

Impact and effect of eriophyid mites on *Cupressus* spp.

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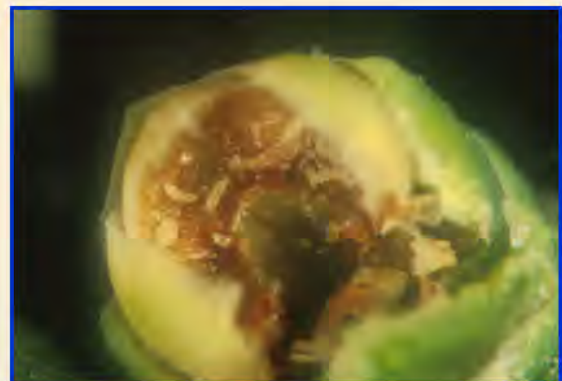


Trisetacus juniperinus

bud mite on Cupressaceae,
Europe and North America

kind of damage:

limited to few bud enlarged in natural stand
complex, until formation of witches' broom
in nursery and young stands of evergreen
cypress (*Cupressus sempervirens* L.).



In the Mediterranean area, selection and commercialization of
resistant varieties to the fungal cypress canker disease *Seiridium*
cardinale are wide.

The increasing problems and the control strategies of *T. juniperinus*
must be evaluated taking into account the
possible difference in susceptibility to this eriophyid of
new selected cypress cultivars.



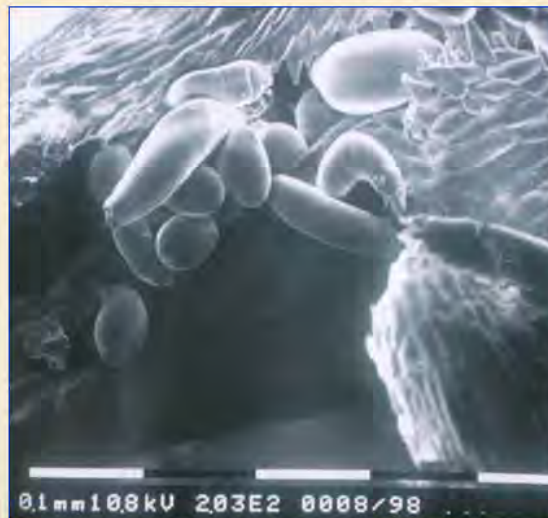
Biology

The eriophyoid mites develop continuously through the year, in apical and subapical buds and in young reproductive organs.

They migrate towards new buds when colonized part becomes dry.

Massive emigration does not appear to take place at a particular time of year.

As this behaviour, the best and crucial approach to monitor the *T. juniperinus* population results by focusing on induced symptoms.



T. juniperinus



Rating system of symptoms caused by *T. juniperinus* on *C. sempervirens*

(mod. after Castagnoli *et al.* 2002)

A	B	C	D	E
Buds enlarged, deformed, russet and/or branch apex fold	Buds more or less dried out	Brachyblasts and/or part of branch dried out	Irregular proliferations of axillary buds, blastomania, witches' brooms	Cones deformed producing few seeds

The severity of each symptom is graduated from 0 (absence) to 4 (highest intensity).

More than one type of damage on each plant and not all damages may be present.

The GDI was the global damage index per plant (the sum of means of four types of dam. recorded).

A and **B** symptoms are the most common and often in high levels in nurseries and immediately after transplant.

T. juniperinus



Long term study on seedlings belonging to different cypress “families” (obtained by self-crossing or crossing with a single heterologous pollen) showed great variation in susceptibility to mite attack

Different levels of susceptibility detected in nursery were, on the whole, maintained after the transplant in field in two locations different for climatic condition and environmental factors.

Higher humidity maintained higher damage.

The environmental conditions of transplanting localities could affect, but not substantially change, the susceptibility of plants.

In the most susceptible families, C and D damages, mainly responsible for the loss of the aesthetic value and plants rarely restored to partial health.

T. juniperinus



The assessment of damage A:

the earliest symptom of mite attack is already significantly indicative for susceptibility evaluation and forecasting.

A negative relationship was between damage and height increase.

As natural infestations rarely occur, in commercial clones, the health of rootstock and graft material is crucial for limiting damage by *T. juniperinus*.

In Agrimed and Bolgheri: the eriophyoids from the rootstock previously infested in nursery can migrate quickly to grafted scions and induce tip deformation (damage A) and growth disturbance.

By decreasing of infestation in time, plants from infested rootstocks maintain apical growth significantly lower even two years following grafting.

T. juniperinus



This long-lasting effect of the precocious mite infestations can be interpreted as a trade-off between resources devoted to growth and to the defence reaction of trees in accordance with the GDB (Growth Differentiation Balance) hypothesis (Herms & Mattson 1992).

Treatments with bromopropylate reduced the percentage of infested plants and when performed on the grafted trees, resulted in a higher growth compared to the control trees.

As the use of bromopropylate and endosulfan has been limited by recent EU rules, the search for acaricides effective in the control of *T. juniperinus* is necessary.

T. juniperinus



Aspects further to explore

- How?

do several environmental and cultural factors hardly affect the impact of the selected eriophyoids on different plant varieties/cultivars?

Where and when?

eriophyoid intra- and inter-plant distribution
their dispersal (period, distance, stress resistance to limiting factors).

How many?

survival rate (overwintering generations, mite days number, stable age distribution of population),
temperature thresholds,
susceptibility/resistance/tolerance of the host varieties.

