Changes to Compendia distribution data: the distribution tables, maps and references in datasheets have been restructured to handle the data better for updating and align with a geographic standard. Further details are available on the About page.

PRA Tool for plant commodity and pest-initiated Pest Risk Analysis. Available as an addition to the CPC.

Horizon Scanning Tool for prioritizing invasive species threats.

Next: Dysmicoccus neobrevipes (grey pineapple mealybug) >>
Return to Search Results

Datasheet

Dysmicoccus brevipes (pineapple mealybug)

Index

Summary

Last modified
19 November 2019

Datasheet Type(s)
Pest
Natural Enemy
Vector of Plant Pest

Preferred Scientific Name
Dysmicoccus brevipes

Preferred Common Name
pineapple mealybug

Taxonomic Tree
Domain: Eukaryota
Kingdom: Metazoa
Phylum: Arthropoda

More information

Subphylum: Uniramia
Class: Insecta

Host Plants and Other Plants Affected

Anacardium occidentale (cashew nut)
Ananas comosus (pineapple)
Annona muricata (soursop)
Annona reticulata (bullock's heart)
Annona squamosa (sugar apple)

More...

More information

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Pictures

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Picture	Title	Caption	Copyright
	Infestation on pineapple	Heavy infestations conspicuous because of white waxy adults which often occur at growing points, around stem nodes, on undersides of leaves, on fruit and on roots - pictured here on pineapple, Ivory Coast.	Crown Copyright

Identity

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Preferred Scientific Name

Dysmicoccus brevipes (Cockerell, 1893)

Preferred Common Name

pineapple mealybug

Other Scientific Names

Dactylopius (Pseudococcud) ananassae Kuwana
Dactylopius brevipes Cockerell, 1893
Dactylopius bromeliae
Dysmicoccus bromeliae Auct.
Dysmicoccus cannae
Dysmicoccus pseudobrevipes (Mamet)
Pseudococcus brevipes (Cockerell), Fernald, 1903
Pseudococcus bromeliae
Pseudococcus cannae Green, 1934
Pseudococcus longirostralis James, 1936
Pseudococcus missionum Cockerell, 1910
Pseudococcus palauensis Kanda, 1933
Pseudococcus pseudobrevipes Mamet, 1941

International Common Names

Spanish: chinche harinosa de la piña; escama harinosa de la piña; palomilla de la raiz de la piña; piojo harinoso de la piña
French: cochenille farineuse de l'ananas

Local Common Names

Brazil: cochonilha do abacaxizeiro; cochonilha pulverulenta do abacaxi
Germany: ananas-schmierlaus
South Africa: pynappelwitluis

EPPO code

DYSMBR (Dysmicoccus brevipes)

Taxonomic Tree

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Domain: Eukaryota
Kingdom: Metazoa
Phylum: Arthropoda
Subphylum: Uniramia
Class: Insecta
Order: Hemiptera
Suborder: Sternorrhyncha
Unknown: Coccoidea
Family: Pseudococcidae
Genus: Dysmicoccus
Species: Dysmicoccus brevipes

Notes on Taxonomy and Nomenclature

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D. brevipes, commonly known as the pineapple mealybug, was originally described from specimens collected from pineapple in Jamaica. Ito (1938) pointed out that there were two distinct types of pineapple mealybug in Hawaii, which he referred to as the pink and grey forms. The pink form reproduced parthenogenetically and the grey form biparentally. Beardsley (1959) found morphological differences between them and described the grey form as D. neobrevipes. In some other regions of the world, there is a third form morphologically indistinguishable from D. brevipes which is biparental, and on the basis of its biology, a distinct species (Rohrbach et al., 1988). For the purposes of this data sheet the biparental and uniparental forms of D. brevipes are regarded as the same species.

Description

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Authoritative identification involves detailed microscopic examination of teneral adult females. Beardsley (1959, 1965) discussed the important morphological characters that separated D. brevipes from closely-related species. Detailed morphological descriptions, illustrations and keys to Dysmicoccus are provided by McKenzie (1967), Williams and Watson (1988) and Williams and Granara de Willink (1992).

Distribution

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D. brevipes originated in tropical America (Rohrbach et al., 1988) and has spread to all zoogeographical regions, mainly in the tropics and subtropics (see also CIE (1972) and Ben-Dov (1994)). It is probably one of the commonest mealybugs in Central and South America (Williams and Granara de Willink, 1992).

Distribution Table

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The distribution in this summary table is based on all the information available. When several references are cited, they may give conflicting information on the status. Further details may be available for individual references in the Distribution Table Details section which can be selected by going to Generate Report.

Last updated: 10 Jan 2020

Continent/Country/Region	Distribution	Last Reported	Origin	First Reported	Invasive	Reference	Notes
Africa							
Angola	Present					UK, CAB International (1972); Ben-Dov (1994)	
Benin	Present					UK, CAB International (1972); Ben-Dov (1994)	
Burkina Faso	Present					UK, CAB International (1972); Ben-Dov (1994)	
Burundi	Present					UK, CAB International (1972); Ben-Dov (1994)	
Cameroon	Present					UK, CAB International (1972); Ben-Dov (1994)	
Chad	Present					UK, CAB International (1972); Ben-Dov (1994)	
Congo, Republic of the	Present					UK, CAB International (1972); Ben-Dov (1994)	
Côte d'Ivoire	Present					UK, CAB International (1972); Ben-Dov (1994)	
Egypt	Present					UK, CAB International (1972)	
Ghana	Present					UK, CAB International (1972); Ben-Dov (1994)	
Guinea	Present					UK, CAB International (1972); Ben-Dov (1994)	
Kenya	Present					UK, CAB International (1972); Ben-Dov (1994)	
Madagascar	Present					UK, CAB International (1972); Ben-Dov (1994)	
Malawi	Present					UK, CAB International (1972); Ben-Dov (1994)	
Mali	Present					UK, CAB International (1972); Ben-Dov (1994)	
Mauritius	Present					UK, CAB International (1972); Ben-Dov (1994)	
Mozambique	Present					UK, CAB International (1972); Ben-Dov (1994)	
Niger	Present					UK, CAB International (1972); Ben-Dov (1994)	
Nigeria	Present					UK, CAB International (1972); Ben-Dov (1994)	
Réunion	Present					UK, CAB International (1972); Ben-Dov (1994)	
Rwanda	Present					UK, CAB International (1972); Ben-Dov (1994)	
Saint Helena	Present					CABI (Undated a)	Present based on regional distribution.
-Ascension	Present					Malumphy et al. (2015)	
São Tomé and Príncipe	Present					UK, CAB International (1972); Ben-Dov (1994)	
Senegal	Present					UK, CAB International (1972); Ben-Dov (1994)	
Seychelles	Present					UK, CAB International (1972); Ben-Dov (1994)	
Sierra Leone	Present					UK, CAB International (1972); Ben-Dov (1994)	
Somalia	Present					UK, CAB International (1972); Ben-Dov (1994)	
South Africa	Present					UK, CAB International (1972); Ben-Dov (1994)	
Sudan	Present					UK, CAB International (1972); Ben-Dov (1994)	
Tanzania	Present					UK, CAB International (1972); Bohlen (1973); Ben-Dov (1994)	
-Zanzibar Island	Present					Ben-Dov (1994)	
Togo	Present					UK, CAB International (1972); Ben-Dov (1994)	
Uganda	Present					UK, CAB International (1972); Ben-Dov (1994)	
Zambia	Present					UK, CAB International (1972); Ben-Dov (1994)	
Asia							

Continent/Country/Region	Distribution	Last Reported	Origin	First Reported	Invasive	Reference	Notes
Bangladesh	Present					UK, CAB International (1972); Ben-Dov (1994)	
Brunei	Present					Waterhouse (1993)	
Cambodia	Present					Waterhouse (1993)	
India	Present					Ben-Dov (1994)	
-Andhra Pradesh	Present					UK, CAB International (1972)	
-Assam	Present					UK, CAB International (1972)	
-Karnataka	Present					Mani and Thontadarya (1987)	
-Kerala	Present					UK, CAB International (1972)	
-Odisha	Present					UK, CAB International (1972)	
-Tamil Nadu	Present					UK, CAB International (1972)	
-Tripura	Present					Das (1988)	
-West Bengal	Present					UK, CAB International (1972)	
Indonesia	Present					UK, CAB International (1972); Waterhouse (1993); Ben-Dov (1994)	
-Irian Jaya	Present					UK, CAB International (1972); Williams and Watson (1988)	
Iran	Present					Moghadam (2004)	
Japan	Present					CABI (Undated a)	Present based on regional distribution.
-Ryukyu Islands	Present					UK, CAB International (1972)	
Malaysia	Present					Waterhouse (1993); Ben-Dov (1994)	
-Peninsular Malaysia	Present					UK, CAB International (1972)	
-Sabah	Present					UK, CAB International (1972)	
-Sarawak	Present					UK, CAB International (1972)	
Pakistan	Present					Ben-Dov (1994)	
Philippines	Present					UK, CAB International (1972); Waterhouse (1993); Ben-Dov (1994)	
Singapore	Present					UK, CAB International (1972); Ben-Dov (1994)	
Sri Lanka	Present					UK, CAB International (1972); Ben-Dov (1994)	
Taiwan	Present					UK, CAB International (1972); Ben-Dov (1994); Huang ShouHorng and Lin ChingYi (2014)	
Thailand	Present					Pitaksa et al. (2000)	
Vietnam	Present					Waterhouse (1993); Ben-Dov (1994)	
Europe							
Italy	Present, Localized					Tranfaglia (1983)	
Portugal	Present					CABI (Undated a)	Present based on regional distribution.
-Azores	Present					UK, CAB International (1972)	
-Madeira	Present					UK, CAB International (1972)	
Spain	Present					CABI (Undated a)	Present based on regional distribution.
-Canary Islands	Present					Pérez et al. (1984)	
North America							
Antigua and Barbuda	Present					Ben-Dov (1994)	
Bahamas	Present					Ben-Dov (1994)	
Barbados	Present					UK, CAB International (1972); Ben-Dov (1994)	
Belize	Present					Ben-Dov (1994)	

Continent/Country/Region	Distribution	Last Reported	Origin	First Reported	Invasive	Reference	Notes
Bermuda	Present					UK, CAB International (1972); Ben-Dov (1994)	
Cayman Islands	Present					Ben-Dov (1994)	
Costa Rica	Present					UK, CAB International (1972); Ben-Dov (1994)	
Cuba	Present					Ben-Dov (1994)	
Dominica	Present					Ben-Dov (1994)	
Dominican Republic	Present					UK, CAB International (1972); Ben-Dov (1994)	
El Salvador	Present					UK, CAB International (1972); Ben-Dov (1994)	
Grenada	Present					UK, CAB International (1972); Ben-Dov (1994)	
Guadeloupe	Present					Panis et al. (1974)	
Guatemala	Present					UK, CAB International (1972); Ben-Dov (1994)	
Haiti	Present					Ben-Dov (1994)	
Honduras	Present					UK, CAB International (1972); Ben-Dov (1994)	
Jamaica	Present					Ben-Dov (1994)	
Martinique	Present					Ben-Dov (1994)	
Mexico	Present					UK, CAB International (1972); Ben-Dov (1994); Villatoro-Moreno et al. (2016)	
Montserrat	Present					Ben-Dov (1994)	
Nicaragua	Present					UK, CAB International (1972); Ben-Dov (1994)	
Panama	Present					UK, CAB International (1972); Ben-Dov (1994)	
Puerto Rico	Present, Widespread					UK, CAB International (1972); Ben-Dov (1994)	
Saint Kitts and Nevis	Present					Ben-Dov (1994)	
Saint Lucia	Present					Ben-Dov (1994)	
Trinidad and Tobago	Present					UK, CAB International (1972); Ben-Dov (1994)	
U.S. Virgin Islands	Present					Ben-Dov (1994)	
United States	Present					CABI (Undated a)	Present based on regional distribution.
-California	Present					Ben-Dov (1994)	
-Florida	Present					UK, CAB International (1972); Ben-Dov (1994)	
-Hawaii	Present					UK, CAB International (1972); Ben-Dov (1994)	
-Louisiana	Present					UK, CAB International (1972); Ben-Dov (1994)	
Oceania							
American Samoa	Present					Williams and Watson (1988)	
Australia	Present					CABI (Undated a)	Present based on regional distribution.
-New South Wales	Present					Ben-Dov (1994)	
-Northern Territory	Present					Ben-Dov (1994)	
-Queensland	Present					UK, CAB International (1972); Ben-Dov (1994)	
-Western Australia	Present					UK, CAB International (1972); Ben-Dov (1994)	
Cook Islands	Present					Ben-Dov (1994)	
Fiji	Present					UK, CAB International (1972); Ben-Dov (1994)	
French Polynesia	Present					Ben-Dov (1994)	
Guam	Present					Ben-Dov (1994)	
Kiribati	Present					Ben-Dov (1994)	
Marshall Islands	Present					UK, CAB International (1972); Ben-Dov (1994)	
New Caledonia	Present					UK, CAB International (1972)	

Continent/Country/Region	Distribution	Last Reported	Origin	First Reported	Invasive	Reference	Notes
Niue	Present					Ben-Dov (1994)	
Northern Mariana Islands	Present					UK, CAB International (1972)	
Palau	Present					Ben-Dov (1994)	
Papua New Guinea	Present					UK, CAB International (1972); Ben-Dov (1994)	
Samoa	Present					UK, CAB International (1972); Ben-Dov (1994)	
Solomon Islands	Present					UK, CAB International (1972); Ben-Dov (1994)	
Tokelau	Present					Ben-Dov (1994)	
Tonga	Present					UK, CAB International (1972); Ben-Dov (1994)	
Tuvalu	Present					Ben-Dov (1994)	
Vanuatu	Present					Ben-Dov (1994)	
Wallis and Futuna	Present					UK, CAB International (1972)	
South America							
Argentina	Present					Ben-Dov (1994)	
Bolivia	Present					Ben-Dov (1994)	
Brazil	Present					CABI (Undated a)	Present based on regional distribution.
-Bahia	Present					UK, CAB International (1972); Ben-Dov (1994)	
-Ceara	Present					UK, CAB International (1972)	
-Espirito Santo	Present					Culik et al. (2009); Culik and Ventura (2013)	
-Mato Grosso	Present					UK, CAB International (1972)	
-Minas Gerais	Present					UK, CAB International (1972); Ben-Dov (1994)	
-Para	Present					UK, CAB International (1972)	
-Parana	Present					UK, CAB International (1972); Ben-Dov (1994)	
-Pernambuco	Present					UK, CAB International (1972); Ben-Dov (1994)	
-Piaui	Present					UK, CAB International (1972)	
-Rio de Janeiro	Present					UK, CAB International (1972)	
-Rio Grande do Sul	Present					UK, CAB International (1972); Ben-Dov (1994)	
-Santa Catarina	Present					UK, CAB International (1972); Ben-Dov (1994)	
-Sao Paulo	Present					UK, CAB International (1972); Ben-Dov (1994)	
Chile	Present					CABI (Undated a)	Present based on regional distribution.
-Easter Island	Present					CABI (Undated)	Original citation: Charlin, 1973
Colombia	Present					UK, CAB International (1972); Ben-Dov (1994)	
Ecuador	Present					Ben-Dov (1994)	
Guyana	Present					Ben-Dov (1994)	
Paraguay	Present					UK, CAB International (1972); Ben-Dov (1994)	
Peru	Present					UK, CAB International (1972); Ben-Dov (1994)	
Suriname	Present					UK, CAB International (1972); Ben-Dov (1994)	
Venezuela	Present					UK, CAB International (1972); Ben-Dov (1994)	

Risk of Introduction

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D. brevipes is often injurious to crops especially when the mealybug is introduced to new geographical areas without natural enemies, or as a result of injudicious chemical spraying techniques. Areas where the mealybug occurs but where the mealybug wilt of pineapple is absent are at risk from the introduction of mealybugs carrying the virus. Areas where only the parthenogenetic form occurs are also at risk from the introduction of the biparental form.

Hosts/Species Affected

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D. brevipes is highly polyphagous, attacking plant species belonging to more than a 100 genera placed in 53 families (Ben-Dov, 1994). It is particularly common on pineapple but is also recorded on a wide range of other crops, mostly fruit crops and ornamentals, including avocado, banana, celery, citrus, clover, cocoa, coconut, coffee, cotton, custard apple, figs, ginger, guava, maize, mango, oil palm, orchids, groundnut, peppers, pineapple, plantain, potato and sugarcane.

Host Plants and Other Plants Affected

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Plant name	Family	Context
Anacardium occidentale (cashew nut)	Anacardiaceae	Main
Ananas comosus (pineapple)	Bromeliaceae	Main
Annona muricata (soursop)	Annonaceae	Main
Annona reticulata (bullock's heart)	Annonaceae	Main
Annona squamosa (sugar apple)	Annonaceae	Main
Apium graveolens (celery)	Apiaceae	Main
Arachis hypogaea (groundnut)	Fabaceae	Main
Brassica rapa subsp. chinensis (Chinese cabbage)	Brassicaceae	Main
Canna indica (canna lilly)	Cannaceae	Main
Capsicum (peppers)	Solanaceae	Main
Casuarina equisetifolia (casuarina)	Casuarinaceae	Main
Citrus	Rutaceae	Main
Cocos nucifera (coconut)	Arecaceae	Main
Coffea arabica (arabica coffee)	Rubiaceae	Main
Colocasia esculenta (taro)	Araceae	Main
Cucumis sativus (cucumber)	Cucurbitaceae	Main
Cucurbita (pumpkin)	Cucurbitaceae	Main
Cyperus appendiculatus	Cyperaceae	Other
Daucus carota (carrot)	Apiaceae	Main
Elaeis guineensis (African oil palm)	Arecaceae	Main
Ficus	Moraceae	Main
Gossypium (cotton)	Malvaceae	Main
Hedychium coronarium (white butterfly ginger lily)	Zingiberaceae	Other
Hibiscus (rosemallows)	Malvaceae	Main
Ipomoea batatas (sweet potato)	Convolvulaceae	Main
Malus domestica (apple)	Rosaceae	Main
Mangifera indica (mango)	Anacardiaceae	Main
Manihot esculenta (cassava)	Euphorbiaceae	Main
Medicago sativa (lucerne)	Fabaceae	Main
Musa (banana)	Musaceae	Main
Nephelium lappaceum (rambutan)	Sapindaceae	Other
Persea americana (avocado)	Lauraceae	Main
Phoenix dactylifera (date-palm)	Arecaceae	Main
Piper betle (betel pepper)	Piperaceae	Main
Poaceae (grasses)	Poaceae	Main
Psidium guajava (guava)	Myrtaceae	Main
Rhapis excelsa	Arecaceae	Other
Saccharum officinarum (sugarcane)	Poaceae	Main
Solanum tuberosum (potato)	Solanaceae	Main
Sorghum halepense (Johnson grass)	Poaceae	Main
Theobroma cacao (cocoa)	Malvaceae	Main
Trifolium pratense (red clover)	Fabaceae	Main
Trifolium repens (white clover)	Fabaceae	Main

Plant name	Family	Context
Zea mays (maize)	Poaceae	Main
Zingiber officinale (ginger)	Zingiberaceae	Main

Growth Stages

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Flowering stage, Fruiting stage, Post-harvest, Vegetative growing stage

Symptoms

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On pineapple:

D. brevipes is common on the roots of pineapple and large colonies develop on the stems just above ground level. The mealybugs may spread upwards to feed in the floral cavities, on both small and mature fruit, and on the crown leaves. The symptoms of the wilt disease are preliminary reddening of leaves followed by a definite colour change from red to pink and an inward reflexing of the leaf margins; a general debility, loss of rigidity and wilted appearance, and finally a recovery state in which the plant grows fresh, apparently normal leaves (Rohrbach et al., 1988). Occasionally this wilting process can be very rapid. The severity of the wilt symptoms depends on the size of the mealybug population. Wilted plants have reduced weight, leaf surface area, number of leaves, leaf length and breadth and root length.

Feeding in the blossom cavities causes wounds which sometimes become contaminated by fungal spores resulting in a disorder called black spot. The biparental form of D. brevipes (and D. neobrevipes) can also cause local green or chlorotic spotting of the foliage.

On plants other than pineapple:

Infestations of D. brevipes occur on the foliage, stems and fruit. This results in reduced vigour and general debility of the host plant, yellow spotting on the undersides of leaves which may be shed prematurely, dieback of stems and wilting. Honeydew deposited on the leaves and fruit by the mealybugs serves as a medium for the growth of black sooty moulds. The sooty moulds result in a reduction of photosynthetic area. Ornamental plants and produce lose their market value.

List of Symptoms/Signs

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Sign	Life Stages	Type
Fruit / discoloration		
Fruit / external feeding		
Fruit / honeydew or sooty mould		
Fruit / honeydew or sooty mould		
Growing point / dead heart		
Growing point / external feeding		
Leaves / abnormal colours		
Leaves / honeydew or sooty mould		
Leaves / honeydew or sooty mould		
Leaves / honeydew or sooty mould		
Roots / external feeding		
Stems / discoloration		
Stems / external feeding		
Stems / honeydew or sooty mould		
Whole plant / discoloration		
Whole plant / external feeding		

Species Vectored

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Pineapple mealybug wilt-associated viruses (pineapple mealybug wilt (PMBW))

Biology and Ecology

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The biology of the biparental form of D. brevipes has been studied in West Malaysia by Lim (1973), where it was becoming increasingly important as a pest of pineapple. The females had three nymphal instars, lasting 10.0, 6.7 and 7.9 days, respectively. The males had two nymphal instars, a prepupal and pupal stage, lasting 9.9, 5.8, 2.5 and 3.7 days, respectively. Development from first instar to adult took about 24 days in both sexes. The adult females lived for 17-49 days, whereas the adult males lived for 1-3 days. When gravid, ovoviviparous females could give rise to 19-137 first instars, over a period of 9.1 days, beginning 14.6 days after adulthood was reached. The sex ratio was 1:1. The life-cycle of the biparental form of D. brevipes was shorter than that of the parthenogenetic form in Hawaii.

The main dispersal stage of D. brevipes is the first instar which moves about actively for a short period, probably for no more than a day. The first instars may be dispersed by wind and animals. All life stages may be dispersed over longer distances in trade on consignments of plant material and fruit.

The parthenogenetic form of D. brevipes is largely confined to the lower portions of the pineapple plant, near ground level or below, whereas the biparental form of D. brevipes, together with D. neobrevipes, occur primarily on the crown and developing fruit.

Rohrbach et al. (1988) discussed the close association between pineapple wilt disease, mealybugs and ants on pineapple in Hawaii. Populations of the ant Pheidole megacephala and D. brevipes are mutually dependent. P. megacephala builds mud encasements around the mealybug colonies that afford protection from predation, parasitism, desiccation and adverse climatic conditions. The ants also remove the honeydew excreted by the mealybugs, thus preventing its accumulation and the potential growth of sooty mould, both of which can be harmful to the mealybugs. The ants also carry the mealybugs to new host plants, as they extend their territory.

Notes on Natural Enemies

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Bartlett (1978) has given an account of the introduced parasitoids and predators used to control D. brevipes.

Natural enemies

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Natural enemy	Type	Life stages	Specificity	References	Biological control in	Biological control on
Aenasius brasiliensis	Parasite				Hawaii	apples
Anagyrus ananatis	Parasite	Adults/Nymphs			Hawaii	apples
Anagyrus coccidivorus	Parasite				Puerto Rico	apples
Anagyrus pseudococci	Parasite	Adults/Nymphs				
Anagyrus sp. nr. kivuensis	Parasite				Hawaii	apples
Arhopoideus peregrinus	Parasite				Hawaii	apples
Blepyrus propinquus	Parasite	Adults/Nymphs				
Blepyrus schwarzi	Parasite				Hawaii	apples
Cleothera bromelicola	Predator	Adults/Nymphs			Hawaii	apples
Coccodiplosis formosana	Predator	Adults/Nymphs				
Cryptolaemus montrouzieri	Predator	Adults/Nymphs			Mauritius; Philippines	apples
Diadiplosis abacaxii	Predator			Culik and Ventura, 2013		
Diadiplosis koebelei	Predator	Adults/Nymphs			Philippines	apples
Diadiplosis pseudococci	Predator	Adults/Nymphs			Hawaii	apples; Pinus; sugarcane
Dicrodiplosis guatemalensis	Predator	Adults/Nymphs			Hawaii	apples
Diomus margipallens	Predator	Adults/Nymphs			Hawaii	apples
Diomus neuenschwanderi	Predator	Adults/Nymphs			Jamaica	apples
Exochomus concavus	Predator	Adults/Nymphs				
Hambeltonia pseudococcinna	Parasite	Adults/Nymphs				
Hambletonia pseudococcinna	Parasite				Florida; Hawaii; Puerto Rico	apples
Hyperaspis albicollis	Predator	Adults/Nymphs			Hawaii	apples
Hyperaspis c-nigrum	Predator	Adults/Nymphs			Hawaii	apples
Hyperaspis silvestrii	Predator	Adults/Nymphs			Philippines	apples
Leptomastix dactylopii	Parasite				Hawaii	apples
Pseudaphycus angelicus	Parasite				Hawaii	apples
Pseudaphycus dysmicocci	Parasite				Hawaii	apples
Pseudaphycus malinus	Parasite				Hawaii	apples
Pseudiastata pseudococcivora	Predator	Adults/Nymphs			Hawaii	apples
Rhyzobius ventralis	Predator	Adults/Nymphs				
Scymnus bilucernarius	Predator	Adults/Nymphs			Hawaii	apples
Scymnus margipellens	Predator	Adults/Nymphs			Philippines	apples
Scymnus quadrivittatus	Predator	Adults/Nymphs			Hawaii	apples
Scymnus uncinatus	Predator	Adults/Nymphs				
Zaplatycerus fullawayi	Parasite				Hawaii	apples

Impact

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D. brevipes is a cosmopolitan pest of pineapple and a vector of mealybug pineapple wilt disease which is a serious threat to commercial pineapple production. It was originally thought that the wilt disease was caused by the secretion of toxins from the mealybugs but a pineapple wilt-associated closterovirus has been isolated from infected plant material. The virus can be transmitted by low numbers of the pest. D. brevipes is also known to transmit the cocoa Trinidad virus (Diego Martin Valley isolate) in Trinidad (Williams and Granara de Willink, 1992). It is a pest of sugarcane (Williams and Granara de Willink, 1992), coffee (Le Pelley, 1968), plantain (Matile-Ferrero and Williams, 1995) and caused a yield loss of about 25% of groundnut in Tripura, India (Das, 1988).

Risk and Impact Factors

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Impact mechanisms

Pest and disease transmission

Detection and Inspection

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Heavy infestations are conspicuous because of the white waxy adults which often occur at the growing points, around the stem nodes, on the undersides of leaves, on the fruit and on the roots.

Similarities to Other Species/Conditions

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D. brevipes should be distinguished from D. neobrevipes which occurs in North America, the Caribbean and the tropical South Pacific. Adult female D. brevipes are distinguished by the presence of long setae above the anal ring on the dorsum of the abdomen and in the roughly quadrate form of the ventral anal lobe sclerotization. D. neobrevipes, on the other hand, has short setae above the anal ring, and the ventral anal lobe sclerotization is conspicuously long, being two or more times as long as wide.

Beardsley (1959, 1965) discussed the important morphological characters that separated D. brevipes from closely-related species.

Prevention and Control

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Due to the variable regulations around (de)registration of pesticides, your national list of registered pesticides or relevant authority should be consulted to determine which products are legally allowed for use in your country when considering chemical control. Pesticides should always be used in a lawful manner, consistent with the product's label.

Heat Treatment

Heating pineapple crowns in a large water bath at 50°C for 30 minutes permitted 100% plant survival and rendered 100% of the plants free of pineapple wilt-associated virus (Ullman et al., 1991). Following heat treatment of pineapple crowns in Hawaii, pineapple wilt-associated closterovirus could not be detected and growth of the heat-treated plants was more rapid than that observed in non-heat-treated plants. The heat-treated plants were not readily colonized by mealybugs, nor did they show mealybug wilt even after more than 2 years from being planted in a commercial plant crop with severe mealybug pineapple wilt (Ullman et al., 1993).

Regulatory Control

Importation of pineapple plants for planting from countries where mealybug wilt of pineapple occurs should be prohibited.

Biological Control

The following species of parasites and predators have been introduced into Hawaii for the biological control of D. brevipes, and have become established: the encyrtid parasitoids Anagyrus ananatis, Euryrhopalus [Blepyrus] propinquus and Hambeltonia pseudococcinna; a cecidomyid predator Lobodiplosis [Diadiplosis] pseudococci, and the predatory coccinellids Nephus bilucenarius and Scymnus uncinatus (Rohrbach et al., 1988). Of these, the encyrtids and cecidomyid are the most effective. These natural enemies, however, do not control the mealybug colonies in the presence of ants and ant control is therefore important.

Chemical Control

Pineapple crowns and slips used for new plantings need to be dipped or fumigated before planting to prevent spreading infestations of the mealybug. In Brazil, fenitrothion and fenpropathrin (Santa Cecilia and Sousa, 1993) and diazinon (Cecilia and Rossi, 1991) have been found to be effective against D. brevipes on pineapple.

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