



Encarsia formosa - Whitefly Parasitoid

***Encarsia* is a parasitic wasp used worldwide for the biological control of greenhouse whitefly on vegetables and ornamentals.**

Life-Cycle:

Encarsia lay their eggs inside whitefly nymphs. When the Encarsia egg hatches, the wasp larva feeds inside the whitefly nymph causing its death. The development time from egg to new adult wasp varies from 31 days at 18°C to 10 days at 30°C. Development does not occur below 10°C and temperatures above 38°C may kill wasp larvae. Adult Encarsia also kill whitefly nymphs by feeding on them. Encarsia live 15 - 39 days and will lay up to 300 eggs during their life.

Target Pests:

Encarsia is primarily used against the greenhouse whitefly, *Trialeurodes vaporariorum*, but can also be used as part of an IPM programme for the silverleaf and tobacco whiteflies. Whitefly adults and nymphs damage plants by sucking the sap. Encarsia is not effective against the ash whitefly on outdoor ornamentals.

Suitable Crops:

Encarsia can be introduced into all crops attacked by greenhouse whitefly. These include tomatoes, capsicums, cucumbers and a wide range of nursery, ornamental and broad-acre crops. Encarsia is most effective when used in greenhouses, but can be effective outside depending on climatic conditions and pest numbers.

When to Release:

For best results start releasing Encarsia at the start of each new crop, as a preventative measure. Alternatively, monitor whitefly levels using yellow sticky traps at 1 trap per 100m² and start releasing Encarsia at the very first signs of whitefly. Continue weekly releases until suitable parasitism occurs. If the number of whiteflies exceeds 10 per leaf, spot spray new growth of infested plants with a non-residual pesticide and start releasing Encarsia.

Ordering & Accounts:

Orders are sent via Express Post on Monday or Tuesday of each week, and usually arrive within a couple of days. Orders received after noon on Tuesday are sent the following Monday. Prices are on a sliding scale i.e. the more that is purchased over a monthly period the lower the price per 1,000 Encarsia. Postage is charged at Australia Post rates. Invoices are sent out at the end of each month, and can be paid by cheque, BPay, or postal order. For further enquiries please telephone our office between 8am and 4-30pm, Mon Fri.

Ideal Conditions:

If possible adjust temperatures to 23°-27°C, adjust humidity to 50 - 70% and adjust lighting to a minimum of 10 hours to favour Encarsia development. Do not use residual pesticides for 4 weeks before introducing Encarsia to avoid toxic residues.

Release Rates:

<u>Whitefly Level</u>	<u>Encarsia/m²/week</u>
Nil	1
Low	2
Medium	5
High	10-20 (at least)

The above rates should be released weekly for a minimum of 8 weeks or continued until at least 80% of whitefly nymphs are parasitized. The first two releases should be at double the above rates in order to kick start the programme. This will cover two generations of whitefly. Rates should also be doubled for hairy plants (eg. cucumber) or where silverleaf whitefly is present.

After Release:

Monitor plants at least once a week, checking the underside of fully expanded leaves. Parasitised nymphs turn black, and should be present within 4 weeks of your first release. Good control should be achieved within 2 - 3 months. If the plant leaves have to be pruned, check for the presence of black parasitised whitefly nymphs. If present, do not remove the leaves from the greenhouse for 2 weeks to allow the emergence of new parasites.

Chemical Use:

Most fungicides, miticides and nutritional sprays are fairly safe, but nearly all insecticides are toxic to Encarsia. Refer to the chemical toxicity table in The Good Bug Book as a guide or contact us for more information.