This article displays insect count data obtained in eleven field trials conducted between 2010 and 2019 in southeastern France. Winged insect abundances were monitored daily within melon crops during 8–11 weeks in May–July using a suction trap or a yellow pan trap. Aphids were identified under a stereomicroscope. In total, 29,709 winged aphids belonging to 216 taxa and 151,061 other flying insects were caught. Among possible uses, these data can populate larger multisite studies or larger time series investigating aphid community variations. They can also feed generic studies exploring temporal dependencies or species assemblages. They can stimulate new collaborations with entomologists keen on implementing molecular tools or taxonomic expertise on a large specimen collection.

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1. Data

Table 1 presents the melon crop details for each of the 11 field trials: location, date of planting, trial area, number of plants, number of rows, number of plants per row, row spacing and plant spacing. Table 2 presents the 216 aphid taxa recorded during the insect monitoring conducted in Avignon between 2010 and 2019.

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Table 3 presents a summary of airborne insect monitoring in 11 field trials conducted in Avignon between 2010 and 2019. In total, 29,709 winged aphids and 151,061 other flying insects were caught. According to the dataset, the abundance of winged aphids varied between 431 and 4206; the abundance of other flying insects varied between 1169 and 23,139. Per dataset, aphids represented between 5 and 35% of the catch. Between 35 and 107 aphid taxa were recorded per dataset. A small proportion of aphids (0.3–2.5% per dataset) could not be assigned to a taxon because of i) limit of taxonomic expertise, ii) loss during storage, or iii) damage during trapping.

Fig. 1 illustrates the main trapping method used to monitor winged insects in each of the 11 trials (suction trap).

Fig. 2 illustrates a complementary trapping method (yellow pan trap) used in three of the 11 trials.

2. Experimental design, materials, and methods

1. Field experiments

Eleven field experiments were conducted between 2010 and 2019 at INRAE Avignon, southeastern France: nine at St Paul experimental station (43°54′53N, 4°52′59E) and two at St Maurice experimental station.
station (43°56′49″N, 4°51′52″E) (Table 1). The two sites are approximately 4 km apart and surrounded by a highly diversified environment consisting of discontinuous urban fabric, commercial units, arable land, permanent crops (vineyards, fruit trees, olive groves), pastures and mixed forest, according to CORINE land cover nomenclature [1].

The experimental design consisted of a Charentais-type melon crop which layout varied according to trials (Table 1). Seedlings were prepared in an insect-proof greenhouse three weeks before planting. Depending on the trial, plants at the 1–3 leaf stage were planted in late April or late May on dark brown plastic mulch with drip irrigation. Early plantings were protected from wind damage with Agryl P17 fleece (Fiberweb France, Biesheim) for 11–15 days. The crop comprised 120 to 240 plants (0.5–0.8 m plant spacing) organized in 6–16 rows (1.5–2 m row spacing) depending on the trial. No insecticides were applied during trials.

### Table 1

| Trial code | Experimental site | Planting date (dd/mm/yyyy) | Trial area (m²) | Number of plants | Number of rows | Number of plants per row | Row spacing (m) | Plant spacing (m) |
|------------|-------------------|-----------------------------|----------------|-----------------|----------------|--------------------------|----------------|------------------|
| M10        | St Paul           | 28/05/2010                  | 256            | 160             | 8              | 20                       | 2              | 0.8              |
| V11        | St Paul           | 09/05/2011                  | 120            | 120             | 6              | 20                       | 2              | 0.5              |
| V12        | St Paul           | 11/05/2012                  | 150            | 150             | 6              | 25                       | 2              | 0.5              |
| V13        | St Paul           | 06/05/2013                  | 150            | 150             | 6              | 25                       | 2              | 0.5              |
| P11        | St Paul           | 24/05/2011                  | 156            | 208             | 16             | 13                       | 1.5            | 0.5              |
| P12        | St Paul           | 31/05/2012                  | 180            | 240             | 16             | 15                       | 1.5            | 0.5              |
| P13        | St Paul           | 24/05/2013                  | 180            | 240             | 16             | 15                       | 1.5            | 0.5              |
| P14        | St Paul           | 27/05/2014                  | 180            | 240             | 16             | 15                       | 1.5            | 0.5              |
| P15        | St Paul           | 28/05/2015                  | 180            | 240             | 16             | 15                       | 1.5            | 0.5              |
| M18        | St Maurice        | 25/05/2018                  | 120            | 160             | 8              | 20                       | 1.5            | 0.5              |
| M19        | St Maurice        | 28/05/2019                  | 120            | 160             | 8              | 20                       | 1.5            | 0.5              |

*Agryl P17 fleece removal; fleece optimizes plant growth by increasing both air and soil temperatures and reducing wind damage.*

A non-biased suction trap was designed to sample winged insects daily at the crop height [2]. It is made up of a vacuum chamber generating a downward suction, an air extractor (400 m³/h, 160B model, France Air), an insect collector and a chimney rain cap (Fig. 1). The insect collector is inserted in the vacuum chamber. Small insects flying above the vacuum chamber opening are caught and dragged in a collecting pot containing 100 ml of water with 5 µl/l detergent (Teepol 610 S, ref 86350, Sigma-Aldrich) to break the surface tension and prevent insects from escaping. Each trial was equipped with a suction trap set up in the melon crop. The trap runned daily for a 12-h sequence (8:00 a.m. - 8:00 p.m.) thanks to a timer. The collecting pot was changed daily before the start of the trapping.

For three of the 11 field trials, winged insects were also sampled with a yellow pan trap (model FLORA cultures basses, ref 058501, SigneNature) placed at 2–3 m from the suction trap (Fig. 2). The trap was filled with 1 l of water with 5 µl/l detergent and changed daily at 8:00 a.m.

Airborne insect monitoring started at crop planting or fleece removal to avoid bias caused by a possible visual repellent effect of the fleece on winged aphid behaviour. Depending on the trial, it was carried out for 55–80 days. Catches were collected daily, rinsed with tap water and stored in 70% ethanol until sorting (aphids vs other insects) and taxonomic identification (aphids only) under a stereomicroscope. Aphids were identified based on morphological characteristics using several dichotomous keys [3–5] and counted. Individuals which could not be identified to species were grouped at genus level.

Whenever possible, aphid species/genera were associated with their Rothamsted Insect Survey (RIS) codes (Table 2). For aphid taxa not yet referenced in the RIS system, INRA codes were assigned.
Table 2
List of aphid taxa recorded during the 2010–2019 monitoring and their corresponding INRA or Rothamsted Insect Survey (RIS) codes.

| Taxon name                                | Taxon code |
|-------------------------------------------|------------|
| Acyrthosiphon caraganae                    | RIS-755    |
| Acyrthosiphon loti                         | RIS-381    |
| Acyrthosiphon malvae                       | RIS-382    |
| Acyrthosiphon pisum                        | RIS-389    |
| Acyrthosiphon primulae                     | RIS-392    |
| Acyrthosiphon spp                          | RIS-1014   |
| Adelges spp                                | RIS-2065   |
| Amphorophora rubi                          | RIS-468    |
| Anoecia corni                              | RIS-480    |
| Anoecia spp                                | RIS-1012   |
| Anuraphis farfarae                         | RIS-238    |
| Anuraphis spp                              | RIS-1015   |
| Anuraphis subterranea                      | RIS-239    |
| Aphis (Protaphis) anuraphoides             | INRA-001   |
| Aphis (Protaphis) spp                      | RIS-1064   |
| Aphis (Protaphis) terricola                | INRA-002   |
| Aphis armoraciae                           | INRA-003   |
| Aphis craccivora                           | RIS-163    |
| Aphis fabae                                | RIS-132    |
| Aphis gossypii                             | RIS-181    |
| Aphis nasturtii                            | RIS-152    |
| Aphis nerii                                | RIS-787    |
| Aphis pomi                                 | RIS-153    |
| Aphis salicariae                           | RIS-142    |
| Aphis sambuci                              | RIS-125    |
| Aphis spp                                  | RIS-1005   |
| Aphis verbasi                              | RIS-197    |
| Aploneura lentisci                         | RIS-530    |
| Appendiseta robiniae                       | RIS-793    |
| Aspidaphis adjuvans                        | RIS-260    |
| Atheroides serrulatus                      | RIS-59     |
| Aulacorthum solani                         | RIS-376    |
| Aulacorthum spyeri                         | RIS-377    |
| Baizongia pistaceae                        | RIS-531    |
| Betulaphis quadriruberculata               | RIS-84     |
| Brachycaudus cardui                        | RIS-241    |
| Brachycaudus helichrysi                    | RIS-243    |
| Brachycaudus populi                        | RIS-747    |
| Brachycaudus rumexicolens                  | RIS-253    |
| Brachycaudus schwartzi                     | RIS-745    |
| Brachycaudus sedi                          | RIS-254    |
| Brachycaudus spp                           | RIS-1016   |
| Brachycaudus tragopogonis                  | RIS-252    |
| Brachycoccus cucubali                      | RIS-262    |
| Brevicoryne brassicae                      | RIS-264    |
| Calaphis flava                             | RIS-82     |
| Callipterinella minutissima                | RIS-80     |
| Capitophorus carduinus                     | RIS-341    |
| Capitophorus elaeagni                      | RIS-342    |
| Capitophorus hippophaes                    | RIS-343    |
| Capitophorus horni                         | RIS-344    |
| Capitophorus similis                       | RIS-346    |
| Capitophorus spp                           | RIS-1018   |
| Cavariella aegopodii                       | RIS-292    |
| Cavariella archangelicae                   | RIS-293    |
| Cavariella spp                             | RIS-1046   |
| Cavariella theobaldi                       | RIS-298    |
| Ceraphis eriophori                         | RIS-211    |
| Chaetosiphon fragaefolii                   | RIS-287    |
| Chaetosiphon tetrarhodum                   | RIS-289    |
| Taxon name               | Taxon code |
|-------------------------|------------|
| Chaitophorus leucomelas | RIS-50     |
| Chaitophorus populeti   | RIS-45     |
| Chaitophorus populialbae| RIS-46     |
| Chaitophorus salicti    | RIS-47     |
| Chaitophorus spp        | RIS-1002   |
| Chromaphis juglandicola | RIS-61     |
| Chromaphis spp          | RIS-1078   |
| Clethrubius comes       | RIS-87     |
| Coloradoa rufomaculata  | RIS-280    |
| Coloradoa spp           | RIS-1020   |
| Coloradoa tanacetina    | RIS-281    |
| Corylobium avellaneae   | RIS-403    |
| Cryptomyzus ribis       | RIS-340    |
| Ctenocallis setosus     | RIS-77     |
| Diuraphis (Holcaphis) spp| RIS-1502 |
| Diuraphis muehlei       | RIS-259    |
| Diuraphis noxia         | RIS-809    |
| Drepanosiphum platanoidis| RIS-91   |
| Dysaphis plantaginea    | RIS-234    |
| Dysaphis pyri           | RIS-235    |
| Dysaphis spp            | RIS-1006   |
| Ericaphis ericae        | RIS-284    |
| Eriosoma lanigerum      | RIS-497    |
| Eriosoma spp            | RIS-1010   |
| Eriosoma ulmi           | RIS-500    |
| Essigella californica   | INRA-005   |
| Essigella spp           | RIS-1518   |
| Eucalipterus tiliae     | RIS-70     |
| Eucrazzia elegans       | RIS-768    |
| Eucrapsis punctipennis  | RIS-88     |
| Forda formicaria        | RIS-527    |
| Geoica setulosa         | RIS-532    |
| Geoica spp              | RIS-1055   |
| Hayhurstia atriplicis   | RIS-261    |
| Hayhurstia spp          | RIS-1022   |
| Hoplocallis pictus      | RIS-772    |
| Hyadaphis coriandri     | RIS-808    |
| Hyadaphis foeniculi     | RIS-271    |
| Hyadaphis spp           | RIS-1023   |
| Hyalopteroides humilis  | RIS-276    |
| Hyalopterus pruni       | RIS-110    |
| Hyalopterus spp         | RIS-1065   |
| Hyperomyzus lactucae    | RIS-358    |
| Hyperomyzus lampsanae   | RIS-359    |
| Hyperomyzus pallidus    | RIS-360    |
| Hyperomyzus picridis    | RIS-362    |
| Hyperomyzus spp         | RIS-1007   |
| Illinoia goldmargareae  | RIS-475    |
| Lipaphis erysimi        | RIS-267    |
| Macchiatiella rhamni    | INRA-007   |
| Macrosiphoniella absinthii| RIS-451  |
| Macrosiphoniella oblonga| RIS-461    |
| Macrosiphoniella persevens| RIS-462  |
| Macrosiphoniella sanborni| RIS-456   |
| Macrosiphoniella spp    | RIS-1027   |
| Macrosiphoniella tapuskae| RIS-732  |
| Macrosiphum euphorbiae  | RIS-410    |
| Macrosiphum rosae       | RIS-416    |
| Macrosiphum spp         | RIS-1009   |
| Megoura viciae           | RIS-470    |
| Melanaphis bambusae     | RIS-811    |
| Taxon name                  | Taxon code |
|----------------------------|------------|
| Melanaphis luzulella        | RIS-122    |
| Melanaphis pyraria          | RIS-727    |
| Metopolophium albidum       | RIS-395    |
| Metopolophium dirhodum      | RIS-396    |
| Metopolophium festucae      | RIS-397    |
| Metopolophium friscum       | RIS-398    |
| Metopolophium spp           | RIS-1008   |
| Microlophium spp            | RIS-2014   |
| Mimeuria ulmiflora          | RIS-510    |
| Mindarus abietinus          | RIS-491    |
| Monelliopsis carcae         | RIS-801    |
| Myzocallis castanicola      | RIS-63     |
| Myzocallis coryi            | RIS-64     |
| Myzocallis komareki         | INRA-009   |
| Myzocallis occidentalis     | INRA-010   |
| Myzocallis spp              | RIS-1003   |
| Myzotoxoptera spp           | RIS-1077   |
| Myzotoxoptera winshurstae   | RIS-364    |
| Myzus cerasi                | RIS-312    |
| Myzus ligustri              | RIS-320    |
| Myzus lythri                | RIS-314    |
| Myzus ornatus               | RIS-315    |
| Myzus persicae              | RIS-322    |
| Myzus spp                   | RIS-1030   |
| Myzus varians               | RIS-740    |
| Nasonovia pilosellae        | RIS-354    |
| Nasonovia ribisnigri        | RIS-355    |
| Nasonovia spp               | RIS-1011   |
| Neartaphis bakeri           | RIS-733    |
| Ovatus insitus              | RIS-303    |
| Ovatus spp                  | RIS-1025   |
| Paracletus cimiciformis     | RIS-525    |
| Pemphigus spp               | RIS-1506   |
| Phorodon cannabis           | RIS-812    |
| Phorodon humuli             | RIS-308    |
| Phylloxera spp              | RIS-2003   |
| Pletrichophorus glandulosus | RIS-350    |
| Pseudacaudella rubida       | RIS-275    |
| Pterocallis alni            | RIS-75     |
| Rhodobium porosum           | RIS-401    |
| Rhopalomyzus poae           | RIS-309    |
| Rhopalosiphonius ribesinus  | RIS-367    |
| Rhopalosiphum insertum      | RIS-111    |
| Rhopalosiphum maidis        | RIS-112    |
| Rhopalosiphum nymphaeae     | RIS-113    |
| Rhopalosiphum padi          | RIS-114    |
| Rhopalosiphum rufabdominale | RIS-2009   |
| Rhopalosiphum rufulum       | RIS-739    |
| Rhopalosiphum spp           | RIS-1045   |
| Schizaphis graminum         | RIS-116    |
| Schizaphis palustris        | RIS-115    |
| Schizaphis pilipes          | RIS-750    |
| Schizaphis scirpi           | RIS-121    |
| Semiaphis dauci             | RIS-728    |
| Semiaphis spp               | RIS-1088   |
| Sipha elegans               | RIS-52     |
| Sipha maydis                | RIS-54     |
| Sitobion avenae             | RIS-420    |
| Sitobion fragariae          | RIS-421    |
| Sitobion spp                | RIS-1031   |
| Smylythruodes betae         | RIS-526    |
| Staegteriai necopinata      | RIS-273    |
Table 2 (continued)

| Taxon name                  | Taxon code  |
|-----------------------------|-------------|
| Subsaltusaphis picta       | RIS-738     |
| Taiwanaphis spp             | INRA-012    |
| Takecallis arundicolens    | RIS-72      |
| Takecallis arundinariae    | RIS-73      |
| Takecallis taiwanus        | RIS-74      |
| Tetaneura nigrabdominalis  | RIS-2008    |
| Tetaneura spp              | RIS-1037    |
| Tetaneura ulmi             | RIS-503     |
| Thelaxes dryophila         | RIS-490     |
| Thelaxes spp               | RIS-1038    |
| Therioaphis luteola        | RIS-92      |
| Therioaphis ononidis       | RIS-93      |
| Therioaphis riehmi         | RIS-731     |
| Therioaphis spp            | RIS-1039    |
| Therioaphis trifoli        | RIS-94      |
| Tinocallis kahawalukalani  | RIS-795     |
| Tinocallis takachihoensis  | RIS-797     |
| Tuberculatus (Tuberculoides) spp | RIS-1024 |
| Tuberculatus annulatus     | RIS-68      |
| Tuberculatus borealis      | RIS-758     |
| Tuberculatus neglectus     | RIS-759     |
| Tuberculatus querceus      | RIS-69      |
| Tuberochlaenus salignus    | RIS-23      |
| Uroleucon (Uroleucon) spp  | INRA-015    |
| Uroleucon (Uromelan) spp   | RIS-1504    |
| Uroleucon ambrosiae        | INRA-013    |
| Uroleucon compositae       | INRA-014    |
| Uroleucon erigeronense     | RIS-763     |
| Uroleucon tussilaginis     | RIS-439     |
| Ulatophora humboldti       | RIS-751     |
| Wahlgreniella nervata      | RIS-782     |
| Wahlgreniella spp          | RIS-1042    |
| Wahlgreniella vaccinii      | RIS-479     |

Table 3
Summary of airborne insect monitoring in 11 field trials conducted in Avignon between 2010 and 2019.

| Dataset code | Trial code | Trapping method | Monitoring period (days) | Number of winged aphids | Number of other flying insects | Ratio aphids/total catch (%) | Number of aphid taxa identified | Number of aphids not assigned to a taxon \(^a\) |
|--------------|------------|-----------------|--------------------------|--------------------------|-------------------------------|-------------------------------|---------------------------------|----------------------------------|
| M10          | M10        | Suction         | 64                       | 3532                     | 14 871                        | 19                            | 107                             | 81                               |
| V11          | V11        | Suction         | 74                       | 3128                     | 16 423                        | 16                            | 92                              | 13                               |
| V12          | V12        | Suction         | 66                       | 4206                     | 23 139                        | 15                            | 95                              | 106                              |
| V13          | V13        | Suction         | 80                       | 2998                     | 13 488                        | 18                            | 99                              | 17                               |
| P11          | P11        | Suction         | 65                       | 3306                     | 17 924                        | 16                            | 91                              | 19                               |
| P12          | P12        | Suction         | 56                       | 3602                     | 11 499                        | 24                            | 75                              | 57                               |
| P13          | P13        | Suction         | 62                       | 1848                     | 7571                          | 20                            | 80                              | 5                                |
| P14          | P14        | Suction         | 59                       | 1457                     | 9346                          | 13                            | 62                              | 7                                |
| P15          | P15        | Suction         | 56                       | 2245                     | 7825                          | 22                            | 51                              | 18                               |
| P15Y         | P15        | Yellow pan      | 56                       | 518                      | 1169                          | 31                            | 35                              | 8                                |
| M18          | M18        | Suction         | 55                       | 786                      | 15 660                        | 5                             | 81                              | 4                                |
| M18Y         | M18        | Yellow pan      | 55                       | 431                      | 2132                          | 17                            | 49                              | 5                                |
| M19          | M19        | Suction         | 58                       | 835                      | 8476                          | 9                             | 76                              | 6                                |
| M19Y         | M19        | Yellow pan      | 58                       | 817                      | 1538                          | 35                            | 52                              | 7                                |
| MIN          | MIN        | Suction         | 55                       | 431                      | 1169                          | 5                             | 35                              | 4                                |
| MAX          | MAX        | Suction         | 80                       | 4206                     | 23 139                        | 35                            | 107                             | 106                              |
| TOTAL        |            |                 |                          | 29 709                    | 151 061                       |                               |                                 |                                  |

\(^a\) Aphids that could not be identified because of i) limit of taxonomic expertise, ii) loss during storage, or iii) damage during trapping.
Fig. 1. Suction trap used to monitor winged insects in eleven field trials conducted in Avignon between 2010 and 2019. (A) In situ in a melon crop (Photo credit: Alexandra Schoeny, INRAE) (B) Schematic representation of a suction trap adapted from Pascal et al., 2013 [2] showing its operating principle and its different parts: ➊ vacuum chamber, ➋ air extractor, ➌ insect collector, ➍ collecting pot, ❼ chimney rain cap.
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Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.dib.2020.105132.
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