RB

Trifferon® ipstip, dispenser	2-methyl-3-butene-2-ol, cis-verbenol, ipsedienol (In one dispenser)	1500 mg ±10%, 100 mg±10%, 8 mg±10%	RB
Fungicide			
Melody Duo 66,8	Iprovalicarb + Propineb	55 g/kg +613 g/kg	WP
Polyram DF	Methiram	700 g/kg	WG
Delan	Dithianon	700 g/kg	WG
Acrobat MZ	Mancozeb + Dimethomorph	600 g/kg +90 g/kg	WG
Ridomil Gold MZ 68	Mefenoxam + Mancozeb	40 g/kg +640 g/kg	WG
Bravo 500	Chlorothalonil	500 g/l	SC
Alto Super 330	Propiconazole + Cyproconazole	250 g/l +80 g/l	EC
Cuproflow	Copper oxychloride	661,38 g/l (377,5 g/l as copper)	SC
Metalaxan	Mancozeb + Metalaxyl	640 g/kg + 80g/kg	WP
Teldor 50	Fenhexamid	500g/kg	WG
Nativo 75	Trifloxystrobin + Tebuconazole	250g/l+500g/l	WG
Zato Star 520	Trifloxystrobin + pyrimethanil	120 g/l+400 g/l	SC
Rex Duo	Epoxiconazole + Thiophanate-methyl	187 g/l+310 g/l	FS
Tercel	Dithianon + Pyraclostrobin	120 g/kg +40 g/kg	WG
Collis	Kresoxim-methyl + Boscalid	100g/l +200g/l	SC
Sphinx Extra	Dimetomorph + Folpet	113 g/kg+600 g/kg	WG
Pen-Force 100	Penconazol	100 g/l	EC
Mancosil 80	Mancozeb	800g/kg	WP
Dimanco 9+60	Dimethomorph + Mancozeb	90 kg/ha +600 g/kg	WP
Mancosh 80	Mancozeb	800g/kg	WP
Mancosh Duo	Mancozeb + Metalaxyl M	640 kg/ha + 40 kg/ha	WG
Rodolit Super	Tebuconazole	250 g/l	EW
Pen-Force 100	Penconazol	100 g/l	EC
Corz Super 50	Mancozeb + Cymoxanil	450 g/kg +50 g/kg	WP
Valsalaxyl	Metalaxyl + Mancozeb	80 g/kg +640 g/kg	WP
Cuperval 20	Copper sulphate + Calcium hydroxide	200g/kg exp. as Cu	WP
Iroco 40	Copper hydroxide	400 g/kg exp. as Cu	WG
Infinito 687,5	Fluopicolide + Propamocarb hydrochloride	62,5 g/l + 625 g/l	SC
Scala 400	Pyrimethanil	400 g/l	SC
Consento 450	Fenamidone + Propamocarb hydrochloride	75 g/l + 375 g/l	SC
Profiler 71,1	Fluopicolide + Fosetyl aluminium	44,4 g/kg + 666,7g/kg	WG
AIRONE	Copperoxychloride + Copper hydroxide	140 g/kg +140 g/kg	WG
Cuproxat	Tribasic Copper Sulfate	345 g/l, exp.as Cu 190 g/l	SC
Champion	Copper hydroxide	770 g/kg	WG

Curzate R	Copper oxychloride+ cimoqsanili	689,5 g/kg+42 g/kg	WP
Stroby 500	Kresoxim-methyl	500 g/kg	WG
Quadris 250	Azoxystrobin	250 g/l	SC
Score 250	Difenoconazole	250 g/l	EC
Topas 100	Penconazole	100 g/l	EC
SKAF	Difenoconazole	250 G/L	EC
Taspa 500	Difenoconazole + Propiconazole	250 g/l+250 g/l	EC
Previcur Energy 840	Propamocarb hydrochloride + Fosetyl aluminum	530 g/l +310 g/l	SL
Antracol 70	Propineb	700 g/kg	WP
Falcon 460	Spiroxamine + Tebuconazole + Triadimenol	250 g/l +167 g/l +43 g/l	EC
Zato 50	Trifloxystrobin	500 g/kg	WG
Prefekto 100	Penconazole	100 g/l	EC
Valsazeb	Mancozeb	800 g/kg	WP
Supper Copper	Copper Oxychloride	500 g/kg	WP
Antracol 70	Propineb	700 g/kg	WG
Topkonazol	Penconazole	100 g/l	EC
Strobstar	Kresoxim-Methyl	500 g/kg	WG
Leader	Dimethomorph + Mancozeb	90 g/kg +600 g/kg	WP
Universal	Metalaxyl + Mancozeb	80 g/kg +640 g/kg	WP
Ridonet MZ 72	Metalaxyl + Mancozeb	80 g/kg +640 g/kg	WP
Cupertine Super	Cymoxanil + Copper sulphate+Calcium hydroxide	30 g/kg +225g/kg exp.as Cu	WP
Cuperval Blue	Copper sulphate + Calcium hydroxide	200g/kg exp. as Cu	WP
abiga-piki	Cymoxanil + Copper sulphate+Calcium hydroxide	30 g/kg +225g/kg exp.as Cu	wx
Merpan	Captan	800 g/kg	WG
Poltiglia 20	Bordeaux mixture -Copper sulfate + Calcium hydroxide	20 % + exp. as copper 200 g/kg	WP
Avanguard	Mancozeb + Dimethomorph	600 g/kg +90 g/kg	WP
Botrin	Propamocarb-Hydrochloride	722 g/l	SL
Pinnacle	Penconazole	100 g/l	EC
Sprint 50	Mancozeb + Cymoxanil	450 g/kg +50 g/kg	WP
Rodolit Extra	Tebuconazole	800 g/l	WG
Tride	Trifloxystrobin	500 g/kg	WG
Progress	Kresoxim-methyl	500 g/kg	WG
Chorus 75	Cyprodinil	750 g/kg	WG
Quadris Max 593,5	Azoxystrobin + Folpet	93,5 g/l +500 g/l	SC
Switch 62,5	Cyprodinil + Fludioxonil	375 g/kg+250 g/kg	WG
Fantic F	Benalaxyl-M + Folpet	37,5 g/kg +480 g/kg	WG
Valsalaxyl	Metalaxyl + Mancozeb	80 g/kg +640 g/kg	WP
Acrobat Top	Dimethomorph + Dithianon	150 g/kg +350 g/kg	WG
Cantus	Boscalid	500 g/kg	WG
Vivando	Metrafenone	500 g/l	SC
Signum	Boscalid + Pyraclostrobin	267 g/kg +67 g/kg	WG

Cabrio Top	Metiram + Pyraclostrobin	550 g/kg +50 g/kg	WG
MANGRIF 75	Mancozeb	750 g/kg	WG
Protect	Copper Hydroxide	770 g/kg	WP
Soloram	Methiram	700 g/kg	WG
Cypro Plus	Cyprodinil	750 g/kg	WG
Copper Sulphate Pentahydrate	Copper Sulphate	980-990 g/kg	CP
MANCOLAXYL	Mancozeb +Metalaxyl	640 g/kg +80 g/kg	WP
CUPROFIX 30 DISPERSS	Bordeaux Mixture + Mancozeb	461,6 g/kg (as Copper 120 g/kg) +300 g/kg	WG
Fossil 70	Dithianon	700 g/kg	WG
Broader 30	Difenoconazole + Propiconazole	150 g/l +150 g/l	EC
Applore 25	Difenoconazole	250 g/l	EC
Placol 70	Propineb	700 g/kg	WP
Drench	Kresoxim-methyl	500 g/kg	WG
Retengo	Pyraclostrobin	200 g/l	EC
Luna Sensation 500	Fluopyram + Trifloxystrobin	250 g/l +250 g/l	SC
Copper Sulphate	Copper Sulphate	980 g/kg	P
Nimbus 24	Myclobutanil	245 g/l	EC
EFDAL AKROBOT MZ	MANCOZEB + DIMETOMORPH	600 g/kg +90 g/kg	WP
EFDAL ISOFOSAT 48	GLYPHOSATE (ISOPROPYLAMINE SALT)	480 G/L	SL
EFDAL PECOZOL 100	Penconazole	100 G/L	EC
Skyner 500	Chlorothalonil + Cupper oxychloride	250 g/kg +250 g/kg	WP
Pergado CU 27	Mandipropamid + Copper Oxychloride	25 g/kg +245 g/kg	WG
Nando 500	Fluazinam	500 g/l	SC
Ondar	Captan	500 g/kg	WP
Draco Blue 80	Mancozeb	800 g/kg	WP
Tanos	Famoxadone + Cymoxanil	250 g/kg +250 g/kg	WG
Arbalet 75	Tebuconazole	750 g/kg	WG
Korus 75	Cyprodinil	750 g/kg	WG
Favorit 70	Propineb	700 g/kg	WP
Ordan	Copper oxychloride + Cymoxanil	689 g/kg +42 g/kg	WP
Rayok	Difenoconazole	250 g/l	EC
Propconazole	Propiconazole	250 g/l	EC
METCopper	Copper oxychloride + Metalaxyl	420 g/kg +80 g/kg	WP
TriMax	Triadimenol	250 g/l	EC
Gart	Copper hydroxide	770 g/kg	WP
Zakhyst	Cymoxanil + Metalaxyl	250 g/kg +100 g/kg	WP
Jack Pot	Difenoconazole + Penconazole	200 g/l +100 g/l	EC
Armetil M	Mancozeb + Metalaxyl	640 g/kg + 80 g/kg	WP
EFDAL MACO M-45	Mancozeb	800 g/kg	WP
EFDAL CYMOXAZEB 50	Mancozeb + Cymoxanil	450 g/kg +50 g/kg	WP
Mikal Flash 75	Fosetyl Aluminium + Folpet	500 g/kg +250 g/kg	WG
EFDAL DONAZOLE 250	Difenoconazole	250 G/L	EC

EFDAL PRONEB 70	Propineb	700 g/kg	WP
Malzeb	Metalaxyl + Mancozeb	80 g/kg +640 g/kg	WP
Penkiler	Penconazole	100 g/l	EC
Hostrakol 70	Propineb	700 g/kg	WP
Karzep 50	Mancozeb + Cymoxanili	450 g/kg +50 g/kg	WP
Patamil 72	Metalaxyl + Mancozeb	80 g/kg +6 40 g/kg	WP
Maximum	Dimethomorph + Mancozeb	90 g/kg +600 g/kg	WP
Fullpas 100	Penconazoloe	100 g/l	EC
Alecto	Metiram + Cymoxanil	570 g/kg +48 g/kg	WG
EFDAL MANTALAX	Metalaxyl + Mancozeb	80 g/kg +640 g/kg	WP
EFDAL CAPTANIM 50	CAPTAN	500 g/kg	WP
Strazh	Cyprodinil	500 g/l	SC
Samshyt	Kresoxime-methyl + Difenoconazole	100 g/l +200 g/l	SC
Revus Top 500	Mandipropamid + Difenoconazole	250 g/l +250 g/l	SC
EFDAL PROCAR 722	PROPAMOCARB HYDROCHLORIDE	722 g/l	SL
EFDAL KRESDIT 50	Kresoxime-methyl	500 g/kg	WG
EFDAL LOKSBIN	TRIFLOXISTROBIN	500 g/kg	WG
HYDROMICRON 77	Copper Hydroxide	500 g/kg exp. as Cu	WP
EFDAL MOCAN	COPPER OXYCHLORIDE + CYMOXANIL	397,5 g/kg +42 g/kg	WP
BORDO SALDECO 20	COPPER SULFATE + CALCIUM HYDROXIDE	200 g/kg (EXP.AS Cu)	WP
Mystic 250	Tebuconazole	250 g/l	EW
Quartet 70	Thiopanate-methyl	700 g/kg	WP
Orvego	Dimethomorph + Ametoctradin	225 g/l + 300 g/l	SC
Nordox 75	Copper (I) oxide	86% (75% metallic copper)	WG
Embrelia 140	Izopyrazam +Difenoconazole	100 g/l +40 g/l	SC
Aliette 80	Fosethyl-Aluminium	800 g/kg	WP
Kobuz 100	Penconazole	100 g/l	EC
Geophite	Mixture of monopotassium phosphite and dipotassium phosphite	745 g/l (53% by weight)	SL
Kocide 2000	Copper Hydroxide	538 g/kg	WG
LANGRIF 75	Mancozeb	750 g/kg	WG
CORSEB	Mancozeb + Cymoxanili	680 G/KG +45 G/KG	WP
Admit	Acetamiprid + Lambda-cyhalothrin	16 g/l +30 g/l	EC
MASS CAPTAN	CAPTAN	500 G/KG	WP
Pasadoble 70	Fluopicolide +Propineb	50 g/kg +650 g/kg	WG
Atlet 750	Cyprodinil	750 g/kg	WG
Prius 400	Pyrimethanil	400 g/l	SC
Sallit 400	Dodine	400 g/l	SC
Sprinter 700	Dithianon	700 g/kg	WG
Doris	Azoxystrobin	250 g/l	SC
Carmen MZ	Dimethomorph + Mancozeb	90 g/kg +600 g/kg	WP

Rambler 50	Mancozeb + Cymoxanil	450 g/kg +50 g/kg	WP
Jako 50	Kresoxim-methyl	500 g/kg	WG
Unicorn DF	Tebuconazole + Sulphur	45 g/kg +700 g/kg	WG
Propacur˙ N	Propamocarb-HCL	772 g/l	SL
Thiram Granuflow	Thiram	800 g/kg	WG
Domark 10	Tetraconazole	100 g/l	EC
Cidely Top 140	Cyflufenamid + Difenoconazole	15 g/l +125 g/l	DC
Bordeaux Caffaro Blue	Bordeaux Mixture-Copper (II) Sulphate + Calcium Hydroxide	200 g/kg exp.as Copper	WP
Violet 72	Metalaxyl + Mancozeb	80 g/kg +640 g/kg	WP
Dinali 90	Cyflufenamid + Difenoconazole	30 g/l +60 g/l	DC
Azox	Azoxystrobin	500 g/kg	WG
Fobos 100	Penconazole	100 g/l	EC
Menta Inox	Penconazole	100 g/l	EC
Evakur	Propamocarb HCI	722 g/l	SL
Kambit	Kresoxim-methyl	500 g/kg	WG
Bordo Flow New	Copper sulphate+Copper hidroxide	124 g/l exp.es copper	SC
Ossiclor 50	Copper oxychloride	500 g/kg	WP
Figther Blu	Dimethomorph + Copper oxychloride	60 g/kg +400 g/kg	WP
Scorpion 250	Difenoconazole	250 g/l	EC
Safacol Combi 76	Propineb + Cymoxanil	70 g/kg +60 g/kg	WP
Ziraflo	Ziram	760 g/kg	WG
Bayomca	Triadimenol	250 g/l	EC
Borecaf	Copper (II) sulphate Calcium hydroxide	20% exp.as metallic copper	WP
Best Bakir 50	Copper oxychloride	50% exp.as metallic copper	WP
Melody Compact 49	Copper-oxychloride + Iprovalicarb	406 g/kg +84 g/kg	WG
Prosper 300	Spiroxamine	300 g/l	CS
Danon 700	Dithianon	700 g/kg	WG
Duet Forte 650	Dimethomorph + Folpet	150 g/kg +500 g/kg	WG
Zahisnik	Thiophanate-methyl	500 g/kg	SC
Celitel	Metalaxyl + Mancozeb	80 g/kg +640 g/kg	WP
Harbor 300	Difenoconazole +Propiconazole	150 g/l +150 g/l	EC
Foris	Flutriafol	250 g/l	SC
Affix 250	Azoxistrobin	250 g/l	SC
Sercadis	Fluxapyroxad	300 g/l	SC
Gurador	Trifloxystrobin	500 g/kg	WG
Syllit 40%	Dodine	400 g/l	SC
Scort 25%	Difenoconazole	250 g/l	EC
Mango	Mancozeb	800 g/kg	WP
M-2	Metalaxiyl + mancozeb	80 g/kg +640 g/kg	WP
EFDAL AKROBOT MZ	MANCOZEB + DIMETOMORPH	600 G/KG +90 G/KG	WP
Pesos 100	Penconazole	100 g/l	EC
SUPER DIANON 70	DITHIANON	700 G/KG	WG

Rubin 2	Tebuconazole	20g/l	DS
Myclofil	Myclobutanil	125 g/l	EC
Bordeaux Mixture, 20	Copper Sulphate + Copper Hydroxide	200 g/kg exp.es copper	WP
InterCaptan 50	Captan	500 g/kg	WP
Sulcal	Tetra cupric copper sulfate (content 200 g/kg copper metal)	678.4 g/kg	WP
Valbon	Benthiavalicarb-isopropyl +Mancozeb	17.5 g/kg +700 g/kg	WG
Delavit	Dithianon	350 g/l	SC
Mustang	Tebuconazole	430 g/l	SC
INDOFIL 72 BLUE	Mancozeb	720 G/KG	WP
POLIMET BORDO	Copper Sulphate + Calcium hydroxide	200 g/kg Copper	WP
Manage 15	Imibenconazole	150 g/kg	WP
MOXIMATE 505	Mancozeb + CYMOXANIL	465 G/KG +40 G/KG	WP
Heliocuivre	Copper hydroxide	as copper 400 g/l	SC
Areva Gold	Dimethomorph + Mancozeb	90 g/kg +600 g/kg	WG
Bestkur 25	Tebuconazole	250 g/l	EC
Rotundis	Azoxystrobin	250 g/l	SC
Cupper Chempion	Copper (II) Hydroxide	770 g/kg (500 g/kg as copper)	WP
Fosbel Extra 80	Fosetyl – Aluminium + Folpet + Cymoxanil	500 g/kg +250 g/kg +40 g/kg	WP
Talendo	Proquinazid	200 g/l	EC
EMSON	PROCHLORAZ	461 G/KG	WP
Benelus	Tebuconazole + Cyprodinil	125 g/l +187,5 g/l	EC
Karneol	Captan + Potassium phosphite, equivalent phosphoric acid 440 g/l	360 g/l +660 g/l	SC
Custodia	Tebuconazol +Azoxistrobin	200 g/l +120 g/l	SC
Folpan	Folpet	800 g/l	WG
Shavit F	Folpet + Triadimenol	700 g/kg +20 g/kg	WG
Algakol 70 %	Propineb	700 g/kg	WP
Fosbel 80	Fosetyl – Aluminium	800 g/kg	WP
Fosbel Plus	Fosetyl – Aluminium + Mancozeb	350 g/kg +350 g/kg	WP
Blue Bordo Disperss	Copper sulfate + Calcium hidroxide	as copper 200 g/kg	WG
Section	Boscalid + Pyraclostrobin	267 g/kg +67 g/kg	WG
Sakozeb M-45	Mancozeb	800 g/kg	WP
Acromen	Mancozeb + Dimethomorph	600 g/kg +90 g/kg	WP
PREVENT	PROPAMOCARB HYDROCHLORIDE	722 G/L	SL
TENNIS 360	HYMEXAZOL	360 G/L	SL
Banjo	Fluazinam	500 g/l	SC
Banjo Forte	Fluazinam+Dimethomorph	200 g/l+200 g/l	SC
Curzeb 50	Mancozeb g + Cymoxanil	450 g/k +50 g/kg	WP
Rhythm	Pyrimethanil	300 g/l	SC

Hektas Bordo 20	Copper sulphate + Calcium hidroxide	740g/kg	WP
Trooper 72	Mancozeb +Metalaxyl	640 g/kg +80 g/kg	WP
Expert Team	Copper oxychloride + Cymoxanil	397,5 g/kg +42 g/kg	WP
PLANET 72	METALAXYL + MANCOZEB	80 G/KG +640 G/KG	WP
PRIVATE 250	DIFENOCONAZOLE	250 G/L	EC
Ridonili	Metalaxyl + Mancozeb	100 g/kg +480 g/kg	WP
Topkazoli	Propiconazole	250 g/l	EC
Geoxe 500	Fludioxonil	500 g/kg	WG
Sercadis Plus	Fluxapyroxad + Difenoconazole	75 g/l +50 g/l	SC
Cymax	Mancozeb +Cymoxanil	640 g/kg +80 g/kg	WP
Relax	Mancozeb + Metalaxyl	640 g/kg +80 g/kg	WP
PITYO PRO	Famoxadone + Cymoxanil	225 g/kg +300 g/kg	WG
AKSIOMA 300	TEBUCONAZOLE + FLUTRIAFOL	225 G/L +75 G/L	SC
Valis M	Valifenalate + Mancozeb	60 g/kg +600 g/kg	WG
Valis F	Valifenalate + Folpet	60 g/kg +480 g/kg	WG
Cymbal	Cymoxanil	450 g/kg	WG
LIRA 680	METALAXYL M + MANCOZEB	40 G/KG +640 G/KG	WP
EFDAL BAKSUL	BORDEAUX MIXTURE (CALCIUM HYDROXIDE-COPPER (II) SULPHATE)	20% METALIC COPPER EQUIVALENT	WP
PENTOS 100	PENCONAZOLE	100 G/L	EC
Super Star	Mancozeb + Cymoxanil	450 g/kg +50 g/kg	WP
DIMECURE 500	Dimethomorph	500 g/l	SC
EFDAL BAKIROX 50	COPPER OXYCHLORIDE	500 G/KG	WP
EFDAL BAROX 77 %	COPPER HYDROXIDE	770 G/KG	WG
EFDAL GOZTASIM 25	COPPER SULPHATE	250 G/KG	WP
Mildicut,	Disodium phosphonate + Cyazofamid	250 g/l +25 g/l	SC
HELIOS 250	Difenoconazole	250 g/l	EC
Leimay	Amisulbrom	200 g/l	SC
TANCAP XTRA,	Captan	800 g/kg	WG
RAINCOZEB XTRA	Mancozeb	750 g/kg	WG
COPPER SULPHATE	COPPER (II) SULPHATE PENTAHYDRATE	980 G/KG	WP
EFDAL FENDOR 500	FENHEXAMID	500 G/L	SC
Bordotan 20	BORDEAUX MIXTURE (COPPER SULFATE + CALCIUM HYDROXIDE)	200 g/kg EXP.AS COPPER	WP
Menta Prelud	Pyrimethanil	300 g/l	SC
Bion 50	Acibenzolar-S-methyl	500 g/kg	WG
Bordeaux Mixture 15 %	Copper Sulphate + Copper Hydroxide	150 g/kg exp.es copper	WP
LACERTA MAXX	AZOXYSTROBIN +DIFENOCONAZOLE	200 G/L +125 G/L	SC
Copper 88	Copper oxychloride	877 g/kg (copper pure 500 g/kg)	WP

Cuprablau	Copper oxychloride	614 g/kg (350 g/kg expressed as copper)	WG
Protect-OH 50	Copper hydroxide	500 exp. as copper	WP
Grand MD	Dimethomorph + Mancozeb	90 g/kg +600 g/kg	WP
Zorvec Vinabel	Oxathiapiprolin + Zoxamide	40 g/l +300 g/l	SE
Koritus	Cyprodinil	500 g/kg	WG
Stager M-45	Mancozeb	800 g/kg	WP
EFDAL EXZUM 450	PROCHLORAZ	450 g/l	EC
Avalon 250	Tebuconazole	250 g/l	EW
Ganzo	Myclobutanil	125 g/l	EC
SHAOLIN XTRA	CYPRODINIL + FLUDIOXONIL	375 g/kg +250 g/kg	WG
LACERTA 250	AZOXYSTROBIN	250 g/l	SC
Scorpi	Difenoconazole	250 g/l	EC
COPPREX	COPPER OXYCHLORIDE +METALAXYL	350 g/kg +150 g/kg	WP
Funguran OH 50	Copper hydroxide	500 g/kg exp.as copper	WP
Funix 25	Difenoconazole	250 g/l	EC
Dithimega 75	Dithianon	750 g/kg	WG
ZZ Cuprotan 700	COPPER OXYCHLORIDE	700 G/L EXP.AS COPPER	SC
Miravis Duo 200	Difenoconazole + Pydiflumetofen	125 g/l +75 g/l	SC
Miravis Prime	Fludioxonil + Pydiflumetofen	250 g/l +150 g/l	SC
Certicor 50	Mefenoxam + Tebuconazole	20 g/l +30 g/l	SC
Ramin 30	Copper oxychloride	550 g/kg, exp.as copper 300 g/kg	DF
ANTALIA 250	Difenoconazole	250 G/L	EC
Azobin	Azoxystrobin	250 g/l	SC
Captanley	Captan	900 g/kg	WG
Graviton	Difenoconazole	250 g/l	EC
Permit	Penconazole	100 g/l	EC
Rock N Roll	Azoxystrobin + Difenoconazole	200 g/l +125 g/l	SC
Bellis	Boscalid + Pyraclostrobin	252 g/kg +128 g/kg	WG
Malakite	Dithianon + Pyrimethanil	250 g/l +250 g/l	SC
Dribbling	Copper oxychloride (metallic copper equivalent 500 g/kg)	877 g/kg	WP
Bluefox	Copper Hydroxide	350 g/kg + Metalaxyl 150 g/kg	WP
Baron	Copper hydroxide	770 g/kg	WP
Alligator	Dithianon	750 g/kg	WDG
Proton	Dimethomorph + Folpet	113 g/kg +600 g/kg	WDG
Radar Combi Flow	Penconazole + Pure Sulph	15 g/l +400 g/l	SC
Femida	Boscalid	500 g/l	SC
Bellona	Mancozeb + Metalaxyl	640 g/kg +80 g/kg	WP
Olympus	Tebuconazole	430 g/l	SC
Korzaquin 62,5	Cyprodinil + Fludioxonil	375 g/kg +250 g/kg	WG

BLUE DROP 20	BORDEAUX MIXTURE(COPPER SULPHATE + CALCIUM HYDROXIDE)	EQUIVALENT TO 200 G/KG COPPER	WP
TAN GOZTASI	COPPER SULPHATE PENTAHIDRATE	250 g/kg	WP
Fungicide, Copper-Count-N	Copper Diamonia Diacetate Complex	271,5 g/l, 93 g/l exp. as Cu	SL
Nixon	Mancozeb + Metalaxyl	640 g/kg +80 g/kg	WP
Felix	Tebuconazole	250 g/l	EC
Pandora	Bordeaux mixture, copper (II) supphate + calcium hydroxide	200 g/kg exp.as copper	WP
Caser Pro	Famoxadone + Cymoxanil	225 g/kg +300 g/kg	WG
Coremiks	Kresoxim-methyl + Boskalid	100 g/l +200 g/l	SC
ANBIMEX	EPOXICONAZOLE + PYRACLOSTROBIN	62,5 G/L +85 G/L	SE
Acbat MZ	Mancozeb + Dimethomorph	600 g/kg +90 g/kg	WP
Gold Cupper	Copper oxychloride + Metalaxyl	350 g/kg +150 g/kg	WP
Cymthane 24	Miclobutanil	245 g/l	EC
Tilsim 25	Tebuconazole	250 g/l	EC
Malvin	Captan	800 g/kg	WG
Agnicor	Pyrimethanil	300 g/l	
Zo Life	Copper sulfate	786 g/kg	WP
Redigo® Pro, FS 170	Prothioconazole +Tebuconazole	150 g/l +20 g/l	
Zermat	Azoxistrobin	250 g/l	SC
Prevex	Propamocarb Hydrochloride	722 g/l	SL
Corridor	Fenhexamid	500 g/l	SC
Oplot Trio	Difenoconazole + Tebuconazole + azoxistrobin	90 g/l +45 g/l +40 g/l	SC
Oplot	Difenoconazole + Tebuconazole	90 g/l +45 g/l	SC
Albacore	Copper sulfate	65,82 g/l equivalent to metallic copper	SC
Imperium,	Captan + Azoxystrobin	500 g/kg +100 g/kg	WG
Roder 80	Fosetyl aluminium	800 g/kg	WP
Violis,	Copper oxychloride	350 g/l	SC
AA Fos-Al 80	Fosetyl-aluminium	800 g/kg	WP
Lennox,	Boscalid +Pyraclostrobin	267 g/kg +67 g/kg	WG
Efecto,	Flutriafol	500 g/l	SC
Femida Xtra	Boscalid + Pyraclostrobin	252 g/kg +128 g/kg	SC
Metashans	Mancozeb + Metalaxyl	640 g/kg +80 g/kg	WP
Skoroshans	Difenoconazole	250 g/l	EC
Strobishans Pro	Azoxystrobin + Cyproconazole	200 g/l +80 g/l	SC
Kolosal	Tebuconazole	250 g/l	EC
Dodin Flo	Dodine	400 g/l	SC
Carpaz 50	Cyprodinil	500 g/kg	WG
Conrad	Azoxistrobin	250 g/l	SC
Dagroxi 50	Copper oxychloride	500 g/kg	WP
Malibu,	Cyprodinil	750 g/kg	WG

Felix Extra,	Tebuconazole	800 g/kg	WG
Fosetyl Xtra,	Fosetyl-aluminium	800 g/kg	WG
Proyza 72	Propamocarb hydrochloride	722 g/l	SL
Hidro-Cup	Copper Hydroxide	770 g/kg	WG
EFDAL AZBIN	AZOXYSTROBIN	250 G/L	SC
EFDAL TEBUZOL 25	Tebuconazole	250 G/KG	WP
PILER BEN 20	BORDEAUX MIXTURE	EQUIVALENT TO 20% METALIC COPPER	WP
Kross	Myclobutanil	400 g/kg	WG
Mister	Kresoxim-methyl + Boscalid	100 g/l +200 g/l	SC
Triumph	Trifloxystrobin + Tebuconazole	250 g/kg +500 g/kg	WG
Hercules	Boscalid + Cyprodinil	200 g/l +200 g/l	SC
Milis 30	Pyrimethanil	300 g/l	SC
Jasop	Copper sulfate	equivalent to 65.82 g/l of Metallic copper	SC
Festan	Cyprodinil +Fludioxonil	375 g/kg +250 g/kg	WG
Winextra,	Metiram + Pyraclostrobin	550 g/kg +50 g/kg	WG
Boxer,	Ziram	760 g/kg	WG
Gorilla,	Azoxystrobin + Folpet	93,5 g/l +500 g/l	SC
Capsule	Dimethomorph + Folpet	150 g/kg +500 g/kg	WG
Corvina	Copper oxychloride + Dimethomorph	400 g/kg +60 g/kg	WP
Spartacus 500	Azoxystrobin	500 g/kg	WG
Lavia	Boscalid + Pyraclostrobin	267 g/kg +67 g/kg	WG
Alcoban	Dithianon	700 g/kg	WG
Astralisto	Metiram + Pyraclostrobin	550 g/kg +50 g/kg	WG
Affet	Penthiopyrad	200 g/l	SC
Redigo M, 120	Prothioconazole + Metalaxyl	100 g/l +20 g/l	FS
Herbicide			
Herbicide (desiccant) Basta 150	Glufosinate-ammonium	150 g/l	SL
Fusilade Forte 150	Fluazifop-p-buthyl	150 g/l	EC
Rotter	Metsulfuron-methyl	600g/kg	WG
Maister 62	Foramsulfuron + Iodosulfuron-methyl-sodium + Isoxadifen-ethyl	300 g/kg +20 g/kg + 300 g/kg	WG
Dianat	Dicamba	480 g/l	SL
True, 75	Tribenuron - methyl	750 g/kg	WG
Fluent	Fluazifop - P- Butyl	125g/l	EC
Gliacint	Glyphosate	480 g/l	SL
Eliminator,	Nicosulfuron	40 g/l	SC
Rivet 24,Desicant	Carfentrazone-ethyl	240 g/l	EC
Axial 45	Pinoxaden + Cloquintocet-mexyl	45 g/l +11,25 g/l	EC
Stomp 330	Pendimethalin	330 g/l	EC
Ouragn Forte 500	Glyphosate potassium	500 g/l	SL
Pandora 330	Pendimethalin	330 G/L	EC

Betanal Expert 274	Ethofumesate + Phenmedipham + Desmedipham	112 g/l +91 g/l +71 g/l	EC
Sencor Liquid 600	Metribuzin	600 g/l	SC
Nikofuron	Nicosulfuron	40 g/l	SC
Shock	Glyphosate (Isopropylammonium salt)	480g/l	SL
Pilot	Rimsulfuron	250 g/kg	WG
Fluzitop	Fluazifop-P-butyl	150 g/l	EC
Diamin 500	2,4 D Acid	500 g/l	SL
Knockdown 48	Glyphosate IPA	480 g/l	SL
Galigan	Oxyfluorfen	240 g/l	EC
Pendigan	Pendimethalin	330 g/l	EC
Glyphogan	Glyphosate -IPA	480 g/l	SL
Mistral	Metribuzin	700 g/kg	WG
Conquer	Clodinafop-propargyl + Antidote	80 g/l +20 g/l	EC
Majestic	Metribuzin	700 g/kg	WG
Stop	Pendimethalin	330 g/l	EC
Amilin	2,4-D Ethylhexylester	687 g/l	EW
Pentagon	Bentazon	480 g/l	WS
Maize	Rimsulfuron	250 g/kg	DF
Metsy	Metsulfuron-methyl	600 g/kg	WG
Logran 75	Triasulfuron	750 g/kg	WG
Grodyl Maxi 375	Amidosulfuron + Iodsulfuron-methyl sodium +Antidote-Mefenpyr-diethyl	100 g/l +25 g/l + 250 g/l	OD
Puma Super 144	Fenoxaprop-P-ethyl + Antidote-Mefenpyr-diethyl	69 g/l +75 g/l	EW
Valsatop	Pendimethalin	330 g/l	EC
Valsaglif	Glyphosate	360 g/l	SL
Titus	Rimsulfuron	250 g/kg	WG
Agil	Propaquizafop	100 g/l	EC
Hector Max	Dicamba + Nicosulfuron + Rimsulfuron	550 g/kg +92 g/kg +23 g/kg	WG
Formula Super 5	Quizalofop-P-Ethyl	50 g/l	EC
Esteron 600	2,4-dichlorophenoxyacetic acid (2-Ethylhexyl Ester)	600 g/l	EC
Goal 2E	Oxyfluorfen	240 g/l	EC
Certo Plus	Tritosulfuron + Dicamba	250 g/kg +500 g/kg	WG
Frontier Optima	Dimethenamid – P	720 g/l	EC
VAGABOND 48	DicambaDimethylamin salt	480 G/L	SC
PEKKS 24	Oxyfluorfen	240 G/L	EC
SULFON 4	Nicosulfuron	40 G/L	SC
Ikanos 40	Nicosulfuron	40 g/l	OD
Paroxyfen 24	Oxyfluorfen	240 g/l	EC
CITATION	Clodinafop-propargyl + Antidote	80 g/l +20 g/l	EC
Basagran	Bentazone	480 g/l	SL
Herbimate 330	Pendimethalin	330 g/l	EC

Stratos Ultra	Cycloxydim	100 g/l	EC
Elumis	Mesotrione + Nicosulfuron	75 g/l +30 g/l	OD
Glyphosan	Glyphosate acid (equivalent to Glyphosate isopropylamine salt)	360 g/l (480 g/l)	SL
Arcade 880	Prosulfocarb + Metribuzin	800 g/l +80 g/l	EC
Felix	Glyphosate monoammonium salt (equivalent to glyphosate acid)	757 g/kg (680 g/kg)	WG
Fenix Gold 720	2,4-D Dimethylammonium salt	720 g/l	SL
Balerina	2.4 D- 2-ethylhexyl ester + Florasulam	410 g/l +7.4 g/l	SE
Escudo	Rimsulfuron	500 g/kg	WG
Tornado 500	Glyphosate acide (equivalent to glyposate-isopropylammonium salt)	500 g/l (675 g/l)	SL
Dublon Gold	Nicosulfuron + Thifensulfuron-methyl	600 g/kg +150 g/kg	WG
Lastik Extra	Fenoxaprop-P-ethyl + Cloquintocet- mexyl	70 g/l +40 g/l	EC
Glyn	Glyphosate isopropylamine salt (equivalent to glyphosate acid 360 g/l)	480 g/l	SL
Gliphovit	Glyposate-isopropylammonium salt	480 g/l	SL
Goliaf	2,4 D-dimethylammonium salt + Dicamba dimethylammonium salt	350 g/l +125 g/l	SL
Miladar	Nicosulfuron	45 g/l	SC
Quin star max	Quizalofop-p-ethyl	125 g/l	EC
Formula	Thifensulfuron-methyl	750 g/kg	WG
Panda 330	Pendimethalin	330 g/l	EC
Sonround 48	Glyphosate isopropylamin salt (equivalent to glyphosate acid)	480 g/ l(360 g/kg)	SL
Helga Super	Quizalofop-p-ethyl	50 g/l	EC
Best Amin 500	2,4 Dimethyl amamin salt	500 g/l	SL
Patrul	Metsulfuron-methyl	600 g/kg	WG
Terdok 080	Clodinafop-propargyl + Antidote-Cloquintocet-mexyl	80 g/l +20 g/l	EC
EFDAL MEBUZIN	METRIBUZIN	700 G/KG	WP
EFDAL ALSON	Nicosulfuron	40 G/L	SC
Kalson	Nicosulfuron	40 g/l	SC
EFDAL DIMETRIN	2,4 D – Acide	500 G/L	SL
Roundup Max, Desiccant	Glyphosate	450 g/l (551 g/l as potassium salt)	SL
Weedager	Rimsulfuron	250 g/kg	WG
EFDAL ZALOSUPER	Quizalofop-p-ethyl	50 G/L	EC
Antysapa	Metribuzine	700 g/kg	WG
EFDAL CLOPAR 240	CLODINAFOP-PROPARGYL + SAFENER CLOQUINTOCET MEXYL	240 G/L +60 G/L	EC

EFDAL PENALIN 330	PENDIMETHALIN	330 G/L	EC
EFDAL OCMOST 240	OXYFLUORFEN	240 G/L	EC
EFDAL METEOR	METSULFURON-METHYL	200 G/KG	WP
EFDAL ULTRAMIX	2,4 -D EHE +FLORASULAM	452,42 g/l +6,25 g/l	SE
Becano 500	Indaziflam	500 g/l	SC
Galaxy 240	Oxyfluorfen	240 g/l	EC
Senkron 70	Metribuzine	700 g/kg	WG
AGAT	CLODINAFOP-PROPARGYL +CLOQUINTOCET-MEXYL	80 G/L +20 G/L	EC
Total Star	Glyphosate IPA (Equivalent to 480 g/l of Glyphosate IPA salt, 360 g/l of Glyphosate acid)	41%	SL
Nicorol	Nicosulfuron	40 g/l	SC
Baccard 125	Quizalofop-p-ethyl	125 g/l	EC
Rimax D 762	Tribenuron- Methyl + Dicamba	102,5 g/kg +659 g/kg	WG
Vain	Nicosulfuron	40 g/l	SC
Rumbo 36	Glyphosate 360 g/l	IPA 486 g/l,	SL
2,4 D Dimethylammonium salt	2,4 D Dimethylammonium salt	720 g/l (2,4 D Acid 600 g/l)	SL
Klini	Glyphosate IPA salt	480 g/l (Glyphosate Acid 360 g/l)	SL
Deamin 720	2,4 D Amine Salt	720 g/l	SL
Sorti Super	Quizalofop-P-ethyl	50 g/l	EC
Maister Power 57,5	Foramsulfuron, sodium salt + Iodsulfuron-methyl-sodium+Thiencarbazone- methyl + Cyprosulfamide	31,5g/l +1 g/l +10 g/l +15 g	OD
Baytor 40	Imazamox	40 g/l	SL
Super Cankor	Metribuzin	700 g/kg	WP
Kyleo	2,4 D acid + Glyphosate	160 g/l +240 g/l	SL
Samba 500	S-Metolachlor + Terbuthylazine	312,5 g/l +187,5 g/l	SC
Banderilla 70	Metribuzin	700 g/kg	WP
Resort 33	Pendimethalin	330 g/l	EC
Buctril 327.5	Bromoxynil octanoate	327.5 g/l	EC
Pulsar Plus	Imazamox	25 g/l	SL
Agent	2,4 D Acid 2-ethylhexyl ester + Phlorasulam	452.42 g/l +6.52 g/l	CE
Arpad	Rimsulfuron	250 g/kg	WG
Fascinate	Glufosinate ammonium	280 g/l	SL
Kabuki	Pyraflufen-ethyl	26,5 g/l	EC
Nikoni	Nicosulfuron	40 g/l	SC
Sponsor 330	Pendimethalin	330 g/l	E
Estet	2,4 d acid (2-ethyl hexyl ester 905 g/l)	600 g/l	EC
Pantera 40	Quizalofop-p-tefuryl	40 g/l	EC
Horma	2,4 D Acid + MCPA Acid	275 g/l +275 g/l as the amine salt	SL

Efdal Roksan 48	Bentazone	480 g/l	SL
Efdal Mectin 18	Abamectin	18 g/l	EC
Metrabuz D	Metribuzin	700 g/kg	WP
Imperator	Metsulfuron-Methyl	600 g/kg	WG
Corvette	2,4 D- 2-ethylhexyl ester + Florasulam	452,42 g/l +6,25 g/l	SE
Mensuron	Nicosulfuron	40 g/l	OD
Drago	Pendimethalin	330 g/l	EC
Gondolier 240	Oxyfluorfen	240 g/l	EC
Nero 75	Tribenuron-Methyl	750 g/kg	WG
Primo	2,4-D Dimethyl amine salt	720 g/l	SL
Fouzile	Fluazifop-P-butyl	125 g/l	EC
Klim	Glyphosate isopropylamine salt (equivalent to glyphosate acid 360 g/l)	480 g/l	SL
Titan	Rimsulfuron	250 g/kg	WG
Zero	Glyphosate acide (equivalent to Glyposate-isopropylammonium salt)	360 g/l (480 g/l)	SL
Cleaner	Glyposate-isopropylammonium salt (equivalent to glyphosate acid)	480 g/l (360 g/kg)	SL
Korfosat 48	Glyposate-isopropylammonium salt (equivalent to glyphosate acid)	480 g/l (360 g/kg)	SL
Koruma Weed Kiler D	2,4,D acid (calculated as Dimethylamine salt 600 g/l)	500 g/l	SL
Geyser	Glyphosate isopropylamine salt (equivalent to Glyphosate acid)	480 g/l (360g/l)	SL
Knockdown Max	Glyphosate IPA (Glyphosate Acid)	748 g/kg (680 g/kg)	WG
Roundup Max, Desiccant	Glyphosate	450 g/l (551 g/l as potassium salt)	SL
Conquer Extra	Clodinafop-propargyl + Cloquintocet-mexyl	240 g/l +60 g/l	EC
Unimark 70	Metribuzin	700 g/kg	WG
Klini Xtreme	Glyphosate (Glyphosate IPA and Glyposate potassium salts)	540 g/l (Glyphosate acid)	SL
MORBIDOL 240	Oxyfluorfen	240 G/L	EC
Hektafermin	2,4 D dimethylamine salt	500g/l	SL
Cowboy	Clodinafop-p-propargyl + Antidote –Cloquintoset-mexyl	80 g/l +20 g/l	EC
Quickstep	Clethodim + Haloxyfop-P-Methyl	130 g/l +80 g/l	EC
Galant	Glufosinate ammonium	150 g/l	SL
Clean-Up	Glyphosate-isopropylammonium salt (Glyphosate acid 360 g/l)	480 g/l	SL
Cutteng	2.4 D- 2-Ethylhexylester + Florasulam	452,42 g/l + 6,25 g/l	SE
Topcup 240	Clodinafop-propargyl + Antidote cloquintocet-mexyl	240 g/l +20 g/l	EC
PARDUS 480	Bentazone	480 G/L	SC

Jaguar	Quizalofop-P-ethyl	200 g/l	EC
DIXI	Glyphosate Isopropylammonium Salt (360 g/l Glyphosate Acide)	480 g/l	SL
Klimi +	Glyphosate IPA (equivalent to Glyphosate acid 360 g/l)	480 g/l	SL
GAVAN XTRA	Nicosulfuron	750 g/kg	WG
Cleaner Extra	Glyposate Ammonium salt (equivalent to Glyphosate acid 680 g/kg)	757 g/kg	SG
Ribasso 4	Nicosulfuron	40 g/l	OD
Diserbone KN	2,4 D +MCPA	346 g/l +346 g/l	EC
MUSSON XTRA	2,4 D	800 G/KG	SG
BOMB	GLYPHOSATE ACID (EQUIVALENT TO ISOPROPYLAMINE SALT 729 G/L)	540 G/L,	SL
Wikilis	Mesosulfuron-methyl + Iodosulfuron-methyl sodium + Mefenpeyer-diethyl (safener)	30,9 g/kg +6,4 g/kg +91,1 ml/l	WG
Barnelaceli 70	Metribuzin	700 g/kg	WG
LECTOR	MESOTRIONE	480 g/l	SC
RAINGRAN	BENTAZONE	480 g/l	SL
Axial 50	Pinoxaden + Cloquintocet-mexyl	50 g/l +12,5 g/l	EC
MERI X-480	GLYPHOSATE (ISOPROPYLAMINE SALT, EQUIVALENT TO GLYPHOSATE ACID 360 G/L)	480 G/L	SL
Machete	Nicosulfuron	250 g/l	OD
Extra 24	Oxyfluorfen	240 g/l	EC
Bentagon	Bentazone	480 g/l	SL
Metsyl 60	Metsulfuron-methyl	600 g/kg	WG
Paroxy 24	Oxyfluorfen	240 g/l	EC
AMINOZ	2,4-D (Calculated on salt 820 G/L, present as the 455 G/L Dimethylamine and 365 G/L Diethanolamine salts)	625 G/L	SL
Lynch	Glyphosate (Isopropilamine salt)	480 g/l (Acide 360 g/l)	SL
MUZA	Metribuzin	750 g/kg	WG
Missi	Tribenuron-methyl	750 g/kg	WG
Dixi Xtra	Glyphosate mono-ammonium salt (Glyphosate acid 688 g/kg)	747 g/kg,	SG
Foison	Clodinafop-propargyl + Cloquintocet-mexyl	240 g/l +60 g/l	EC
Tokta Super	Quizalolofop-p-ethyl	50 g/l	EC
Kurmuzine 70	Metribuzin	700 g/kg	WP
KIRES ULTRA 40	Imazamox	40 G/L	SL

Thor	2,4 D 2 –ethylhexyl ester + Florasulam	453 g/l +6 g/l	SE
Raker	Pendimethalin	330 g/l	EC
Secret	Fenoxaprop-p-ethyl + Cloquintocet-mexyl	69 g/l +34,5 g/l	EW
Uragan Extra	Glyphosate acid (Glyphosate Ammonium Salt 777,7 g/kg)	700 g/kg	SG
Menta Suron	Nicosulfuron	40 g/l	OD
Boltrer	Metribuzin	700 g/kg	WG
Tomcato	Monoisopropilamin salt (glyphosate 360 g/l)	485,8 g/l	SL
Sultan Suspension Concentrate	Metazachlor	500 g/l	SC
Sunposat	Glyphosate Potassium Salt (Glyphosate acid 540 g/l)	660 g/l,	SL
Klainer	Sulfosulfuron	750 g/kg	WG
Allatan 105	Mesotrione + Nicosulfuron	75 g/l +30 g/l	OD
Evolution	Clethodim + Quizalofop-P-ethyl	140 g/l +70 g/l	EC
Zenka Forte	Fluazifop-p-butyl	150 g/l	EC
Terzim Extra	Terbuthylazine	900 g/kg	WG
Pendipax	Pendimethalin	330 g/l	EC
Cosmo	Carfentrazone-ethyl	400 g/l	EC
Glifoshans Super	Glyphosate potassium salt	540 g/l	SL
Kletoshans	Cletodim	240 g/l	EC
Prishans	2,4 D acid (2-ethylhexyl ester) + Florasulam	300 g/l +6,25 g/l	SE
Shanstar	Tribenuron- methyl	750 g/kg	WG
Shansugen	Fenoxaprop-p-ethyl + Cloquintocet-mexyl	69 g/l +34,5 g/l	EW
Shantus	Rimsulfuron	250 g/kg	WG
Kapuero	Tribenuron-methyl + Florasulam	563 g/kg +187 g/kg	WG
Cubix	Clodinafop-propargyl + Antidote-Cloquintocet-mexyl	240 g/l +60 g/l	EC
Mensuron Extra	Nicosulfuron	750 g/kg	WG
EFDAL MAGICPRO	Imazamox	40 G/L	SL
Artrow	Nicosulfuron + Mesotrione	30 g/l +75 g/l	OD
Gun Shot	Flumioxazin	510 g/kg	WG
Roller	Glyphosate IPA salt	480 g/l	SL
Astragil	Quizalofop-P-ethyl	50 g/l	EC
Hunter	2,4-D 2-ethylhexyl ester + Florasulam	615 g/l +7,4 g/l	SE
Tayga	Quizalofop-P-ethyl	50 g/l	EC
Rodenticide, nematocide			
Nemasol,	Metam - sodium	510 g/l	SL
Rodenticide, RATICIDE	Zinc Phosphide	800 g/kg	P
EFDAL FENOS 400	FENAMIPHOS	400 G/L	EC
Vydate 10 L	Oxamyl	100 g/l	SL
Detia Mause Giftkorner	Zinc Phosphide	3,04 %	P

Zinc Phosphide	Zinc Phosphide	800 g/kg	P
Insecticide, Fungicide for seed treatment			
Nuprid 600	Imidacloprid	600 g/l	SC
Resumme 70	Imidacloprid	700 g/kg	WS
EFDAL IMIDRID 70	IMIDACLOPRID	700 G/KG	WS
Gaucho Plus 466	Clothianidin + Imidacloprid	233 g/l+233 g/l	FS
Gaucho 600	Imidacloprid	600 g/l	FS
Bi Prid	Imidacloprid	600 g/l	FS
Wooper	Imidacloprid + Pencycuron	140 g/l+150 g/l	FS
Ditane M-45	Mancozeb	800 g/kg	WP
Rodolit	Tebuconazole	60 g/l	FS
Conil 2	Diniconazole	10 g/l	DS
Indazol	Carbendazim	500 g/l	EC
Efdal Tebuxil 60	Tebuconazole	60 g/l	FS
Efdal Tebuzol 2	Tebuconazole	20 g/kg	DS
Insure Perform	Pyraclostrobin + Triticonazol	40 g/l +80 g/l	FS
Apron XL 350	Mefenoxam	350 g/l	ES
Raxil Ultra 120	Tebuconazole	120 g/l	FS
Dividend Star 036	Difenoconazole + Cyproconazole	30 g/l +6,3 g/l	FS
Rovral Aquaflo	Iprodion	500 g/l	SC
Gensil 060	Tebuconazole	60 g/l	FS
Karnaval 50	Iprodione	500 kg/ha	WP
Supervin	Flutriafol +Thiabendazole	30 g/l +45 g/l	SC
Tebicur 060	Tebuconazole	60 g/l	FS
Tebuji 060	Tebuconazole	60 g/l	FS
Premium	Imidaclopride + Pencycuron	140 g/l +150 g/l	SC
Emesto Quantum 273,5	Clohtianidin + Penflufen	207 g/l +66,5 g/l	FS
Prestige 290	Imidacloprid + Pencycuron	140 g/l +150 g/l	FS
Celest Top 312,5	Thiamethoxam + Fludioxonil + Difenoconazole	262,5 g/l +25 g/l+25 g/l	FS
MOLLUSCICIDE			
Snail Granules	Metaldehyde	60 g/kg	GR
MILLONA	Metaldehyde	60 G/KG	GR
Taldex Extra, Pellet Bait	Metaldehyde	60 g/kg	GR
LOKOCIDE	Metaldehyde	6%	GR
EFDAL SISTOKS	Metaldehyde	60 G/KG	GR
AA Ulit-Kill 6	Metaldehyde	60 g/kg	GR
Fungicide, Insecticide - Fungicide,Acaricide			
Finesulfur 80	Sulphur	800 g/kg	WG
Kumulus DF	Sulphur	800 g/kg	WG
Vitashans	Sulphur	800 g/kg	WG
Sulphur	Sulphur	800 g/kg	WG
Thiovit Jet 80	Sulphur	800 g/kg	WG
Merton	Sulphur	800 g/kg	WD
EFDAL SULFUR 80	Sulphur	800 g/kg	WP
Sulfolac 80	Sulphur	800 g/kg	WG
Sulph	Sulphur	800 g/kg	WG

Cosavet 80	Sulphur	800 g/l	DF
Lifesul	Sulphur	800 g/kg	WG
Inferno	Sulphur	800 g/kg	WG
gogird plius	Sulphur	800 g/kg	WG
RANSULPHUR 80	Sulphur	800 g/kg	WG
Heliosoufre	Sulphur	700 g/l	SC
Miticide, Sulphovita	Sulphur	800 g/kg	WG

Note: HHPs are marked in red.