



**EUROPEAN CONFERENCE**

# **Conference Proceedings**



**V International Science Conference  
«Development and implementation of  
technologies in production»**

**March 12 – 13, 2021**

**Leeuwarden, The Netherlands**

# **DEVELOPMENT AND IMPLEMENTATION OF TECHNOLOGIES IN PRODUCTION**

Abstracts of V International Scientific and Practical Conference

Leeuwarden, Netherlands  
March 12 – 13, 2021

UDC 01.1

ISBN – 978-9-40361-461-8

The V International Science Conference «Development and implementation of technologies in production», March 12 – 13, 2021, Leeuwarden, Netherlands. 86 p.

Text Copyright © 2021 by the European Conference (<https://eu-conf.com/>).

Illustrations © 2021 by the European Conference.

Cover design: European Conference (<https://eu-conf.com/>).

© Cover art: European Conference (<https://eu-conf.com/>).

© All rights reserved.

No part of this publication may be reproduced, distributed, or transmitted, in any form or by any means, or stored in a data base or retrieval system, without the prior written permission of the publisher. The content and reliability of the articles are the responsibility of the authors. When using and borrowing materials reference to the publication is required. Collection of scientific articles published is the scientific and practical publication, which contains scientific articles of students, graduate students, Candidates and Doctors of Sciences, research workers and practitioners from Europe, Ukraine, Russia and from neighboring countries and beyond. The articles contain the study, reflecting the processes and changes in the structure of modern science. The collection of scientific articles is for students, postgraduate students, doctoral candidates, teachers, researchers, practitioners and people interested in the trends of modern science development.

The recommended citation for this publication is: Gerasko T., Pyda S.

Effect of inoculation with symbiotic endo- and ectomycorrhizal fungi on physiological parameters of sweet cherry leaves // Development and implementation of technologies in production. Abstracts of V International Scientific and Practical Conference. Leeuwarden, Netherlands 2021. Pp. 7-9.

URL: <https://eu-conf.com>.

## TABLE OF CONTENTS

AGRICULTURAL SCIENCES		
1.	Gerasko T., Pyda S. EFFECT OF INOCULATION WITH SYMBIOTIC ENDO- AND ECTOMYCORRHIZAL FUNGI ON PHYSIOLOGICAL PARAMETERS OF SWEET CHERRY LEAVES	7
2.	Данілова О.М. ВИКОРИСТАННЯ СУЧАСНИХ МЕТОДІВ ТА ТЕХНОЛОГІЙ ДЛЯ ОБЛІКУ ТА СПОСТЕРЕЖЕННЯ ЗА ЛІСОВИМИ НАСАДЖЕННЯМИ	10
3.	Коваль С.А. РОЗПОВСЮДЖЕННЯ БУКА ЛІСОВОГО (FAGUS SYLVATICA L.) У ПРАВОБЕРЕЖНОМУ ЛІСОСТЕПУ УКРАЇНИ	13
BIOLOGICAL SCIENCES		
4.	Курбатова И.Н., Чепиль Л.В. ВЛИЯНИЕ ХЛОРТЕТРАЦИКЛИНА НА РАЗВИТИЕ ИКРЫ КАРПА (CYPRINUS CARPIO L.)	16
ECONOMIC SCIENCES		
5.	Nazarenko V. IMPACT OF URBANIZATION ON FOREST AND GREEN AREAS COVER: ECONOMIC OUTLOOK	19
6.	Зайцева Л.О. КАПІТАЛІЗАЦІЯ ЯК ПОКАЗНИК ЕФЕКТИВНОЇ ДІЯЛЬНОСТІ КОМПАНІЇ	22
LEGAL SCIENCES		
7.	Петрова І.А., Чекін Д.О. ПОКАЗНИКИ СОЦІАЛЬНОЇ ЕФЕКТИВНОСТІ СУДОВОЇ ЕКСПЕРТИЗИ	26

MEDICAL SCIENCES		
8.	Starokadomsky D., Reshetnyk M. POSSIBILITIES OF PYROGENIC NANOSILICA "ASIL" A300 AS THE MAIN COMPONENT OF FORMULATIONS FOR SELF-RESTORATION AND DELAY IN THE DEVELOPMENT OF DEEP CARIOUS LESIONS	29
9.	Колосович И.В., Ганоль И.В. ПРОФИЛАКТИКА И ЛЕЧЕНИЕ ВНУТРИБРЮШНОЙ ГИПЕРТЕНЗИИ ПРИ ОСТРОМ ПАНКРЕАТИТЕ	32
10.	Нечитайло О.Ю. ДІАГНОСТИЧНЕ ЗНАЧЕННЯ ІНФРАЧЕРВОНОЇ ТЕРМОМЕТРІЇ У ПОПЕРЕДЖЕННІ РОЗВИТКУ ГНІЙНО-НЕКРОТИЧНИХ УСКЛАДНЕНЬ СИНДРОМУ ДІАБЕТИЧНОЇ СТОПИ	35
PEDAGOGICAL SCIENCES		
11.	Шетеля Н.І. ЦІННІСНА ОСВІТА ТА ЇЇ ПОТЕНЦІАЛ ДЛЯ ПРОФЕСІЙНОЇ ПІДГОТОВКИ ФАХІВЦІВ У ГАЛУЗІ КУЛЬТУРИ І МИСТЕЦТВ	38
PHILOLOGICAL SCIENCES		
12.	Galka Y. MULTIMEDIA TECHNOLOGY APPLICATION IN TEACHING OF ENGLISH	48
PHILOSOPHICAL SCIENCES		
13.	Сумченко І.В. ОСОБЛИВОСТІ МАСОВОЇ КУЛЬТУРИ ЯК ФЕНОМЕН ХХ СТОЛІТТЯ	50
PSYCHOLOGICAL SCIENCES		
14.	Зубіашвілі І.К., Мельничук Т.І. МОНЕТАРНА СОЦІАЛІЗАЦІЯ ЯК ЧИННИК ЕКОНОМІЧНОГО САМОВИЗНАЧЕННЯ СТУДЕНТСЬКОЇ МОЛОДІ	53

TECHNICAL SCIENCES		
15.	Berezutskyi V., Maksimenko O. MODERN RAIN SEWERAGE SYSTEMS OF MACHINE-BUILDING ENTERPRISES	56
16.	Dmitrieva O., Khorenzhaja I. THEORETICAL AND METHODOLOGICAL AND APPLIED PROBLEMS OF INTRODUCTION OF ECOLOGICALLY SAFE WATER USAGE IN SETTLEMENTS IN THE PROCESS OF SOCIETY URBANIZATION	59
17.	Haitan O. SOFT SKILLS FORMATION AT DISTANCE LEARNING OF THE TECHNICAL SPECIALTIES STUDENTS IN WEBINAR-ORIENTED PLATFORMS	61
18.	Kurzina N.M., Kolmakov A.G., Kurzina E.G. INVESTIGATION OF THE FRICTIONAL PROPERTIES OF METAL-POLYMER TRIBOCONJUGATION UNDER VARIOUS TEMPERATURE AND FORCE EFFECTS	63
19.	Кайрбаева А.Е., Серікбай Н.С. СОВЕРШЕНСТВОВАНИЕ ПРОЦЕССА ПЕРЕРАБОТКИ СЕМЯН НА РАСТИТЕЛЬНОЕ МАСЛО МЕТОДОМ ХОЛОДНОГО ОТЖИМА	67
20.	Кайрбаева А.Е., Әбдісейіт Ш.Қ. УСТАНОВЛЕНИЕ ХАРАКТЕРИСТИК ОПОР РОТОРНОГО УЗЛА	70
21.	Кайрбаева А.Е., Бейсембаева А.Б. ИССЛЕДОВАНИЕ ВЛИЯНИЯ ПАРАМЕТРОВ УЛЬТРАЗВУКОВОЙ ОБРАБОТКИ НА ФОРМИРОВАНИЕ НАПРЯЖЕНИЙ ПРИ НАРЕЗАНИИ НАРУЖНЫХ РЕЗЬБ	74
22.	Кусий Я.М., Погорілий Ю.О. ФУНКЦІОНАЛЬНО-ОРІЄНТОВАНЕ ПРОЕКТУВАННЯ ОПЕРАЦІЙ ПРИ ВИГОТОВЛЕННІ ВИРОБІВ	78
23.	Кутепов С.Н., Гвоздев А.Е. ВЛИЯНИЕ УРОВНЯ РАСТЯГИВАЮЩИХ НАПРЯЖЕНИЙ НА СОПРОТИВЛЯЕМОСТЬ АРМАТУРНОГО ПРОКАТА ВОДОРОДНОМУ РАСТРЕСКИВАНИЮ	81

24.	Летюк В.И. ПОВЫШЕНИЕ КАЧЕСТВА И ПРОДУКТИВНОСТИ МЕЛКОСЕРИЙНОГО ГРУППОВОГО ИЗГОТОВЛЕНИЯ ЛОПАТОК ПАРОВЫХ ТУРБИН МЕТОДАМИ ИМИТАЦИОННОГО МОДЕЛИРОВАНИЯ	84
-----	---	----

# **EFFECT OF INOCULATION WITH SYMBIOTIC ENDO- AND ECTOMYCORRHIZAL FUNGI ON PHYSIOLOGICAL PARAMETERS OF SWEET CHERRY LEAVES**

**Tatyana Gerasko,**

PhD of Agricultural Sciences, Associate Professor,  
Department of Horticulture, Viticulture and Biochemistry,  
Dmytro Motornyi Tavria State  
Agrotechnological University,  
Melitopol, Ukraine

**Svitlana Pyda,**

Dr. of Agricultural Sciences, Professor,  
Department of Botany and Zoology,  
Volodymyr Hnatyuk Ternopil  
National Pedagogical University,  
Ternopil, Ukraine

Sweet cherry (*Prunus avium* L.) is the dominant fruit crop of our region. The relevance of our research is due to the need to develop a sustainable, independent of external resources organic technology for growing sweet cherry. Abandonment of synthetic mineral fertilizers and chemical plant protection products, inoculation of fruit tree roots with endo- and ectomycorrhizal fungi should to promote agroecosystem sustainability. But little is known about the effects of inoculation with symbiotic endo- and ectomycorrhizal fungi on physiological parameters of sweet cherry leaves in organic orchards. The aim of this study was to investigate the effect of endo- and ectomycorrhizal root inoculation on the physiological parameters of sweet cherry trees, in particular, on the physiological parameters of leaves. Our task was to determine the total leaf area, specific leaf density, leaf total moisture content, water-retaining ability, chlorophyll content and ratio in sweet cherry leaves by root inoculation with symbiotic endo- and ectomycorrhizal fungi.

The work was conducted from 2018 to 2020 years in the Southern Steppe of Ukraine in Zelene village near the city of Melitopol (46°46'N, 35°17'E). The soil cover of the investigated area is the chestnut soils, which are very low-humus. Soils have a weakly alkaline reaction of soil solution (pH varies within 7.1-7.4). On the background of a light granulometric composition, the humus content in the upper humus horizon is 0.6%. The analysis of aqueous extraction revealed that the total content of water-soluble salts does not exceed 0.015-0.024%. Mineral nitrogen was not detected, the content of P<sub>2</sub>O<sub>5</sub> is 5.4; K<sub>2</sub>O - 6.5 mg / kg of soil. Despite the lack of nutrients and low humus content, the soil is quite suitable for growing sweet cherries, which is confirmed



by more than a century of production experience. Soil conditions of the experimental garden are favorable for mycorrhization, as it is shown that the low level of soil nitrogen and phosphorus contributes to the colonization of plant roots by symbiotic fungi [1]. The plant material for the research was the sweet cherry cv. Dilema (*Prunus avium* L. / *Prunus mahaleb*), planted in 2011 at 7 × 5 m. The cv. Dilema is a medium-early sweet cherry obtained by crossing cv. Drogan Yellow and Valery Chkalov. The tree is vigorous, forms a spreading, slightly drooping, dense crown. The fruits are convex-heart-shaped, the skin and flesh are dark red, excellent sour-sweet, refreshing taste. It ripens in the conditions of Melitopol in the first decade of June. Orchard rows were oriented north to south. Trees were trained as central leader.

For our fungal treatments we chose MycoApply Superconcentrate 10 (endomycorrhizal fungi) and MycoApply Micronized Endo / Ecto (ectoendomycorrhizal fungi) to inoculate sweet cherry roots. MycoApply Superconcentrate 10 is a concentrated, thin, suspended material with a particle size of less than 300 µm, containing 10 million endomycorrhizal propagules per pound of 4 species of fungi: *Glomus intraradices* (modern name *Rhizophagus intraradices*), *Glomus mosseae*, *Glomus aggregatum*, *Glomus etunicatum* [2]. MycoApply Micronized Endo/Ecto is a concentrated, thin, suspended powder mycorrhizal inoculum with a particle size of less than 300 µm, containing mycorrhizal propagules of 4 species of endomycorrhizal fungi (1 million propagules per pound *Glomus intraradices*, *Glomus mosseae*, *Glomus aggregatum* and 7 species of ectomycorrhizal fungi (5.5 million propagules per pound *Rhizopogon villosulus*, *Rhizopogon luteolus*, *Rhizopogon amylopogon*, *Rhizopogon fulvigeleba*; 100 million propagules per pound *Pisolithus tinctorius*; 5 million propagules per pound *Scleroderma cepa* and *Scleroderma citrinum* [2]. The orchard floor was kept under "live mulch" (natural herbs, mowed 4 times during the growing season and the clippings were left on the ground for decomposition). The following treatments were applied: 1. Control - without inoculation; 2. Inoculation of sweet cherry roots with MycoApply Superconcentrate 10 (root inoculation with endomycorrhizal fungi); 3. Inoculation of sweet cherry roots with MycoApply Micronized Endo / Ecto (root inoculation with endo-ectomycorrhizal fungi). Any other management was identical in each treatment. Synthetic mineral fertilizers and chemical plantprotection products were not used. The experiment was designed as a randomized complete block with three treatments in four replicates. Each experimental plot contained 4 control trees surrounded by 14 " guard " trees. The physiological parameters of leaves were determined and statistically compared by conventional methods [3-5].

The results of our research show that inoculation with endomycorrhizal fungi increased leaf total moisture content and water-retaining ability than uninoculated trees. The total leaf area at the beginning of the study (1 year) was significantly reduced in endomycorrhizal-inoculated trees, while the specific leaf density was increased (compared to control trees). In the following year, the total leaf area was significantly increased in endomycorrhizal-inoculated trees, and the specific leaf density did not differ significantly from control trees.

Leaf chlorophyll content of mycorrhizal-inoculated trees was significantly decreased compared to control trees, both in 2019 and in 2020. The chlorophyll ratio

(a / b) in 2019 was significantly increased in endomycorrhizal-inoculated trees and significantly decreased in endo-ectomycorrhizal-inoculated trees compared to uninoculated trees. In 2020 chlorophyll ratio (a / b) was significantly lower both in endomycorrhizal-inoculated and endo-ectomycorrhizal-inoculated trees than uninoculated trees. Inoculation of fruit tree roots with endo-ectomycorrhizal fungi did not significantly affect the leaf total moisture content and the total leaf area, but significantly increased the water-retaining ability in the first year of research.

#### **List of references**

1. Martinez TN, Johnson NC (2010) Agricultural management influences propagule densities and functioning of arbuscular mycorrhizas in low- and high-input agroecosystems in arid environments. *Applied Soil Ecology*. 46(2): 300-306. doi: 10.1016/j.apsoil.2010.07.001
2. MycoApply Mycorrhizal Product Line: What is the Best Option for You? URL: <https://mycorrhizae.com/mycoapply-mycorrhizal-product-line-what-is-the-best-option-for-you/>
3. Karpenchuk GK, Melnyk AV (1987) Uchety, nabliudeniya, analyzy, obrabotka dannykh v opytakh s plodovymy i yahodnymy rastenyami: Metodycheskye rekomendatsyy. Uman. s.-kh. yn-t, Uman (in Russian).
4. Pochynok HN (1976) Metody biokhymycheskoho analiza rastenyi. Nauk. Dumka, Kiev (in Russian).
5. Lakyn HF (1990) Biometrya. Vysshaya shkola, Moscow (in Russian).