



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΥΠΟΥΡΓΕΙΟ ΑΓΡΟΤΙΚΗΣ ΑΝΑΠΤΥΞΗΣ
ΚΑΙ ΤΡΟΦΙΜΩΝ
ΓΕΝΙΚΗ Δ/ΝΣΗ ΦΥΤΙΚΗΣ ΠΑΡΑΓΩΓΗΣ
Δ/ΝΣΗ ΠΡΟΣΤΑΣΙΑΣ ΦΥΤ. ΠΑΡΑΓΩΓΗΣ
ΤΜΗΜΑ ΓΕΩΡΓΙΚΩΝ ΦΑΡΜΑΚΩΝ

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ΘΕΜΑ: «Πρωτόκολλο πειραματισμού για την καταπολέμηση του Δάκου της ελιάς»

Αγαπητοί συνεργάτες,

Με αφορμή αιτήσεις που υποβάλλονται στην υπηρεσία μας για διεξαγωγή πειραμάτων για την καταπολέμηση του δάκου της ελιάς με δολωματικούς ψεκασμούς θα θέλαμε να σας ενημερώσουμε ότι στα πλαίσια των συζητήσεων που διεξάγονται στον ΕΡΡΟ προκειμένου να καθοριστεί σχετικό πρωτόκολλο πειραματισμού, η υπηρεσία μας έχει καταθέσει ορισμένα σχόλια επί του σχεδίου πρωτοκόλλου πειραματισμού τα οποία και σας επισυνάπτουμε.

Μέχρι την ολοκλήρωση των συζητήσεων στον ΕΡΡΟ και την υιοθέτηση εναρμονισμένου πρωτοκόλλου πειραματισμού τα πειράματα που διεξάγονται στη χώρα μας για την καταπολέμηση του δάκου με δολωματικό ψεκασμό θα πρέπει να διεξάγονται σύμφωνα με το συνημμένο πρωτόκολλο πειραματισμού.

Η παρούσα εγκύκλιος θα τοποθετηθεί στην ιστοσελίδα της Δ/σης Προστασίας Φυτικής Παραγωγής προκειμένου να λάβουν γνώση όλοι οι ενδιαφερόμενοι.

Ο ΠΡΟΪΣΤΑΜΕΝΟΣ ΤΗΣ Δ/ΝΣΗΣ



ΣΠ. ΖΩΓΡΑΦΟΣ

Συνημμένα: Σχέδιο πρωτοκόλλου πειραματισμού ΕΡΡΟ

Πίνακας Διανομής

1. ΕΣΥΦ
Πατησίων 53
10433 Αθήνα
(υπόψη κας Υδραίου)
2. Dow Agrosiences Export S.a.s
Καλύμνου 2,
Θεσσαλονίκη
Τ.Κ. 55133
3. ANADIAG HELLAS ΕΠΕ
Σταδίου 122
Βέροια
Τ.Κ. 59100
4. AGROBLU HELLAS ΕΠΕ
Κολοκοτρώνη 42
Θέρμη Θεσσαλονίκης
Τ.Κ. 57001
5. ΧΕΛΛΑΦΑΡΜ Α.Ε.
Φλέμιγκ 15,
Μαρούσι, Αθήνα
Τ.Κ. 15123
6. ΕΛΑΝΚΟ ΕΛΛΑΣ Α.Ε.Β.Ε
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7. ΑΓΚΡΟΛΑΜΠ Α.Ε.
Εργαστηριακές και Συμβουλευτικές Υπηρεσίες
Τ.Θ. 88
Βιομηχανική Περιοχή Θεσσαλονίκης
8. BASF AGRO Ελλάς ΑΒΕΕ
Αιγιαλείας 48, Παράδεισος
Τ.Θ. 61339
Τ.Κ. 151 04 Μαρούσι
9. SYNGENTA Hellas ΑΕΒΕ
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15344 Ανθούσα Αττικής
10. GAB HELLAS
Καρατάσου 16,
57018 Μελισσοχώρι
Θεσσαλονίκη
11. AgroUnit Ε. ΚΟΛΤΣΙΔΑ-Γ. ΚΟΛΤΣΙΔΑΣ Ο.Ε.
Γούλα Γεωργίου 1
41222 Λάρισα
12. BAYER ΕΛΛΑΣ ΑΒΕΕ
Σώρου 18-20,

15125 Μαρούσι
13. ΝΤΥ ΠΟΝΤ ΕΛΛΑΣ Α.Ε.
Σολωμού 12 & Βας. Γεωργίου
Χαλάνδρι
Τ.Κ. 15232

ΚΟΙΝ. :

1. Π. Κ.Π.Φ & Π.Ε
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2. Μ.Φ.Ι.
Εκάλης 2
14561 Κηφισιά
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Νομαρχιακές Αυτοδιοικήσεις
Έδρες τους
4. Εσωτερική διανομή
Τμήματα Β', Δ'

Συνημμένο 1

European and Mediterranean Plant Protection Organization

Organisation Européenne et Méditerranéenne pour la Protection des Plantes

PP 1/108(2 3) REVISION

Efficacy evaluation of insecticides

~~Dacus oleae~~ *Bactrocera oleae* (Gmelin)

Specific scope

This standard describes the conduct of trials for the efficacy evaluation of insecticides against ~~Dacus~~ *Bactrocera oleae* on olive.

The criteria for evaluating a product with Bait spray from the ground applications (the aim of bait sprays is to attract and kill the adults) are the followings:

1. Olive fruit fly population
2. Olive fruit fly infestation
3. Number of bait spray applications

Specific approval and amendment

First approved in 1985-09.

Aligned with revised standard text in 1997.

Revision approved in 200_-09.

1. Experimental conditions

1.1 Test organisms, selection of crop and cultivar

Test organism: *Bactrocera oleae*

Crop: olive *Olea europaea* (OLVEU), whether the olives are intended for table (e.g. canned fruit) or for oil production.

1.2 Trial conditions

The trial should be set up in the field. The trees should be of the same cultivar.

Cultural conditions (e.g. exposure, slope, soil type, fertilization, tillage) should be uniform for all plots of the trial and should conform with local agricultural practice.

The trial should form part of a trial series carried out in different regions with distinct environmental conditions and preferably in different years or growing seasons (see EPPO Standard PP 1/181 Conduct and reporting of efficacy evaluation trials, including good experimental practice and PP 1/226 Number of efficacy trials).

1.3 *Design and lay-out of the trial*

Treatments: test product(s), reference product and untreated control, arranged in a suitable statistical design.

Plot size (net): at least 5 ha (5 ha=1000 trees).

Comment: The plot size is very critical, initial proposal was for 2000 trees but **we agreed on 1000 trees as the absolute minimum**. According to our experience anything less will give inconsistent and inconclusive results.

Replicates: at least 4.

Monitoring traps: 5 McPhail traps (baited with 2 % ammonium sulphate or protein hydrolysate)/ experimental plot in the centre of each plot and the distance among traps more than 40m

Experimental design: complete randomized block design

Comment: There should be experiments for residues and ecotox prior to efficacy in order to avoid high cost of yield destruction

For further information on trial design, see EPPO Standard PP 1/152 Design and analysis of efficacy evaluation trials.

2. Application of treatments

2.1 *Test product(s)*

The product(s) under investigation should be the named formulated product(s), see EPPO Standard PP 1/181 Conduct and reporting of efficacy evaluation trials, including good experimental practice.

2.2 *Reference product*

The reference product should be a product known to be satisfactory in practice under the conditions of the area of intended use (plant health, agricultural, horticultural, forestry, climatic, environmental, as appropriate). In general, type of action, time of application and method of application should be as close as possible to those of the test product. If this is not possible, reference product and test product should be applied according to their specified use.

2.3 *Mode of application*

Applications should comply with good standard practice.

2.3.1 *Type of application*

The type of application (e.g. bait spray) should be as specified for the intended use.

Rules of proper bait sprays:

1. Spray early in the morning
2. Directional spray inside the tree canopy
3. Spraying solution not more than 30lt/ha
4. Suitable environmental conditions (temperature <28 °C, wind velocity<4bf)

Comment: Manufacturer should specify if spray every tree, every other tree, every third tree e.t.c.

2.3.2 Type of equipment

Application(s) should be made with equipment which provides an even distribution of product on the whole plot or accurate directional application where appropriate. Factors which may affect efficacy (such as operating pressure, nozzle type, volume rate) should be chosen in relation to the bait sprays intended use.

In bait applications the spraying nozzle which is the size recorded in a leaf surface should be as large as it can be (droplet size diameter > 5mm).

The size depends on the viscosity of the spraying solution, pressure, the hole of the gun sprayer and the distance from the tree application point.

e.g In Crete conditions, the man who holds the gun sprayer is in a distance of 7m from the application point, the diameter hole of gun sprayer is about 1.5mm, the spraying pressure is about 10 Atm and the nozzle size >5mm.

2.3.3 Time and frequency of application

The number of applications and the date of each application should be as specified for the intended use.

In general, the timing of applications is based on regular monitoring of populations of the pest. Weekly assessments (see 3.2.1) should be made until the threshold for treatment is reached (see below). Weekly assessments of the same type should also be made during periods of strongly increasing attack, in order to time late treatments.

Weekly monitoring of olive fruit fly population with a net of McPhail traps. Application with the tested product when the mean number of adults of *B. oleae*/trap/week more than five.

In order to apply the first bait spray application, you should take in account the followings:

- Mean number of adults/week/trap>5
- Ratio of females to males>1
- Mature females >5% of the population
- Suitable environmental conditions (temperature <28 °C, wind velocity<4bf)
- The hardness of the stone of the olive fruit.

The criterion for the next application is only the weekly captures of the traps.

2.3.4 Doses and volumes

The product should normally be applied at the dosage specified for the intended use. Doses higher or lower than the intended dose may be tested to determine the margin of effectiveness and crop safety (see EPPO Standard PP 1/225 Minimum effective dose).

Full details on doses and volumes are given in EPPO Standard PP 1/239 Dose expression for plant protection products.

In summary, the dosage applied should normally be expressed in kg (or L) of formulated product per ha and volume of water per ha should also be recorded for sprays. It may also be useful to record the dose in g of active substance per ha. In certain circumstances, the dose may be expressed as a concentration (%) combined with a volume ($L ha^{-1}$) appropriate to specific use.

Deviations from the intended dosage should be noted.

2.3.5 *Data on other plant protection products*

If other plant protection products (or any biocontrol agents) have to be used, they should be applied uniformly to all plots, separately from the test product and reference product. Possible interference with these should be avoided.

3. Mode of assessment, recording and measurements

3.1 *Meteorological and edaphic data*

3.1.1 *Meteorological data*

On the days before and after application, meteorological data should be recorded which are likely to affect the development of the crop and/or pest and the action of the plant protection product. This normally includes data on precipitation and temperature.

All data should preferably be recorded on the trial site, but may be obtained from a nearby meteorological station. Its location and distance from a trial site should be noted.

On the date of application, meteorological data should be recorded which are likely to affect the quality and persistence of the treatment. This normally includes at least precipitation (time between treatment and start of precipitation, and amount in mm), wind speed and direction (at trial site during application), temperature (average, maximum, minimum in °C), relative humidity and, if possible, cloud cover and light intensity. Any significant change in weather should be noted.

Throughout the trial period, extreme weather conditions, such as severe or prolonged drought, heavy rain, late frosts, hail, etc., which are likely to influence the results, should also be reported. All data concerning irrigation should be recorded as appropriate.

3.1.2 *Edaphic data*

Not required.

3.2 *Type, time and frequency of assessment*

The BBCH growth stage of the crop at each date of application and assessment should be recorded.

3.2.1 *Type*

1. Weekly monitoring of population with McPhail traps
2. Olive fruit samplings infestation: From 50 olive trees from each plot, collect a sampling of 10 olive fruits/tree distributed in all parts of the tree canopy (north,

south etc and 1.5m from the ground). Totally, 500 olive fruits (25x 20 olive trees) will be collected in order to estimate

➤ **% Alive infestation** = Live ((eggs + Larvae (L1 +L2 +L3) + Pupae)

➤ **% Dead infestation** = Dead (eggs + Larvae (L1 +L2 +L3) + Pupae) + Parasitized (Larvae (L2 +L3) + Pupae)

➤ **% Total infestation** = % Alive infestation + % Dead infestation + Exit holes

*(measure the weight of 100 olive fruits for each sampling period)

3. Record the number of bait spray applications with the tested products compared to reference product

3.2.2 Time and frequency

1. Weekly monitoring of population with McPhail traps

2. Random olive fruit samplings are necessary twice a month from the central part of each experimental plot during all the experimental period (until harvest).

3.3 Direct effects on the crop

The crop should be examined for the presence of phytotoxic effects (or visible remains of the product). In addition, any positive effects should be noted. The type and extent of such effects on the crop should be recorded and, if there are no effects, this fact should also be recorded.

Phytotoxicity should be scored as follows:

- (1) if the effect can be counted or measured, it should be expressed in absolute figures ;
- (2) in other cases, the frequency and degree of damage should be estimated. This may be done in either of two ways: each plot is scored for phytotoxicity by reference to a scale, or each treated plot is compared with an untreated plot and % phytotoxicity estimated.

In all cases, unintended effects on the crop should be accurately described (stunting, chlorosis, deformation, delay in emergence, etc.). For further details, see EPPO Standard PP 1/135 Phytotoxicity assessment which contains sections on individual crops.

3.4 Effects on other organisms

3.4.1 Effects on other pests

Any observed effects, positive or negative, on the incidence of other pests should be recorded.

3.4.2 Effects on other non-target organisms

Any observed effects, positive or negative, on naturally occurring or introduced pollinators or natural enemies should be recorded. Any observed effect, positive or

negative, on adjacent or succeeding crops should be recorded. Any environmental effects should also be recorded, especially effects on wildlife.

3.5 *Quantitative and qualitative recording of yield*

Not required.

4. Results

The results should be reported in a systematic form and the report should include an analysis and evaluation. Original (raw) data should be available. Statistical analysis should normally be used, by appropriate methods which should be indicated. If statistical analysis is not used, this should be justified. See EPPO Standard PP 1/152 Design and analysis of efficacy evaluation trials.