

The two defoliating beetles, *Zygogramma signatipennis* Stål and *Zygogramma piceicollis* Stål (Chrysomelidae: Chrysomelinae), both originally from Mexico, were approved for release in South Africa in 2014. The potential distribution of *Z. signatipennis* and *Z. piceicollis*, as predicted by a climate matching model, perfectly matches the current distribution range of red sunflower in southern Africa, although the smaller species, *Z. piceicollis*, is likely to be predominant along the eastern coastal regions.

#### DESCRIPTION

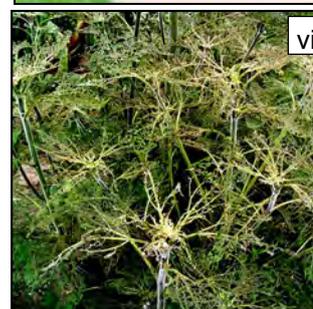
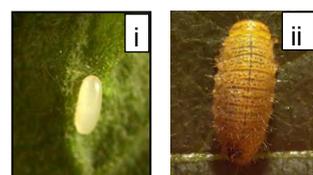
Although the two beetle species look very similar, *Z. signatipennis* (iv) is larger and shiny black in colour with silvery green markings on the elytra, while *Z. piceicollis* (v) is smaller, with a brown head and thorax and light grey markings on the elytra. The life histories and feeding habits of the two *Zygogramma* species are similar, and they are equally damaging to leaves of red sunflower in Mexico.

#### LIFE CYCLE

Females of both *Zygogramma* species deposit their eggs singly (i), often on the leaves and occasionally on flower heads and stems. The eggs hatch in about 4 days, and the neonate larvae immediately begin to feed on the leaves. Each larva (ii) undergoes six moults and thereafter the late instar larva drops onto the soil and burrows into the ground to pupate (iii). Development from egg to adult takes about 4–5 weeks, depending on temperature.

#### FEEDING DAMAGE

Both adults and larva of the two *Zygogramma* species feed on leaves and are highly damaging on red sunflower. The young larvae cause small lesions on leaves, but the size of the feeding holes increases as the larvae develop. The beetles often skeletonize plants completely, leaving only the leaf veins (vi). In the laboratory it was shown that adults and larvae together cause such severe feeding damage that red sunflower remained smaller and produced fewer flowers. By directly suppressing the below- and above-ground biomass of the weed, both beetle species should be able to make the weed less invasive. They are therefore expected to make a substantial contribution to the biological control of red sunflower in South Africa and elsewhere.



environmental affairs

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