

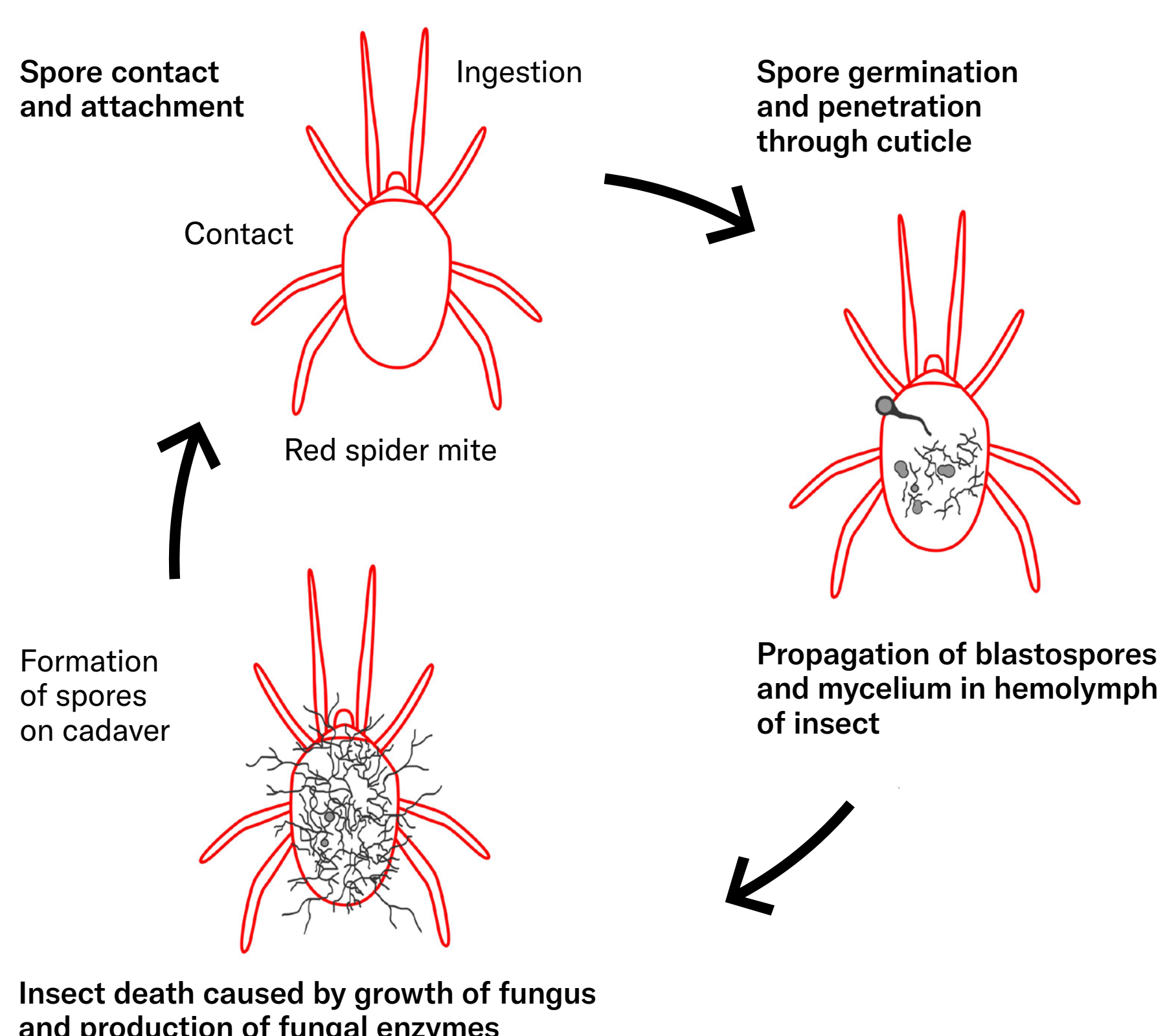


Bb-Protec

Biological insecticide for use against spider mite, whitefly and other agricultural pests

Bb-Protec contains the insect-pathogenic fungus *Beauveria bassiana* strain R444 and is effective against red spider mite, whitefly, mealybug, and false codling moth. It is non-toxic, has zero MRL constraints and is suitable for use in both conventional and organic agricultural practices.

Mode of Action of Bb-Protec



Left: Red spider mite
right: Mealybug 1st instar

Left: False codling moth larvae
right: Stinkbug

Under optimal temperature and humidity conditions, the fungus sporulates on the outside of the dead insect; For harder bodied insects/instars (e.g. adult stinkbugs) the fungus grows out of the softer parts of the insect's body such as the joints and mouth parts; Insect death can occur without external sporulation taking place.

Product information

Key benefits Infects multiple insect pests, affects all life stages of most target pests, unique and complex mode of action (resistance management), no MRL constraints, non-toxic, friendly towards many beneficials, approved for organic farming, unique and easy to use formulation

Active ingredient *Beauveria bassiana* strain R444

Strain benefits Strain R444 was isolated from a hot and dry region of South Africa, and is therefore adapted to these conditions

Concentration 1×10^8 CFU/g

Standard dose rate 300g/ha – 1 000g/ha depending on the crop and level of pest pressure

Formulation type Wettable powder

Shelf life 2 years at 4 – 10 °C

Crops Vegetables, berries, grapes, tree crops, potatoes, ornamentals and others

Mixibility Generally compatible with insecticides and fertilisers. Not compatible with many broad-spectrum fungicides

Bb-Protec can infect its target by

- Direct penetration of cuticle (contact); or
- Ingestion of spores while feeding

Bb-Protec can affect all life stages of many target insects

Time to death depends on the pest, life stage and environmental conditions

- Small soft bodied pests (e.g. red spider mite) 3 – 5 days to death;
- Large harder bodied pests (e.g. stinkbug) 7 – 14 days to death

Bb-Protec alters feeding behaviour before insect death

Field results

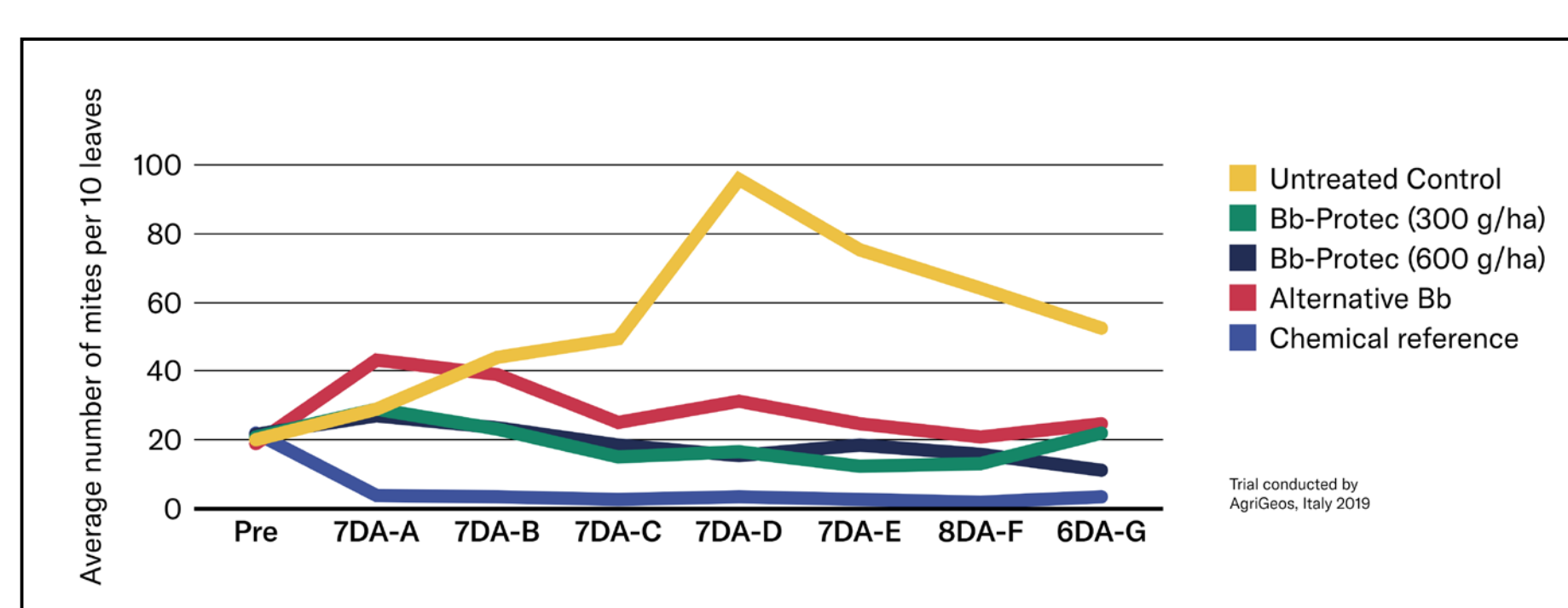


Figure 1: Number of red spider mite per 10 strawberry leaves assessed 7 days after each application (AgriGeos, Italy, 2019).

Trials with red spider mite on brinjals



Figure 2: Photograph comparing plant damage caused by red spider mite on untreated, Bb-Protec treated and silicone treated brinjals. The combination of Bb-Protec and silicone showed a reduction in plant damage and an increase in plant vigour compared to the untreated control.

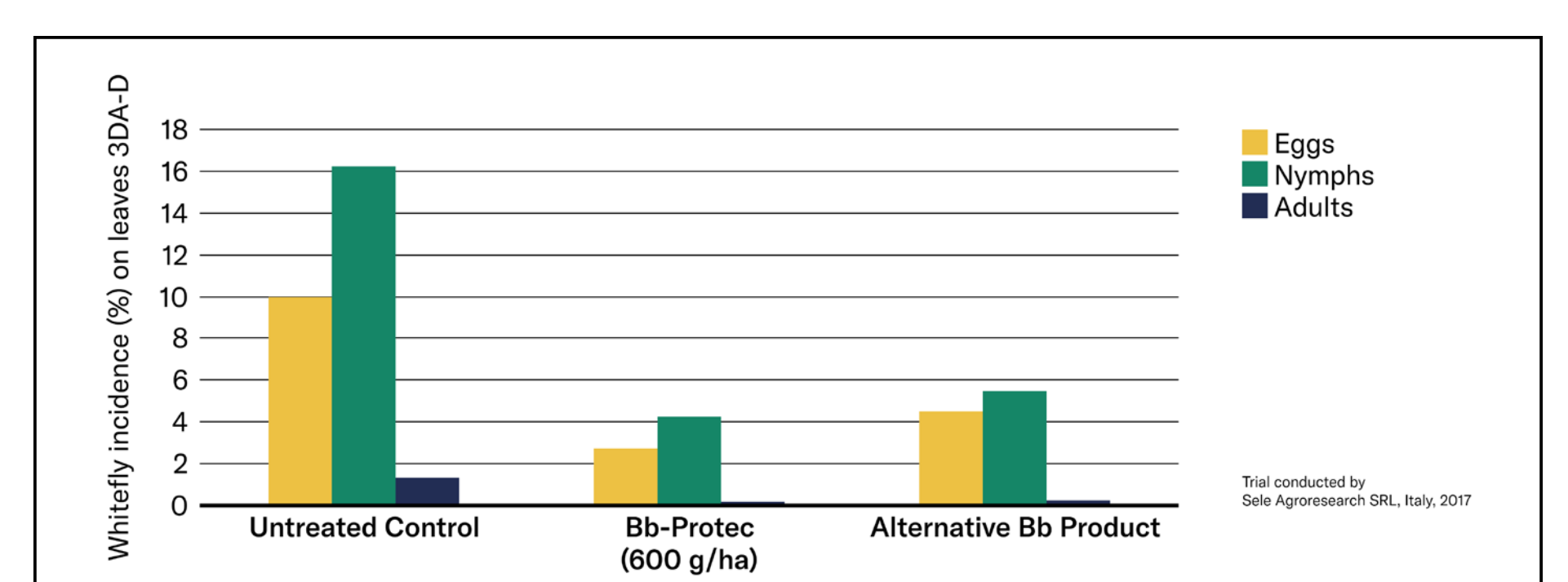


Figure 3: Percentage of cucumber leaves infested with whitefly 3 days after the 4th application (Sele Agrosresearch Srl, Italy, 2017).

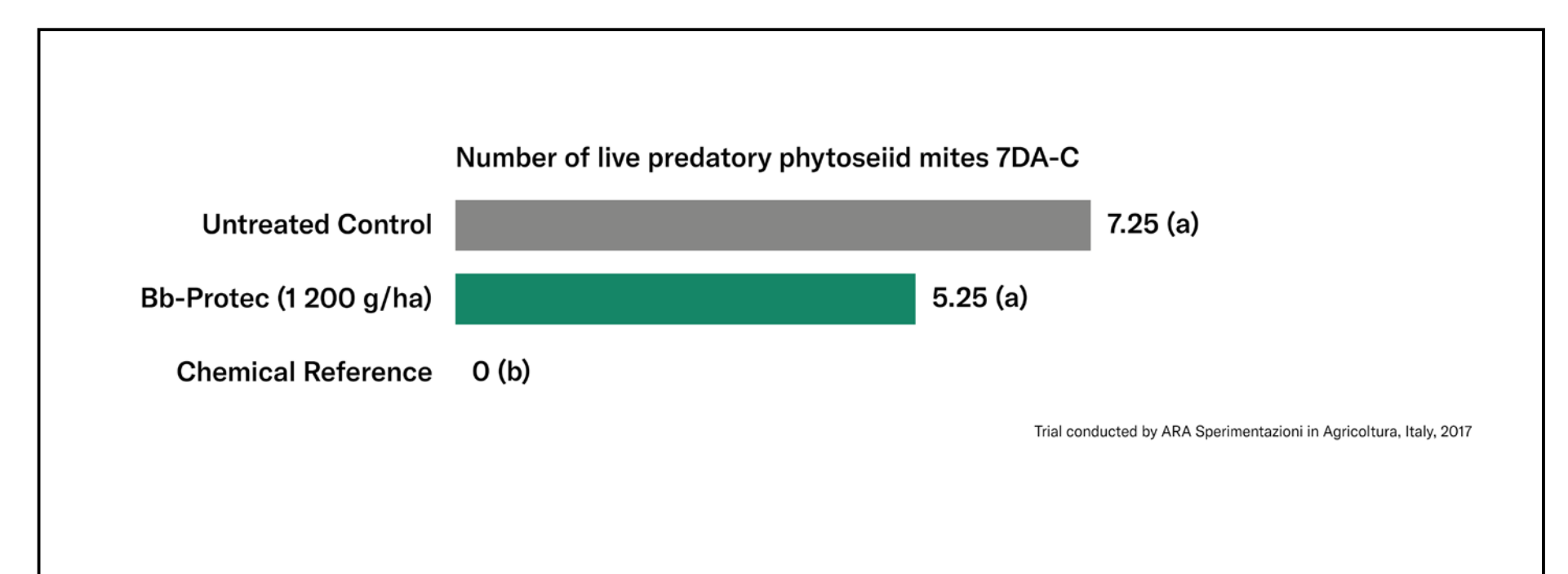


Figure 4: Number of live predatory phytoseiid mites on 30 leaves 7 days after the third application (ARA Sperimentazioni in Agricoltura, Italy, 2017).