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Fungi associated with the attacks of insect in apricot and peach

Faiza Ilias[1]*, Nassira Gaouar[1], Wahiba Kholkhal[2]

[1]Laboratory of Ecology and Management of Natural. Department of Biology and Environment, Abu Bakr Belkaid University, BP 119 Imama, Tlemcen, (ALGERIA)

[2]Laboratory of Natural Products, Department of Molecular and Cellular Biology, Abu Bakr Belkaid University, Tlemcen, 13000, (ALGERIA)

Email : faizahope@yahoo.fr; gaouarn@yahoo.fr; wahiba13165@yahoo.fr

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ABSTRACT

The study of the infestation by insects of apricot and peach, helped to know that the rate of infestation of the insects show significant variations at different sampling dates. In addition, we have identified various fungi associated with attacks of these insects, consisting of *Aspergillus, Alternaria, Penicillium, Monilia, Cladosporium, Mucor, Rhizopus* and *Ulocladium* with the dominance of *Penicillium* and *Aspergillus.* This study shows that insects are the first vector of fungi by injuries.

KEYWORDS

Apricot;
Peach;
Insects;
Infestation;
Fungi;
Associated.

INTRODUCTION

Apricot (*Prunus armeniace*) and peach (*Prunus persicae L.*) in Algeria, have a special place in the lives of farmers to the area it occupies and its importance in the national market are the most cultivated species of fruit. Many pathogens (viruses, bacteria, fungi) and parasites attack all parts of the tree. The apricot and peach are susceptible to fungal diseases (rot, mildew ...) and pests like Capnodis, Mediterranean fruit fly and aphids.

Fungi themselves are responsible for 70% of the plant disease. They produce spores that are spread by wind, water (water, irrigation), insects and other animals that come into contact with the plant[1]. The needle holes are gateways to various saprophytic fungi that cause fruit rot and fall[2].

The insect also transmits bacteria and fungi that cause fruit rot. Among the existing pathogens, some can have serious consequences and their transmission by insects and other vectors makes their control difficult. Fungal diseases can cause crop losses or significant dieback of trees.

The present work aims to assess the infestation of insects of apricot and peach according to different dates of sampling and fungi associated with the attacks of this pest in the region of Tlemcen.

MATERIALS AND METHODS

Description of the study area

The station study is Maghnia situated in the region of Tlemcen, in northwestern Algeria, west longitude. It is semi-arid bioclimatic atmosphere less cool winter.

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Study of the infestation by insects

Three samples were taken during the month of may 2010, according to a systematic sampling, in an apricot orchard with 56 apricot trees and in peach orchard with 62 peach trees. The samples were taken so as to study the impact of the date on the rate of infestation. The apricots are reported to the laboratory and examined and dissected to count bites and exit holes of larvae.

The results obtained are subjected to analysis of variance ANOVA to test the influence of the date (the statistical study is performed using the Minitab software).

Mycological analysis

a. Isolation strategy: for the isolation of fungi, we cut fragments apricots and peachs posts by insects. Four fragments for each fruit were put on the surface of Petri dishes containing 20 ml of PDA medium supplemented with ampicillin at 0.6mg / l (In the case of bacterial contamination) and incubated at 25 °C for 7 days. Each sample was prepared in duplicate.

b. Preservation and identification of strains: The strains obtained as pure culture were maintained on PDA at 4 °C. For identification, we use the key of[3].

RESULTS

Study of attack of insects

a.Varying the number of bites by date

The results of statistical variations in the number of bites by date by analysis of variance, testing the effect of observation date on biting rates show clearly that there are significant variations in the average number of bites based on dates (Fobs = 34.48, p = 0.092 for apricot and Fobs = 31.56, p = 0.082 for peach). Infestations decreased significantly from the former to the latter date (Figure 1).

b. Change in number of exit holes by date

The statistical results of varying the number of exit holes by date, shows significant variations from one date to another with Fobs = 3.24 p = 0.021 for apricot and Fobs = 2.98 p = 0.032 for peach. It increases from the first date on the latest (Figure 2).

Mycological analysis

apricot and peach attacks by insects were analyzed and we found the presence of: *Aspergillus, Alternaria, Monilia, Penicillium* and *Mucor* in apricot *and Aspergillus, Penicillium, Ulocladium, Rhizopus* and *Cladosporium* in peach. *Penicillium* and *Aspergillus* fungi are the dominance in filamentous fungi in samples (Tab.1).

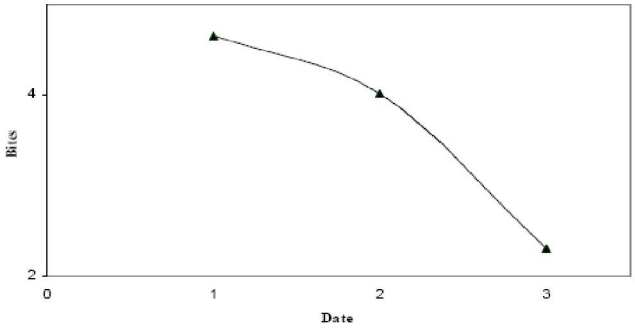

Figure 1: variation of through bites per fruit depending on the date of apricot.

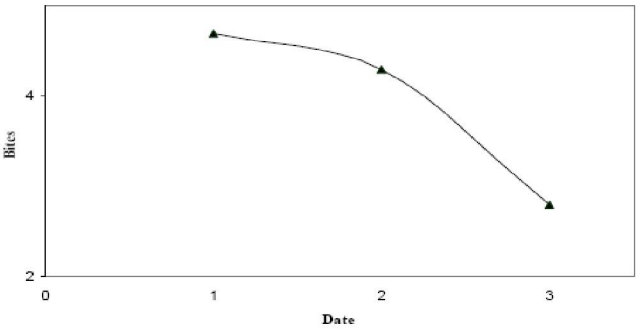

Figure 2: variation of through bites per fruit depending on the date of peach.

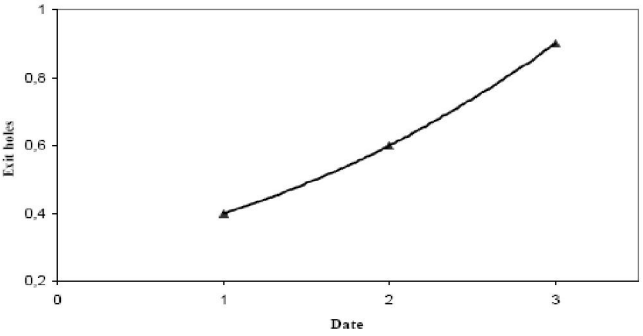

Figure 3: variation of exit holes per fruit depending on the date of apricot.

Table 1: fungi isolated from apricot attacks by insects

Genera	Number of strains	General distribution%
Penicillium	25	32.46
Aspergillus	22	28.57
Mucor	17	22.07
Alternaria	8	10.38
Monilia	5	6.49

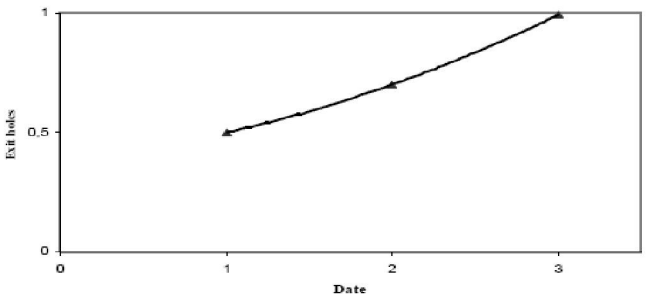

Figure 4: variation of exit holes per fruit depending on the date of peach.

Table 2: fungi isolated from peach attacks by insects

Genera	Number of strains	General distribution%
Penicillium	27	32.92
Aspergillus	20	24.39
Cladosporium	16	19.51
Rhizopus	12	14.63
Ulocladium	7	8.53

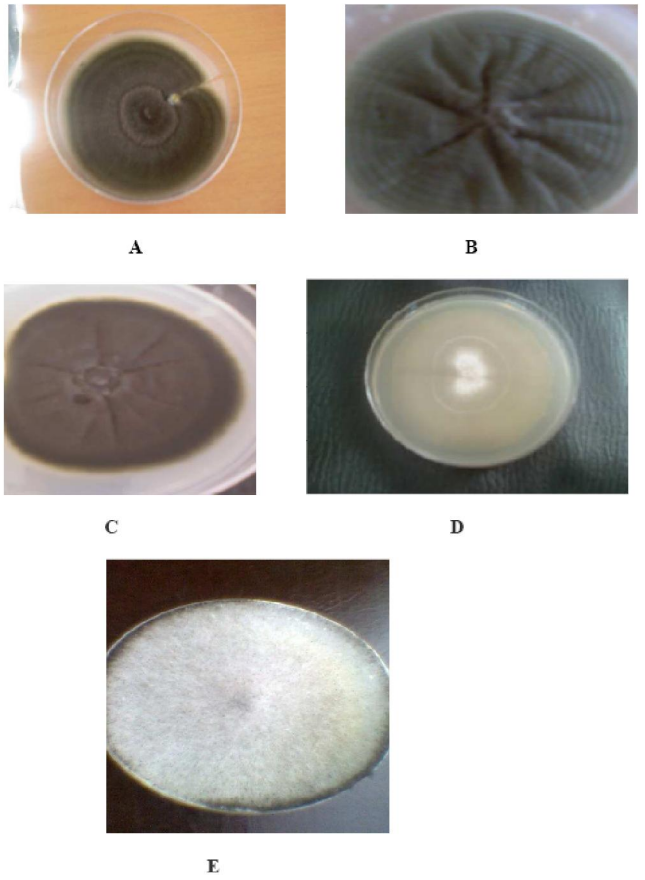

Figure 5: Macroscopic appearance of some fungi obtained (PDA medium, 25 °C, 6 days) (A: *Alternaria*, B: *Aspergillus*, C: *Ulocladium*, D: *mildew*, E: *Rhizopus*).

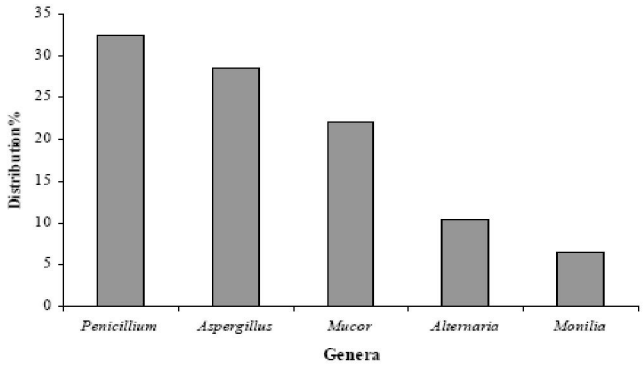

Figure 6: General distribution of fungi isolated from apricot attacks by insects

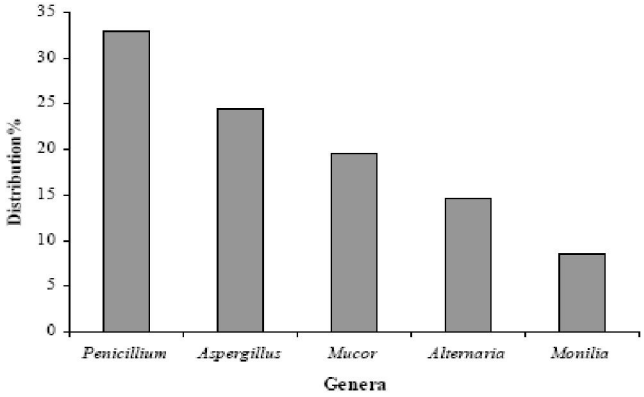

Figure 7 : general distribution of fungi isolated from peach attacks by insects

DISCUSSION

For our study, there are variations in the number of bites and number of exit holes on a date to another but without an increase as expected, this is due to the early fall heavily infested fruit[4,5]. These differences are mainly related to geographical and bioclimatic characteristics specific to each station[6]. The date is linked to climatic variations which we know the impact on the biology of all living organisms in general and especially on invertebrates[7], it is natural that this factor has much influence on the herbivore.

Females lay their eggs under the skin of the fruit. The maggots that eat cause rot and fruit drop. The attacks of insects like olive fly does not only depend on the increased number of population of the fly, but also the mobility of the fly, the presence of natural enemies and growth climatic conditions[8].

Forficula auricularia, this insect can cause significant damage to apricot and peach. It mainly attacks the fruit at the approach of the maturity[9].

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The total fungal flora of our samples showed a dominance of filamentous fungi sporulating very gifted with great power of the release: *Penicillium* and *Aspergillus.*

Botrytis, *Penicillium*, *Rhyzopus* or *Alternaria*, these diseases are parasites of injury: the burst the epidermis and insect attacks are favorable for their installation[10].

The needle holes are then Gateway secondary pests, including moths and other Oospora and Penicillium molds[11].

At the time of oviposition of insects, fungi are introduced into plant tissues as spores.

Prolasioptera berlesiane would grow to depend on *Phoma dalmatica* that invades wounds nesting *Dacus oleae Rossi*[12].

Drosophila ampelophela is a vector of *Aspergillus niger*, one of the oldest known diseases of figs[12].

Insects can also be injected into the plant or fruit microorganisms causing spoilage.

Damage caused by chewing insects or borers provide an additional opportunity for fungi to penetrate the plant and cause rot, especially in fruits[1].

The results obtained show that insects with these pikes led to the installation of diverse fungi that attack fruit and causes fruit drop and yield.

This study has confirmed that the fight against this insect can reduce infection by various fungal diseases in olive trees.

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