

# Early spring agrotechnical and plant protection measures in vineyards

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- Agricultural producers who apply plant protection products in production are obliged to use only plant protection products authorized for use on the respective crop, pest, and at the respective dose, included in the "**List of plant protection products authorized for placing on the market and for use**", published on the website of the Bulgarian Food Safety Agency (BFSA) at: <http://www.babh.government.bg>

- The purchase of plant protection products must be made only from traders holding a license for the activity and included in the **"List of companies that have received a license to carry out the activities of wholesale trade in plant protection products, retail trade in plant protection products in an agricultural pharmacy, repackaging of plant protection products, and fumigation and disinfection of areas, premises, and plant products against pests"**, published on the website of the **BFSA**.

## Early Spring Agrotechnical and Plant Protection Measures in Vineyards

Disease/Pest	Causal Agent	Symptoms/Damage	Life Cycle
Crown Gall of Grapevine 	<i>Agrobacterium vitis</i> - bacterium	<ul style="list-style-type: none"> <li>rough swellings (tumors) with a granular structure, ranging from 0.5 to 10 or more centimeters in size, are found near the soil surface on woody parts</li> <li>tumors are pale yellow and soft, gradually darken, harden, and begin to disintegrate</li> <li>tumors also develop just below the soil surface or at a height of up to 1 m above it</li> <li>infected plants form weaker shoots, and parts formed above the tumor sites may die</li> </ul>	<ul style="list-style-type: none"> <li>the pathogen persists in plant residues in the soil and in infected plants</li> <li>it enters mainly through wounds caused by frost or hail</li> <li>old and abandoned vineyards are a primary source of infection</li> <li>the disease is particularly harmful in vine nurseries and young vineyards</li> <li>in infected vines, severe winter cold can cause bark cracking</li> </ul>

- Control:
- Use of healthy planting material.
  - Establishing vine nurseries in well-drained locations.
  - Shallow soil tillage, hilling up of young vines, and autumn fertilization with potassium fertilizers.
  - Pruning in fruiting vineyards with established disease should be done before sap flow begins, first cutting healthy plants, then diseased ones.
  - Burning of infected parts.
  - Disinfection of tools after pruning each vine with a 5% formalin solution or a 10% bleach solution.
  - Uprooting and destruction of vines upon detection of affected plants within the first 3 years after vineyard establishment.

Disease/Pest	Causal Agent	Symptoms/Damage	Life Cycle
Esca (White Wood Rot)	Fungi of the genus <i>Phaeoacremonium</i> and mainly the species	<ul style="list-style-type: none"> <li>reduced shoot growth</li> <li>reduction in size, deformation, or deep incisions of leaves, accompanied by strong yellowing and necrosis</li> </ul>	<ul style="list-style-type: none"> <li>the causal agents of esca develop saprophytically in the soil and infect small roots, then the thick roots, destroying the tissues</li> </ul>

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Ph.chlamydospora,  
Ph.aleophilum

- symptoms intensify and culminate in the death of entire plants
- the disease may manifest as sudden wilting, followed by drying of plants
- the wood of affected vines is soft, brittle, discolored whitish or yellowish
- leaves turn yellowish from the periphery towards the center in varieties with green and yellow-green berry skin, and reddish in varieties with red and bluish-red berry skin
- tissues necrotize, and leaves fall prematurely, exposing the shoots as early as late July and early August
- disease symptoms start from the basal leaves of the shoots
- vines may partially or completely dry out suddenly after prolonged drought followed by heavy rains
- infected parts have a brownish-grayish color, leaves fall within just a few days, and the wood cracks

- the disease develops in aging vineyards or in young vineyards planted on heavy, acidic soils with poor agrotechnical practices

Control:

- In the production of planting material, cuttings should be taken only from completely healthy vines.
- During the growing season, vines in the nursery should be regularly inspected, and all with signs of the disease should be marked and burned.
- Dead vines are uprooted and burned early in spring.
- Affected fruiting canes, spurs, or trunks are cut out and burned, and a new trunk is formed from shoots emerging from the base of the vine.
- If possible, cut out and destroy affected parts of the vine during summer and autumn.
- In spring, pruning is done first on completely healthy vines.
- Pruning tools are disinfected with a 5% copper sulfate solution or other disinfectants.

Disease/Pest	Causal Agent	Symptoms/Damage	Life Cycle
Anthrax nose	Gleosporium ampelophagum - fungus	<ul style="list-style-type: none"> <li>• irregularly rounded, dark brown spots on shoots and tendrils</li> <li>• gradual enlargement of spots, tissues in their central part sink and split, forming deep lesions</li> <li>• under severe attack, shoot growth stops, tips blacken, become distorted, and dry out</li> </ul>	<ul style="list-style-type: none"> <li>• the pathogen overwinters in damaged shoots and mummified fruits as mycelium and sclerotia</li> <li>• mass infections are carried out by sclerotia</li> <li>• favorable conditions for disease development are cool and rainy weather, dense planting, one-</li> </ul>

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- clusters and pedicels may also dry out

sided nitrogen fertilization, and cordon pruning

- the attack in vineyards is patchy

- During pruning, all shoots with signs of the disease must be removed.

Control: • Application of a winter spray with a 2% Bordeaux mixture.

Disease/Pest	Causal Agent	Symptoms/Damage	Life Cycle
Grapevine Scale	<i>Pulvinaria vitis</i>	<ul style="list-style-type: none"> <li>• larvae and adult insects suck sap from all above-ground parts of the vine, preferring spurs, shoots, leaves, and berries</li> <li>• they transmit three types of viruses that cause grapevine diseases</li> <li>• severely damaged vines become exhausted, yield low and poor-quality grapes, and often dry out</li> </ul>	<ul style="list-style-type: none"> <li>• the species develops one generation per year</li> <li>• it overwinters as a second-instar larva on the trunk, spurs, and fruiting canes of the vine</li> <li>• overwintered larvae develop until the second half of May and begin laying eggs in a white egg sac, several times larger than the scale's shield</li> <li>• one scale lays from 1500 to 3000 eggs</li> </ul>
Control:		<ul style="list-style-type: none"> <li>• To control the overwintering form in the second half of March, at the beginning of bud swelling, at a density of 1 larva per 1 linear meter of fruiting cane, treatment should be carried out with Para Zomer (paraffin oil) – 3%.</li> <li>• In the second half of June, spraying with registered insecticides should be carried out.</li> </ul>	