Galloprotect Pack

Pine sawyer *Monochamus galloprovincialis*

The pine sawyer, *Monochamus galloprovincialis* (Coleoptera: Cerambycidae), is a secondary insect that colonizes newly dead or dying pine trees all over Europe. It has also been found in the Caucasus, Siberia, Mongolia, China and North Africa. All pine tree species are susceptible of being settled by this species but also the genera *Abies, Picea* and *Larix*.



Monochamus galloprovincialis
Coleoptera: Cerambycidae









The importance of *M. galloprovincialis* is based on the transmission of *Bursaphelenchus xylophilus*, a lethal pathogen responsible of pine trees wilt disease. Adults of this coleoptera emerge in late May and can remain until October feeding on the bark of young twigs of healthy trees. Reproduction and larvae development take place in decaying, recently dead, dying, cut or half-burnt trees. There is usually one generation per year, but it can take two in colder areas. Nematodes enter the body of the adult insect, mainly in the trachea.
When *M. galloprovincialis* feed on the twigs of healthy pine trees, the nematode leaves the vector body and penetrates the tree through the bites, infecting it. Nematodes can also infect newly dead pine trees when the vector oviposits on them.

CONTROL MANAGEMENT

The fight against *M. galloprovincialis* is quite necessary, not for the direct damage but for the spread of the pinewood nematode. The control techniques of the insect are based on preventive management headed to avoid the cerambycid dispersal from the currently affected areas. In order to prevent the spread of the insect, it is recommended a correct planning of silvicultural treatments, like not leaving a large amount of dead wood in the forest. Registered and authorized phytosanitary products can be punctually used, although their utilization has to be considered as last option for the high environmental impact involved.
For the reduction of the insect population, it has been extended the use of pheromones and kairomones of *M. galloprovincialis.*

FORMULATION

Dispensers

The product GALLOPROTECT PACK consists of three vapor dispensers:
- GALLOPROTECT 2D composed of two dispensers that contains independently the aggregation pheromone (2-undecyloxy-1-ethanol) and kairomonal substances such as ipsenol and 2-methyl-3-buten-2-ol.
- GALLOPROTECT PLUS, consists of two dispensers which emit a kairomonal attractant (alpha-pinene).

The persistence of the whole product GALLOPROTECT PACK is, in normal conditions, around 45-50 days. The efficiency of the whole dispenser depends on temperature, ventilation and relative humidity.



APPLICATION

- For the application of monitoring it is necessary to follow the guidelines established by the vegetable sanitary authorities.
- Each dispenser comprising GALLOPROTECT PACK has to be placed in different places of the same trap. The type of device recommended is a multi-funnel trap or

an interception one, locating the kairomonal dispenser in the upper part of the trap and the pheromone in the lower.
- Furthermore GALLOPROTECT PLUS is recommended to be placed in the middle part of the trap.
- Traps should be disposed in the forest, hanging from a suitable support or by ropes, about 2 m above ground. Distance between traps should be 100 to 150 m, placing them in open areas. Periodic counts of the traps are highly recommended.
- Monitoring application does not exempt from a continuous, proper and careful silvicultural management.

HANDLING AND STORAGE

GALLOPROTECT PACK is packed in a single package. The material of the packaging is impermeable to vapors of the different products. It is recommended to keep the product in its original packaging, unopened in a cool place until ready to use. The dispensers comprising GALLOPROTECT 2D should be stored preferably in the freezer and GALLOPROTECT PLUS in the refrigerator (never in the freezer). Under these conditions GALLOPROTECT 2D and GALLOPROTECT PLUS can be stored for a period of one year from the date of manufacture.
Avoid cutting, perforating and opening the dispensers.
The dispensers used and their packaging have to be managed according to current legislation for residues disposal.









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