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BIOLOGICAL METHOD OF PROTECTION OF APPLE TREE FROM SCABY IN THE CONDITIONS OF THE WESTERN FOREST-STEP OF UKRAINE

HUNCHAK Mykhailo, https://orcid.org/0000-0002-3521-8531

Chernivtsi regional center of the state institution "Institute of soil protection of Ukraine", Ukrainian Science-Research Plant Quarantine Station IPP NAAS
Corresponding e-mail: gunchak00@ukr.net

Purpose: Apple plantations are affected by a large number of diseases, but the most common in the conditions of the Western Forest-Steppe of Ukraine is scab (*Venturia inaequalis* Wint). Therefore, the aim of the work was to study the effectiveness of integrated systems for protecting apple trees against scab.

Materials and Method: The work conducted during 2023-2025 in the apple orchard of the Ukrainian Science Research Plant Quarantine Station Institute of Plant Protection NAAS as per generally approved methods on the apple trees plantings of 2014 the Idared variety planting. The fungicides efficiency determined according to the official methods through 7 days.

Summarized results. There were 3 biological complex systems in combinations with microelements study for apple-trees plantations protection from scab.

The first system of biological protection included treatment at phenophase "bud separation" with biological preparation Fluorescin BT at rate 2,0 l/ha and S, Zn; at phenophase "fruit forming" – Bactofit BT (4,0 l/ha) + Mg, Mn, Fe, Co; at phenophase "fruit growing" (walnut-size fruit) – Biogibervit BT (3,0 l/ha); at phenophase "fruit growing" (July second ten-days) – Trichopsin BT (5,0 l/ha) + Ca; at phenophase "fruit ripening" – Fluorescin BT (1,5 l/ha). The results of the research showed that the effectiveness against scab on leaves was 64.5% and on apple fruits – 66.2%.

The second biological protection system based upon the next spraying during phenophase "rose bud" mix Bactofit BT at rate 4,0 l/ha and Trychipsin BT at rate 5,0 l/ha + B, Mo; "fruit growth" (hazel fruit size) – Biohybervit BT (3,0 l/ha) + Mg, Mn, Fe, Co; "fruit growth" (first July's ten-days) – Fluorescin BT (1,5 l/ha); "fruit growth" (first August's ten-days) – a mixture of Trichopsin BT (3,0 l/ha) and Biospectre BT (3,0 l/ha) + Ca; "fruit ripening" – Fluorescin BT (1,5 l/ha). The use of this protection system allowed to reduce the development of scab on leaves by 68.4% and on apple fruits by 69.1%.

The following biological protection system included treatment during the phenophase “bud separation” with S, Zn; in the phenophase “rose bud” – with a mixture of Ampelomycin BT (4,0 l/ha) and Bactofit BT (3,0 l/ha) + B, Mo; at the phenophase “fruit formation” – a mixture of Phytosporin BT (5,0 l/ha) and Fluorescin BT (1,0 l/ha) + Mg, Mn, Fe, Co; in the phenophase “growth fruit” (walnut – sized fruit) – Biohybervit BT (3,0 l/ha); at the phenophase “fruit growth” (second July’s ten-days) – Biospectre BT (6,0 l/ha) + Ca; in the phenophase “fruit maturation” – a mixture of Trichopsin BT (3,0 l/ha) and Fluorescin BT (1,0 l/ha). The effectiveness of this system against scab on leaves was 74.0% and on apple fruits – 74.8%.

A chemical system used as a reference. It was based upon five spraying by chemical pesticides. The technical effectiveness of this protection system against leaf scab was 87.3%, and against apple fruit scab was 92.6%.

Conclusions. The results of the research showed that the use of the studied complex biological protection systems in combination with microelements allowed to reduce the development of apple scab by 64.5-74.8%.

Keywords: apple tree, scab, biological protection, technical efficiency.

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