



ULST Timisoara
Multidisciplinary Conference on Sustainable Development
 21-22 May 2026



***Tuberculatus annulatus* (Hemiptera: Aphididae) in natural and artificial regeneration of pedunculate oak (*Quercus robur*)**

Ciprian G. FORA, Vlad IORDĂNESCU

University of Life Sciences "King Mihai I" from Timisoara
 Faculty of Horticulture, Forestry and Plant Biotechnology
 Department of Forestry

Abstract: Pedunculate oak (*Quercus robur*), is one of the most valuable deciduous tree species in Romanian's forest and serves as an important food source for numerous species of harmful insects. *Tuberculatus annulatus* (Hartig, 1841), is one of them. Common oak aphid (*Tuberculatus annulatus*) is a small sap-sucking insect, mainly found on pedunculate oak undersides leaves, to which it clings using its pretarsal claws. Unlike other species of forest aphids, this species does not form strong mutualistic relationships with ants, not benefiting from the advantages offered by the 'trophobionic' relationship. The species of aphid lives mostly solitary on the undersides of leaves, which is why the activities of its parasitoids and predators often go unnoticed. In fact, to date, only a few species of parasitoid wasps (eg. *Aphelinus thomsoni*) and of predatory Coccinellids (eg. *Coccinella septempunctata*, *Anatis ocellata*, *Calvia quatuordecimguttata*), are noticed. As is well known, in temperate region, aphids are most destructive insect pests on cultivated plants. At the same time, many species of aphids can transmit viruses to their host plants, which can have a devastating effect on the health of the trees. Given these facts, as well as the insect's widespread presence on pedunculate oak trees in both natural and artificial regenerations in the forests placed in western side of Romania, the aim of below study is to assess the level of existing populations in several areas. To conduct the observations, three sample plots with natural regeneration and three sample plots with artificial regeneration were selected in the field. *Tuberculatus annulatus* was present in all research areas investigated, on different levels.



Tuberculatus annulatus
 adult winged viviparae



Pedunculate oak
 natural regeneration

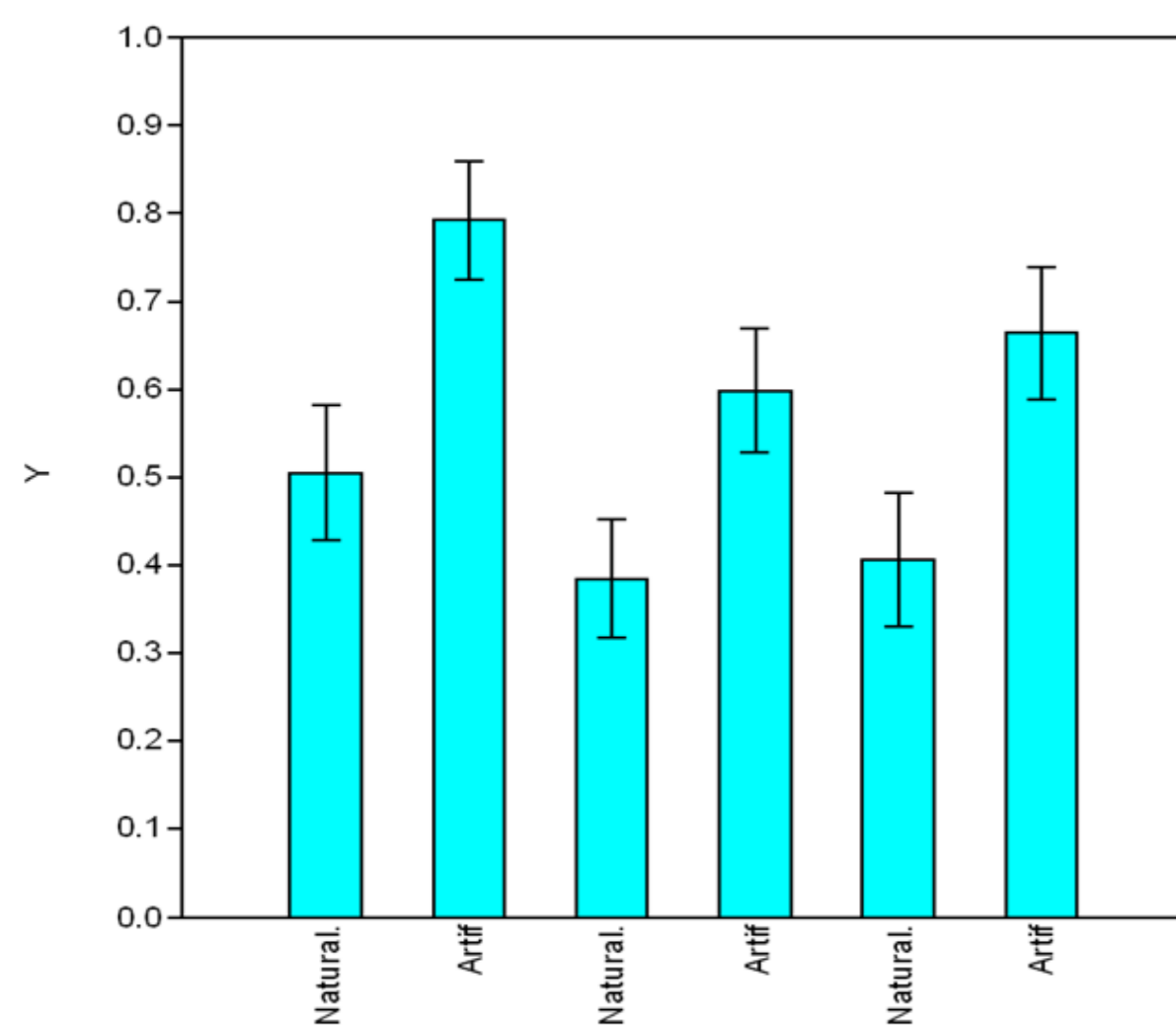


Pedunculate oak
 artificial regeneration

Research plots description

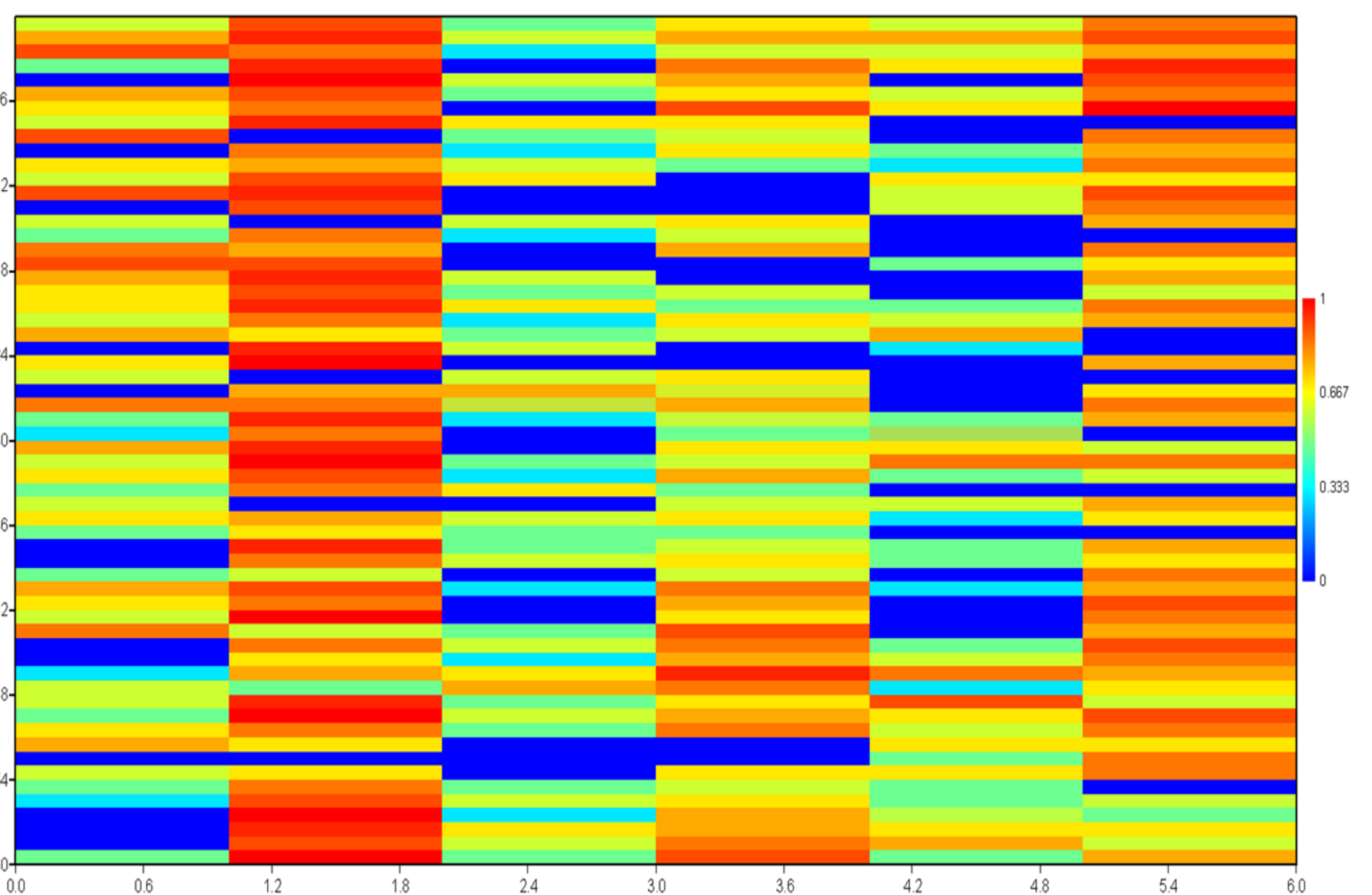
Crt. no.	Aphid species	Forest regeneration type	Forest district	Production unit	Location	Planing unit	Composition	Age (years)	Altitude (m)	Forest site	Forest type	Flora
1	<i>Tuberculatus annulatus</i>	Natural	Timisoara	I	Pischia	57A	6ST3FR1DT	5	140	8333	6223	Arum-Pulmonaria
2	<i>Tuberculatus annulatus</i>	Artificial	Timisoara	I	Pischia	66E	5ST2CE2FR1DT	5	140	8333	6223	Arum-Pulmonaria
3	<i>Tuberculatus annulatus</i>	Natural	Lunca Timisului	IV	Cheveres	53A	7ST2FR1DT	5	100	8512	6122	Arum-Pulmonaria
4	<i>Tuberculatus annulatus</i>	Artificial	Lunca Timisului	IV	Cheveres	10A	6ST4FR	5	90	8511	6324	Arum-Pulmonaria
5	<i>Tuberculatus annulatus</i>	Natural	Lugoj	VI	Leucusesti	164E	7ST2FR1TE	5	160	7333	6131	Carex-pilosa
6	<i>Tuberculatus annulatus</i>	Artificial	Faget	I	Margina	47A	3CA2FA2CE1ST	5	190	6152	7514	Carex-Poa pratensis

Kruskal-Wallis test



Plot	1	2	3	4	5	6
Plot	Natural.	Artif.	Natural.	Artif.	Natural.	Artif.
1 Natural.		2.45E-10	0.005817	0.04938	0.045	0.000118
2 Artif.	3.68E-09		1.74E-14	1.95E-08	4.15E-13	5.82E-05
3 Natural.	0.08725	2.61E-13		7.52E-07	0.5335	7.55E-10
4 Artif.	0.7407	2.93E-07	1.13E-05		6.05E-05	0.0107
5 Natural.	0.675	6.22E-12	1	0.000907		5.88E-08
6 Artif.	0.001776	0.000873	1.13E-08	0.1604	8.82E-07	

P values



Heat map - Real distribution based on the number of individuals (relative density).

Conclusions

Tuberculatus annulatus was present in all research areas;
 Population levels differ significantly in the most of areas between natural and artificial regeneration of pedunculate oak;
 Site conditions significantly influence the population levels of the species under study;
 The incidence of attack is lower in natural regeneration (ranging from 70% to 79%) compared to artificial regeneration, where the incidence of attack ranged from 85% to 92%.
 The relative population density is lower in naturally regenerated forest stands than in artificially regenerated forest stands;
 Naturally regenerated stands are less preferred by *Tuberculatus annulatus*.

Acknowledgement: This work has been possible with the support of Romsilva National Forest Administration - Timis Forest Directorate, to whom we are grateful for technical support and general permission.