

Successive release of *Neoseiulus californicus* McGregor and *Phytoseiulus persimilis* A.H. (Acari, Phytoseiidae) for sustainable biological/integrated control of spider mites in greenhouse cut roses – Interim results of a long-term trial in a commercial nursery

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Simultaneous, inundative releases of *P. persimilis* and *N. californicus* were found to improve biological control of *Tetranychus urticae* (Acari, Tetranychidae) especially with regard to long-term effects in greenhouse cut roses, compared to single species releases.

Successive release of *N. californicus* and *P. persimilis* should be evaluated as alternative release strategy considering the reduction of the predatory mites amount to be introduced and thus the overall expenses. Successive release of *N. californicus* and *P. persimilis* has to be understood as follows: The prey generalist *N. californicus* is released at the start of the growing season before any spider mite infestation is visible on the roses.

The presence of *N. californicus* should help to delay population development of *T. urticae*. If, despite the preventive release two spotted spider mite infestation increases to an unacceptable level, introductions of the prey specialist *P. persimilis* should follow in hot spots.

The experiment was started in March 2001 in two greenhouses of a commercial nursery and will end in September 2002. Assessments in alternative fortnightly intervals include both, the percentage of infested rose shoots per greenhouse and the number of spider mites and predatory mites on a fixed number of leaves. In spite of the release of a sufficient amount of both phytosei-

ids according to practical experience, spider mite control was only achieved in combination with repeated acaricide applications until June. In July the predator/pest ratio reached 1:10 in both greenhouses which should usually enable efficient control of *T. urticae* for the rest of the growing season. As main reason for the failure of the biological spider mite control in the first half of growing season the quality of the released predatory mites (*P. persimilis*) is discussed. Notwithstanding of the unfavourable results of the first part of the experiment a final evaluation of the new long-term release strategy will only be possible after a second season under improved trial conditions.

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