

## SUMMARY

Walnut is popularly called walnut or constellation walnut, it is grown primarily for its fruits that are eaten green but especially ripe.

Walnut is considered the KING OF TREES, because it prefers high areas of orchards. Due to the large amount of IOD that the leaves emit, it is not indicated to relax and rest in its shade, and the plants do not live in the shaded area of walnut. Although it grows slowly and enters the fruit late, compared to other tree species, the walnut is very long-lived, on average, 80-100 years, after 15 years it gives high yields.

Walnut is a crop of economic importance to the food industry: the core is eaten, fresh or fried, alone or in other edible products, such as confectionery, pastries or sauces. It is popular worldwide and is appreciated for its nutritional, health and sensory attributes. The core is a nutrient-dense food, largely due to its high fat content and protein, vitamin and mineral profiles. Walnut kernels are also a good source of a wide variety of flavonoids, phenolic acids and related polyphenols (Martinez et al., 2010; Ecocrop, 2012).

Walnut kernels contain about 50-70% of an oil rich in unsaturated fatty acids, especially linoleic acid (49-63%) (Shahidi et al., 2005; Ecocrop, 2012).

Walnuts are a complete food due to the content of fatty substances, proteins, carbohydrates, minerals, vitamins.

Walnut has ecological value - it combats soil erosion and landslides. The special nutritional value of the fruits, the superior quality of the wood, the use of the other organs of the tree, leaves, bark and shoots, in the chemical and pharmaceutical industry, give the walnut a special economic and social importance.

Walnut is a plant attacked by many diseases and pests. Ensuring phytosanitary protection is essential to guarantee quality production.

In order to ensure an efficient ecological protection, it is necessary to respect some obligatory elements and phases at the level of the nut holding or for a microzone (locality):

- identification of diseases and pests existing in plantations;
- assessment of the economic risk produced by these pathogens;
- the relationship between pathogen and climatic conditions;
- elaboration of the control strategy according to the impact on the environment and on man (as a manipulator of some toxic substances and as a future consumer of fruits).

The application of phytosanitary treatments is done depending on the stages of development of the disease or pest and the climatic conditions at that time.

The control of the control is done by the specialists of the County Inspectorate for Plant Protection by issuing warning bulletins and with the support

of specialists from the Research-Development Stations for Fruit Growing, who prepare and guide farmers in this regard.

The mixed use of insecticides, acaricides and fungicides in the integrated magnifying glass complex, which is recommended for walnuts, leads to very good results in preventing and combating the main pests and diseases that cause damage to cultivated walnuts.

The purpose of the research that was conducted was to determine the existing arthropods in walnut orchards in the northeastern part of Moldova.

The work is spread over 200 pages and according to the regulations in force and it consists of two parts: the first part of the "Current state of knowledge and the national nature of the world." which includes 30 pages, 11 tables and 10 figures, and part of it entitled "Own Research", which comprises 163 de pages, 77 tables and 74 figures.

"The current state of knowledge" includes two chapters in which are briefly presented information from the literature on the subject of the doctoral thesis and which were subsequently used for interpretation and comparison of data obtained in the part of "Own researchers" and description of the natural environment, in this chapter being presented information regarding the geographical location, the pedoclimatic conditions and the meteorological conditions.

Part II of "Own Research" consists of 2 chapters: Chapter III presents the purpose and objectives of the research, research materials and methods used. The proposed objectives were:

1. Comparative study on arthropods existing in the two walnut plantations.
2. Tracking the dynamics of arthropod species existing in the two stations
3. Identification of harmful species and quantification of damage by calculating several indicators, such as: frequency of attack, intensity, degree of damage, loss or damage, etc.
4. Establishing the dynamics of harmful species, their density, monitoring the phenology of trees and establishing the optimal moments and control measures.
5. Identification of the useful species existing in the two stationary and calculation of indices such as: abundance (A), constancy (C), dominance (D), ecological significance index (W) etc. of useful fauna.
6. Establishing the structure, dynamics and arthropods for each experimental variant;
7. Identify the diet of useful arthropods collected from the two walnut plantations.

The chapter IV "Results and sketches" presents the study on the structure, the names of the arthropods collected in the natural states taken in the study. In order to carry out research on arthropods collected from walnut plantations, they were used to grow them from Barber, from May to September.

1. In the two years of research, 2018 and 2019, the sampling was done periodically according to the research method applied, during the vegetation period. The experience was organized in 2 variants:

- V1 walnut plantation in conventional system (treated);
- V2 walnut plantation in ecological system;

The results obtained and presented in this thesis are in line with current concerns and progress in the field. We emphasize below the main conclusions that emerge from this research.

2. Structure, dynamics and abundance of arthropod species collected in variant V1, conventionally treated walnut, in 2018: a number of 7 harvests of entomological material were made, being collected 3635 specimens belonging to 95 arthropod species.

3. Regarding the dynamics of the abundant species collected from the conventional walnut plantation in 2018, with the help of Barber type soil traps, it results that the most abundant species collected were hymenoptera 940 specimens, followed by colembes 589 specimens, beetles 539 specimens, dipterans 464 specimens, arachnids 401 specimens, isopods 210 specimens, hymenoptera 193 specimens, hemiptera 148 specimens and homoptera 50 specimens. Most specimens were collected at the fifth harvest - 971 specimens, and the fewest at the first harvest - 248 specimens

4. The structure, dynamics and abundance of the species collected in variant V2, ecological walnut, in 2018: a number of 7 harvests of the entomological material were made, being collected 6680 specimens of arthropods belonging to 70 arthropod species.

5. Regarding the dynamics of arthropods collected from the ecological walnut plantation in 2018, with the help of Barber type soil traps, it results that the most abundant species collected were isopods 3838 specimens, followed by hymenoptera 845 specimens, orthoptera 661 specimens, coleoptera 441 specimens, colembes 387 specimens, arachnids 277 specimens, dipterans 94 specimens, heteroptera 87 specimens and homoptera 26 specimens.

Most specimens were collected at the fifth harvest - 2180 specimens, and the fewest at the second harvest - 215 specimens.

6. In 2019, within SCDP Iași, 8 harvests were performed (on the dates: 27.05, 11.06, 30.06, 08.07, 20.07, 06.08, 25.08 and 11.09) using the method of Barber type soil traps, for the two experimental variants

7. Structure, dynamics and abundance of species collected in variant V1, walnut treated-conventional, in 2019: a number of 8 harvests of entomological material were made, being collected 2920 specimens of arthropods belonging to 54 arthropod species.

8. Regarding the dynamics of arthropods collected from the conventional walnut plantation in 2019, with the help of Barber-type soil traps, it results that the

most abundant species collected were isopods 839 specimens, followed by hymenoptera 752 specimens, collembola 408 specimens, hemiptera 272 specimens, arachnids 216 specimens, coleoptera 164 specimens, heteroptera 122 specimens, homoptera 25 specimens, orthoptera 5 specimens, lepidoptera 4 specimens and thysanoptera 1 specimen.

Most specimens were collected at the third harvest - 734 specimens, and the fewest at the seventh harvest - 144 specimens.

9. Structure, dynamics and abundance of species collected in variant V2, ecological walnut, in 2019: a number of 8 harvests of entomological material were made, being collected 6989 specimens of arthropods belonging to 84 arthropod species.

10. Regarding the dynamics of arthropods collected from the ecological walnut plantation in 2019, with the help of Barber type soil traps, it results that the most abundant species collected were isopods 4089 specimens, followed by hymenoptera 883 specimens, coleoptera 642 specimens, orthoptera 536 specimens, arachnids 298 specimens, heteroptera 161 specimens, dipterans 133 specimens, hemiptera 58 specimens collembola 57 specimens, homoptera 29 specimens, lepidoptera 10 specimens and thysanoptera 7 specimens.

Most specimens were collected at the third harvest - 2461 specimens, and the fewest at the seventh harvest - 499 specimens.

11. The collection of the entomological material by the threading method was done periodically, on May 27, June 11, June 30, July 8, July 20 and August 6 in the two experimental variants: V1 treated walnut (conventional); V2 organic walnut;

12. In 2019, a number of 1080 arthropods were collected for the treated V1-walnut variant with the help of the entomological net, and for the ecological V2-walnut variant, a number of 980 specimens of arthropods were collected.

13. In 2018 and 2019, a number of 6 chemical treatments were applied in the conventional walnut plantation to control pests: aphids, mites, defoliating insects, San Jose lice using products such as Mopsilan 20 SG, Decis 25 WG, Calypso 0.2%, etc., and against fungal pathogens Bordelaise juice was used in conc. 5%, Signum 0.05%, Captan 80 WDG, etc.

14. Although the walnut species is suitable for organic fruit growing, given that this fruit species compared to others manages to give a qualitative and quantitative production with a lower number of phytosanitary treatments, they should not be neglected because with climate change pests of this species they have become more and more present in walnut orchards. The substances used were: Funguran OH 300 SC - 0.05%, Altosan -0.3%, Kerafol evo - 0.3%, Wetcit - 0.3%, Mimox 0.2%, Prev-am - 0.2 %, Laser 240 SC -0.06%, Garex - 0.3%, Ovipron top - 0.10%, etc

15. Regarding the useful arthropod species found in walnut plantations in the two years of research they were: *Formica rufa*, *Harpalus distinguendus* Duf., *Anisodactylus binotatus* F., *Tachyusa coarctata* Erichson, *Harpalus calceatus* Duft., *Amara crenata* Dejean, *Harpalus aeneus* F., *Metabletus truncatulus* L., *Amara aenea*, *Sipalia circelar* Grav., *Staphylinus caesareus* Cederh., *Aphthona euphorbiae* Schrank, *Coccinella 7 punctata* L., *Scymnus auritus* Thunberg, *Brachynus crepitans* L., *Pterostichus cupreus* L., *Harpalus azureus* F., *Malachius bipustulatus* L., *Pterostichus nigrita* Payk., *Brachynus explodens* Duft., *Coccinella bipunctata* L., *Pterostichus punctatus* L., *Forficula auricularia* L., *Harpalus tardus* Panz., *Hister purpurascens* Herbst, *Oxytelus nitidulus* Grav., *Philonthus splendens*, *Pterostichus niger* Schaller, *Tachyporus macropterus* Steph.