INTEGRATED PROTECTION OF GRAPE FROM PESTS AND DISEASES IN GEORGIA Guram Aleksidze

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The grapevine in Georgia is damaged by different pests and diseases (about 100 varieties), which in optimal conditions cause irreparable damage. It is also noted that in recent years, due to changes in climatic conditions, some species have lost their relevance, and some on the contrary, began to appear intensified aggressiveness. Such species include the *grape berry moth, false scale insects, mites, oidium, mildew, viral and phytoplasmal diseases,* etc. [1]

Currently, in the vineyards of Georgia, integrated protection has been actively used, which implies the maximum increase in the share of biological and other non-chemical methods and reduction of using chemical pesticides. The main principle of protecting vineyards from pests are the economic harmful level are already control of main pests of grapes. [2]

To obtain maximum effect in the fight against pests, it is necessary to rationally combine various pest management methods:

<u>The agrotechnical method</u> is a complex of preventive measures. Its purpose is to create adverse conditions for the development of pests and pathogens diseases, and on the other hand to create favorable conditions for plants. Significant meaning has such agrotechnical methods as soil cultivation, the timely and qualitative irrigation, the use of fertilizers, elimination of weeds, the exact observance of the harvesting terms, the destruction of plant remains after harvest, etc. Through proper usage of agrotechnical measures many pests and diseases may be removed.

<u>The selection method</u> is based on the resistance of grape varieties using various methods of breeding, which make it invulnerable to pests, especially for mildew (Plasmopara viticola) and oidium (Uncicula necator).

<u>Physico-mechanical methods</u> are used when pests are distributed massively. One way to fight against the root form of phylloxera (Viteus vitifolee) is soil inundation. [3] This method also includes the removal of the old bark on the stem of the vine, its removal from the vineyard and burning. This event in large numbers destroys false-scales, mites, pupae of the berry moth, it is used in autumn, winter and spring.

<u>The physical method</u> gives a good result in the fight against grape leaf hopper (Theresimima ampelophaga). As is known, a large number of larvae of the leaf hopper hibernate in the core of the tips of the shoots, on this basis, it is necessary to burn the scraps of the vine in autumn or spring.

<u>The biological method</u> of struggle implies the use of natural enemies of pests - insects and mites, birds, mammals, etc.

Predatory insects are effective when they feed on all the phases of pests, move quickly, give in comparison with pests for many generations and have high sexual production, tolerate hunger, poor external conditions and are free of secondary parasites.

In the conditions of Georgia, predators play an important role in regulating the number of pests. For example, beetles and larvae of ladybug feed on false-scales, six-spotted thrips (Eutetranychus pruni) in large numbers destroy the spider mite. The optimum temperature for the development of pests and their predators is 25-28⁰ C, and the relative humidity is 75-80%. Currently, artificial nutrient media for the breeding of beetles of Cryptolaemus have been developed. The composition of these includes: casein, sucrose, powdered milk, sunflower oil, brewer's yeast, ascorbic acid, etc. The protection of vineyards by Cryptolaemus from coccidaes depends on the time of release of beetles. The best period is considered to be when the coccidaes begin the mass transition from the stocks to the bunches. In accordance with the phenophases of the vine, the time of release of cryptolemus usually coincides with the onset of ripening of grapes, which lasts from July 15 to August 15. [4]

A good result is the release of the Metacelilus against pests 2500 unit/ha [4]. Parasitic insects, especially hymenoptera and tahini, also play an important role in regulating the number of vine pests. In Georgia, five parasitic species of coccidaes have been identified, which in some years by the end of summer reduce the number of pests by 80%. A lot of parasites are also found in butterfly Lobesia botrana, which up to about 50% destroy the wintering larvae of this pest. [3]

In the fight against pests of the vine, a microbiological method that involves the use of organisms that cause insect diseases (bacteria, viruses and fungi) is effective. At the present time, bacteria are relatively widely used, on the basis of which highly effective biopesticides are used against and berry eating insects - sonita, bitoxybacillin, lepidicides, etc. These substances are widely used against butterflies lobesia botrana and other pests. [2]

One of effective methods is a biotechnical method that involves the use of repellents (insect repellent substances), attractants (substances attracting insects), antifidants (protecting plants from eating insects).

Pheromones are successfully used in Georgia, which are one of the groups of biologically active substances. It is known that insects from special glands secrete odorous substances - pheromones, which by means of an air stream spread to the external environment

and cause a response from individuals of the same species. There are several kinds of pheromone, in particular sex, aggregation, trace pheromones, food search, pheromone signaling for finding a substrate for egg laying, etc. For example, in a vineyard, pheromone of a berry moth, diethyl acetate, is used to signal their appearance, as well as control them. [5] With the help of pheromone sex traps, it is easy to establish the exact date of appearance of butterflies and the density of population, the daily and seasonal dynamics, the scope of quarantine pests and, accordingly, the usefulness of using the chemical method of control.

Against grape diseases it is effective to spray with 0.5-0.75% emulsion of a biological fungicide-timorex.

For the protection of plants, the chemical method of elimination is widely used, chemical means are pesticides, which are divided into insecticides, fungicides, and zoocides depending on their effect on the objects.

Pesticides are used intensively in Georgia, both to increase crop yields and to improve its quality. However, it is necessary to select pesticides together with high efficiency, will be less toxic to beneficial organisms and humans, and at the same time insignificantly pollute the biosphere. Such drugs include groups that are medium and slightly toxic (less than ----1000 mg / kg) for animals and humans.

Such a system for protecting vineyards from pests and diseases has been developed by us in the vineyards of Georgia.

During the rest period of grape - late autumn, the soil is plowed at a depth of 20-22 cm, which significantly reduces pests and diseases.

In the vegetation period from the moment of bud swelling to the appearance of 3-4 leaves, insectoacaricide *bi-58 new 0.2%, neoron 0.2%, masai* 0.04%, etc. are used against mites. When the number of mites per leaf reaches more than 3, spraying should be done. In the same period, with the advent of berry moth and for the purpose of signaling measures to combat it, pheromone sex traps (1-2 units / ha) are used.

On the inflorescences during the separation of buds, measures are carried out against mildew, anthracnose, mites, and also against the first generation of larvae of the berry moth. In this case poliram 0.2% and bi-58 0.2% are used in combination. Treatment against the first generation of larvae of a lobesia botrana should be performed in those cases when, after the beginning of the flight of butterflies, within 5 days, 5-7 butterflies will appear on the sexual trap or 10 larvae on 100 inflorescences.

In the period before flowering, treatment is carried out against mildew, oidium, *Botrytis cinerea* of grapes and pests. A combined mixture of acrobat 0.2% (or ridomil gold 0.25%), cumulus 0.5%, and a fostak 0.03% are used.

At the end of flowering against mildew, oidium, mites, coccids, a combined mixture of acrobat 0.2%, colis 0.3% (or topaz 0.04%) and karate 0.04%, zeon or other pyrethroid preparations are used. Against mites the acariphage metaseylus is used. Against coccidaes, treatments are carried out when the frequency of settling on one plant reaches 5-6 individuals.

At the beginning of the green bunch phase, against mildew, oidium, black rot, secondgeneration larvae of the **Lebesia botrona**, combined mixture of cabrioton 0.2%, a flystick 0.03% or their substitutes is used.

During the full phase of the green bunch - against mildew, the oidium is used to spray the combined mixture of copper-containing fungicide 0.5% thiovit jetta or cumulus.

At the beginning of grape ripening, against the third generation of lobesia botrana larvae there are used only bacterial preparations: bitoksibatsilin (0.6%), Lepidocide (0.3%) and sex pheromone traps (15-25 items/ ha), and against coccidaes - Cryptolaemus beetles (1000 items / ha).

During epiphytoty of gray or black rot of grape bunches sprayings are carried out with 2% Bordeaux mixture or chorus (0.6-0.7 kg / ha).

References

1. G. Aleksidze, O. Kuparashvili. 1992. Directory of the agronomist in plant protection. Tb.

2. G. Aleksidze. 2014. Protection of plants. Tb.

3. N. Aleksidze. 1958. The main pests of grapes and the struggle against them. Tb.

4. G. Dolidze. 1998. Recommendations on pest control systems and grape disease. Tb.

5. A. Kipiani, E. Machavariani. 1988. Pheromones and the protection of nature. Tb.

ვაზის ინტეგრირებული დაცვა მავნებლებისა და დაავადებებისაგან საქართველოში

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ვაზს საქართველოში 100-მდე მავნე ორგანიზმი აზიანებს, მათგან მნიშვნელოვანია: ყურძნის ჭია, ცრუფარიანები, ტკიპები, ნაცარი, ჭრაქი, ვირუსული და სხვა ფიტოპლაზმური დაავადებები, სიდამპლეები და სხვა.

ვაზის მავნე ორგანიზმების წინააღმდეგ, ჩვენ მიერ დამუშავებულია ბრძოლის ინტეგრირებული ღონისძიებები, რომლებიც ითვალისწინებს აგროტექნიკური, სელექციური, ფიზიკური, პიოლოგიური, პიოფიზიკური, ქიმიური და სხვა შეთანაწყობას რის შედეგადაც მიიღება ვაზის ღონისძიებების იმგვარად მავნე ორგანიზმების რიცხოვნობის შემცირება (მავნებლობის ეკონიმიკური ზღვრების დონეზე), აგრეთვე ეკონომიკური და ეკოლოგიური მდგომარეობის მნიშვნელოვანი გაუმჯობესება.

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