

BasilProtect: A COCKTAIL OF PARASITOIDS AGAINST APHIDS IN AROMATIC PLANTS AND HERBS



Parasitoids used:

Aphidius ervi
Aphidius colemani
Aphidius matricariae
Ephedrus cerasicola
Praon volucre
Aphelinus abdominalis



Fig. 1: Attacking *Ephedrus*



Fig. 5: BasilProtect, a ready-to-use product



Fig. 2: Attacking *Aphelinus*

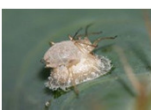


Fig. 3: *Praon volucre* mummy



Fig. 4: Mummies of different species making up BasilProtect



Fig. 6: BasilProtect in a parsley crop

BasilProtect : Aphids – Crops – Parasitoids relations

Aphid species	Aromatic herb									Parasitoids						
	Dill	Basil	Chives	Coriander	Tarragon	Mint	Parsley	Rosemary	Sage	Thyme	<i>Aphidius colemani</i>	<i>Aphidius ervi</i>	<i>Aphidius matricariae</i>	<i>Aphelinus abdominalis</i>	<i>Ephedrus cerasicola</i>	<i>Praon volucre</i>
<i>Aphis craccivora</i>	X	X	X	X	X	X	X	X	X	X	+++	++	++			+
<i>Aphis fabae</i>		X	X	X	X	X	X	X	X	X	X					+
<i>Aphis frangulae</i>											+++	++	++		X	+
<i>Aphis gossypii</i>		X				X	X	X	X	X	+++	++	++		X	+
<i>Aphis spiraeicola</i>											++	++	++			
<i>Aulacorthum solani</i>		X	X			X	X	X	X	X		++	X	++	+++	++
<i>Cavariella aegopodii</i>	X			X								+	++		X	X
<i>Dysaphis apiifolia</i>								X			++	+	+		++	
<i>Hyadaphis foeniculi</i>					X			X							+	+++
<i>Macrosiphum euphorbiae</i>						X	X	X			+++		+++		+++	+++
<i>Myzus ascalonicus</i>		X	X				X	X	X	X		X			X	X
<i>Myzus ornatus</i>		X	X			X	X	X	X	X	++	++	++		X	+
<i>Myzus persicae</i>		X	X			X	X	X	X	X	+++	+	++	++	++	++
<i>Ovatus crataegarius</i>		X										++	++		+++	+++

Aromatic herbs can be attacked by far more than ten different aphid species. The table lists the most important species (left column, in bold are the most common species or those which are economically important) and their commonly observed presence in the different regular aromatic herbs (listed in the first line of the table – Pink part). The parasitoids present in BasilProtect are listed in the first line – Green Part. Their efficacy in the control of the different aphids is indicated by + (proven control under field conditions - +++: very high efficacy, ++: high efficacy, +: good efficacy). X stands for control under laboratory and semi field conditions, or described in literature.

Advantages

- Protects aromatic herbs against aphids
- No identification of aphids needed
- No development of resistance possible
- No delay before harvest / sales of plants
- Saves on aphicides, hence less residuals in IPM
- Complementarity with other crop protection strategies
- Long lasting effect at broad temperature range
- Reliable and consistent quality
- Quick and easy application
- Safe for people, plants, and the environment



Fig. 7-8 : Easy installation of BasilProtect

Continuous crop protection through spread out hatching

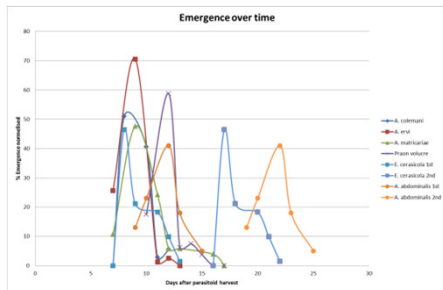


Fig. 9: Emergence of parasitoid species from one tube under variable temperatures (night : 7°C day : 20-25°C).

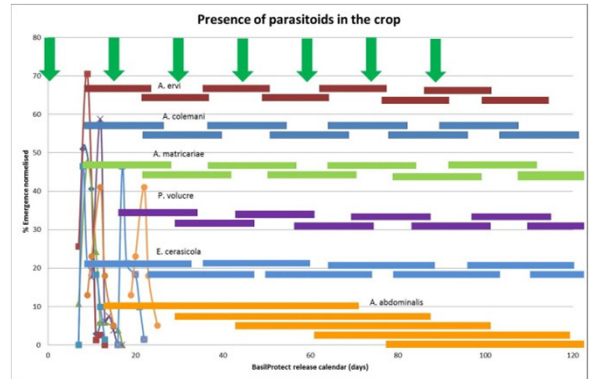


Fig. 10: Hatching and life length of BasilProtect species.

Green arrows represent releases of BasilProtect. The bars (color code see fig. 9) represent the life length of each species of parasitoid. Bi-weekly releases guarantee constant presence of parasitoids in the crop and insure a permanent protection against aphids independent of the moment when first aphid can be spotted.

Conclusions

- The parasitoids must be released in crops before any aphids can be spotted.
- Each releasing point, a cardboard tube with an integrated honey point for feeding of parasitoids, covers 200 m² of plantation.
- The six species are complementary in their host spectrum, temperature range and behavior.
- A mix of not only different species but also different batches confers to BasilProtect a longer hatching period insuring a permanent presence of fresh parasitoids.
- Trials demonstrated that BasilProtect can be adapted to different production systems, pot plants and cut plants, vast variety of different aromatic herbs such as basil, parsley, mint, sage, thyme and dill.
- Good control of aphid populations (including the regularly observed aphid species *Cavariella aegopodii*, *Macrosiphum euphorbiae* and *Aulacorthum solani*) by BasilProtect.
- For growers of herbs in protected cultures, BasilProtect is the solution for optimal aphid control. In herbal cultures, only a few chemical pesticides are available, and so far, biological solutions have been fighting only a limited spectrum of aphid species. BasilProtect fills this gap, because it contains different species of aphid enemies. This cocktail is able to control all commonly appearing aphids, and its application in the ready-to-use units is much faster than even any chemical treatment.

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Fig. 11: *Aphidius colemani* parasitizing an aphid

