



Koppert

Biological control of
Mealybugs
in grapes



Biocontrol
is our nature

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Citripar

Anagyrus vladimiri

What is it

A parasitoid capable of controlling various species of mealybugs, including:

- *Planococcus ficus*
- *Planococcus citri*
- *Pseudococcus comstocki*

Mode of action

The female lays her eggs in the scale insects, targeting 2nd and 3rd instar nymphs and immature females. The parasitised scale insect swells and hardens, turning yellowish-brown (mummy). The hymenopteran larva develops inside the host, consuming its contents. The adult emerges through an irregularly shaped opening in the mummy.

Advantages

- The mummy format prevents stress and mortality in adults during transport.
- It ensures a longer period of protection thanks to the staggered emergence of adults.
- Few inoculation points per hectare.
- Citripar can parasitise mealybugs not targeted by mating disruption, such as *P. citri* and *P. comstocki*. In addition, the parasitoid locates *P. ficus* through multiple cues, being attracted by the pest sexual pheromone, making it highly effective at detecting and controlling mealybug infestations in the field.
- Citripar can produce 2 to 3 generations during the time mealybugs complete a single generation, enabling rapid population growth and more effective biological control.

Packaging

Bottle with double-sided adhesive label for placement in the vineyard, containing 500 parasitised scale insect mummies from which an equal number of adult parasitoids will emerge.



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Citripar

Cryptobug-L Cryptobug

Cryptolaemus montrouzieri

What is it

A beetle of the Coccinellidae family, a polyphagous predator that feeds on all life stages of many species of mealybugs.

- All stages of many mealybug species.

Mode of action

Adults and larvae consume the mealybugs completely.

[Click here to learn more about](#)

Cryptobug-L

[Click here to learn more about](#)

Cryptobug



Advantages

Cryptobug-L

Larvae do not fly and can be recognised by the waxy filaments on their backs. Although they may be mistaken for scale insects, they move faster. They should be released directly into infestation sites, where they are highly effective at rapidly eliminating pest colonies.

Cryptobug

Adults are good flyers, capable of actively seeking out their prey. This makes them particularly suitable for widespread infestations where mobility is essential for effective pest control. Adults are characterised by their black thorax and reddish head.

Packaging



Cryptobug-L is supplied in jars containing 1,000 larvae.



Cryptobug is supplied in packs containing 500 adults.

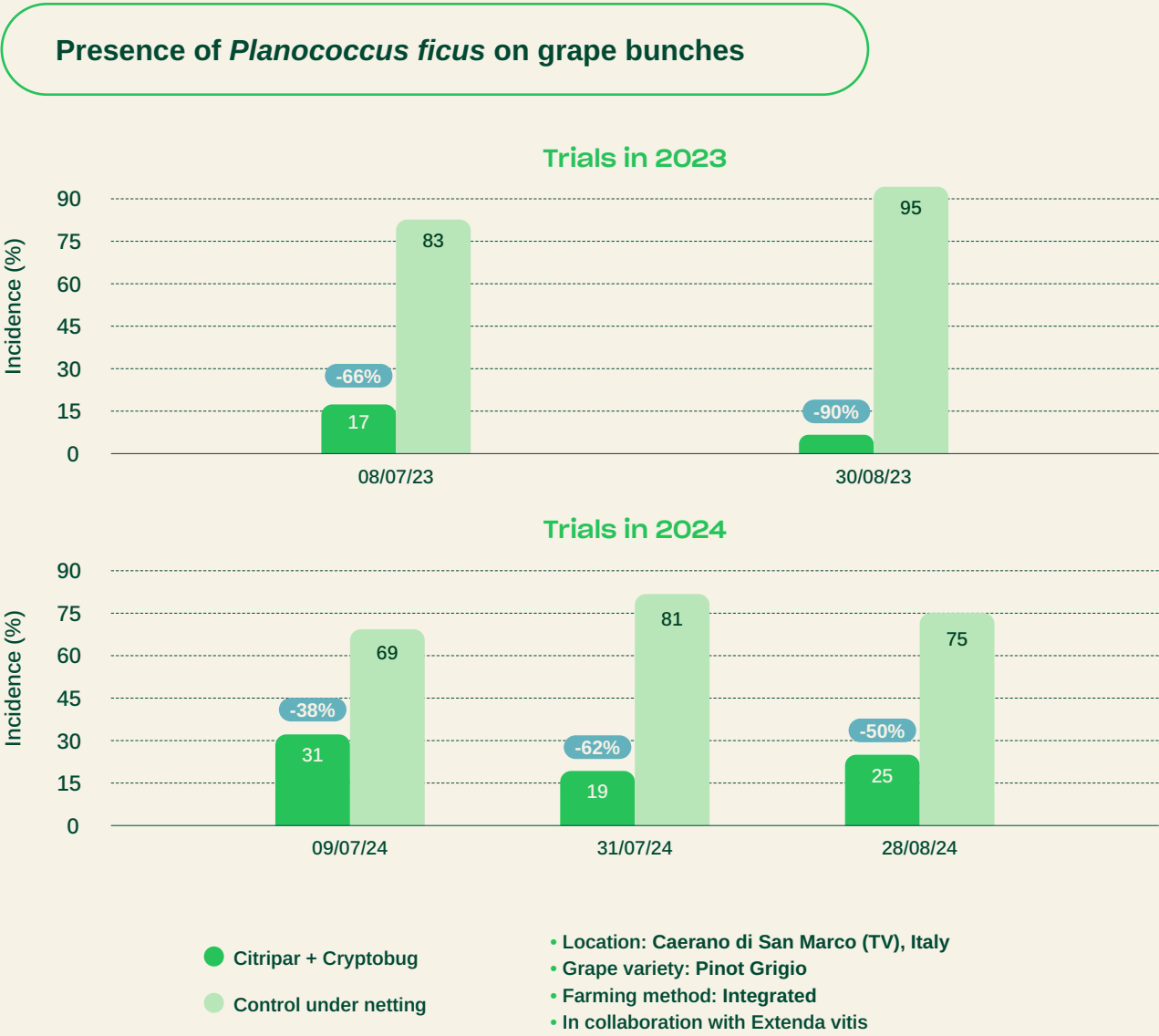
Proven efficacy with Citripar & Cryptobug(-L)

Mealybugs are among the most important pests in vineyards, affecting grape quality and vine performance while also promoting honeydew and sooty mold development. To support a more sustainable biological control strategy, field trials were conducted to evaluate the combined use of Citripar (*Anagyrus vladimiri*) and Cryptobug(-L) (*Cryptolaemus montrouzieri*) against mealybug populations in grapes.

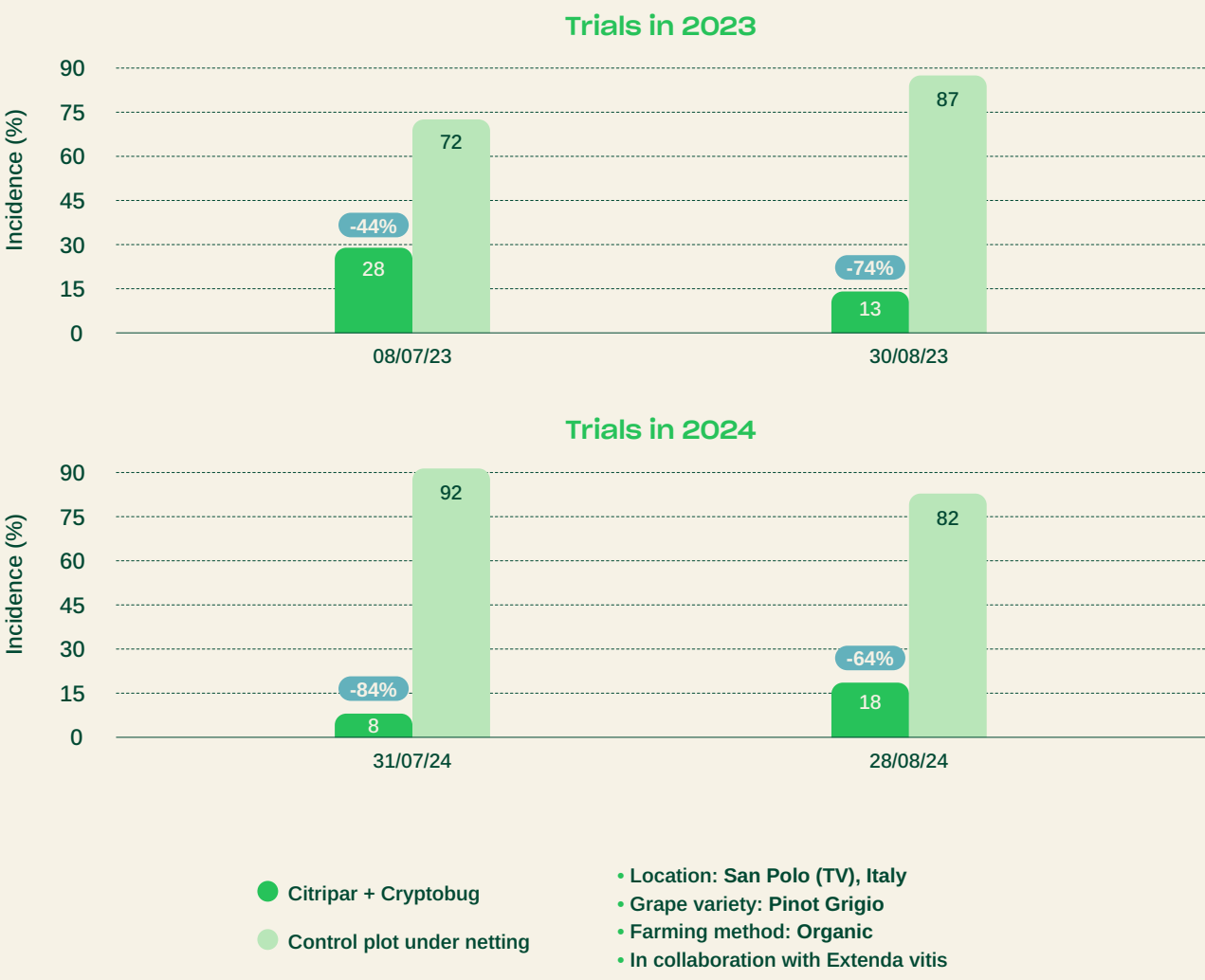


Mealybugs

Focus: *Planococcus ficus* and *Pseudococcus comstocki*.

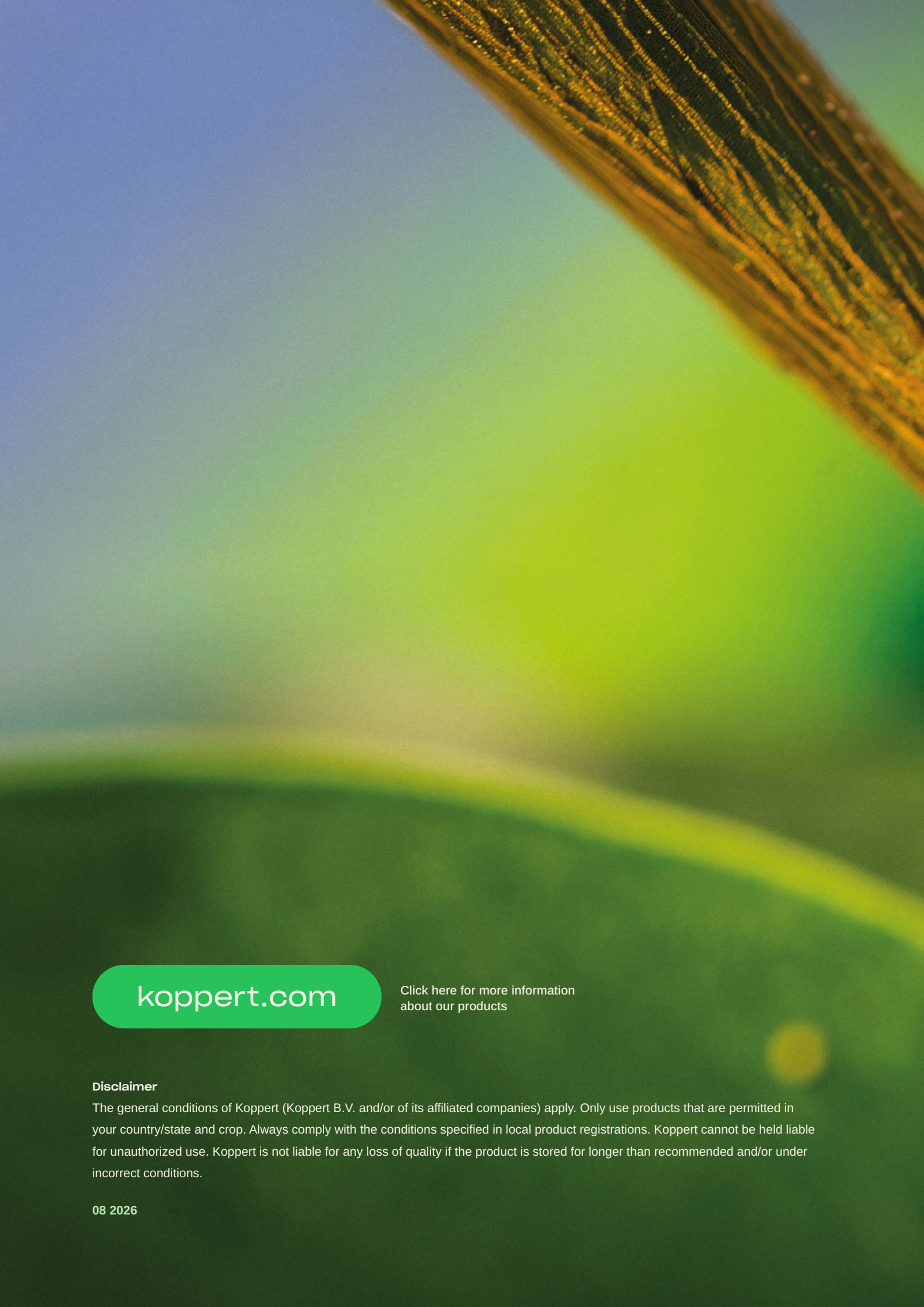


Presence of *Pseudococcus comstocki* on grape bunches



The trials show that control using beneficial insects yields results from the very first year. The combined strategy involving **Citripar** (*Anagyrus vladimiri*) and **Cryptobug(-L)** (*Cryptolaemus montrouzieri*) has made it possible to mitigate and control the population dynamics of the two scale insects over time.

For optimal results, it remains essential to identify the type of scale insect present in the field and understand its development. For technical advice or support, please contact your Koppert representative.



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