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► To cite this version:

Adrien Vergès, Sébastien Codis, Elodie Trinquier, Benjamin Perriot, David Pasquier, et al.. Spray drift in viticulture: A dataset to analyse the influence of spray application techniques, hedges and their combination on the reduction of sedimentary drift, aerial drift and exposure of bystanders. *Data in Brief*, 2024, pp.110819. 10.1016/j.dib.2024.110819 . hal-04674037

HAL Id: hal-04674037

<https://hal.science/hal-04674037v1>

Submitted on 21 Nov 2024

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Data Article

Spray drift in viticulture: A dataset to analyse the influence of spray application techniques, hedges and their combination on the reduction of sedimentary drift, aerial drift and exposure of bystanders



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ARTICLE INFO

Article history:

Received 3 July 2024

Revised 23 July 2024

Accepted 5 August 2024

Available online 14 August 2024

Dataset link: [Drift data from French CAPRIV project \(Original data\)](#)

Keywords:

Grapevine

Sprayer

Airborne drift

Drift mitigation

Contamination risk

ABSTRACT

In 2021 and 2022, the national and cross-sector project CAPRIV funded by the French Ministry of Agriculture, made it possible to assess the influence of application techniques associated or not with a hedge or an anti-drift net on spray drift and bystander exposure. The acronym CAPRIV stands for "Concilier l'application des PPP et la protection des riverains" (Reconciling the use of PPPs and the protection of residents), within the orchard, viticulture, and field crops sectors. This specific data article focuses on viticulture. In viticulture, over the two years, 10 different spray application techniques were tested. For 3 of them the influence of a hedge on drift mitigation was also evaluated. All the trials were conducted on the "EoleDrift" test bench, with an artificial vegetation and an artificial wind. Spray drift has been measured according

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to a common protocol harmonised between cropping sectors within the project using three different types of passive drift collectors that were set up downwind of the treated field. Petri dishes collected sedimentary drift, PVC wires collected airborne drift and cotton T-shirts placed on manikins were used to assess potential dermal exposure of bystanders. The plant protection mix was simulated by a dilution of a fluorescent dye in water. The collected mass of dye was measured using a classical technique with dilution and concentration evaluation. Two fluorescent dyes were successively used, Brilliant Sulfaflavine and Sulforhodamine B. A total amount of 4770 collectors were analysed individually. The data set provides a drift index for each collector expressed as the quantity of dye recovered per unit area of collector on the quantity of dye applied per unit area on the sprayed field multiplied by 100.

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Specifications Table

Subject	Agronomy and Crop Science
Specific subject area	Pesticide application, plant protection, spray drift, exposure of residents and bystanders.
Data format	Raw (parameters, samples) Analyzed (weather conditions, normalised indicator from samples) Raw data for weather are also provided for traceability
Type of data	Tables
Data collection	Trials to evaluate drift from several spraying technologies used in vineyards and effect of a hedge were carried out according to ISO 22866:2005 and using artificial wind. A mixture of a fluorescent tracer and water was sprayed on an artificial vine test bed. Three types of spray drift collectors were placed in an adjacent bare ground: petri dishes, PVC wires and manikins. The tracer was extracted with water and its mass estimated with spectrofluorometry. The drift index was then calculated by normalization and is analogous to $[100 * \text{deposition (mass collected/collector surface)} / \text{application (mass sprayed / ground surface)}]$ where mass and surface units are the same for deposition and application.
Data source location	Experiments were carried out in 2021 and 2022 in INRAE facilities, 361 rue Jean-François Breton, 34196 Montpellier – France. Data are stored in an INRAE dataverse on https://entrepot.recherche.data.gouv.fr
Data accessibility	Repository name: Recherche Data Gouv (entrepot.recherche.data.gouv.fr) Data identification number: (or DOI or persistent identifier) doi:10.57745/Z8OJ3A Direct URL to data: https://doi.org/10.57745/Z8OJ3A The data are available under doi:10.57745/Z8OJ3A (under the title “Drift data from French CAPRIV project”, dataverse “Spraying processes and equipment for agriculture” that is accessible within Data INRAE)

1. Value of the Data

- The presented data, which are part of the data accessible in [1], are about drift in the vicinity of a vine field being sprayed with several commonly used spraying technologies tested and drift mitigation measures such that using air-induction nozzles or planting hedges at the edge of the field. They are complementary to data presented in [2], as this previously published data paper is related to field crops and especially wheat.

- As indicated in [2], spray drift was evaluated with a specific sampling method for each drift notion considered: sedimentary drift evaluated with Petri dishes on the ground, airborne drift was evaluated with PVC wires (diameter 2mm) arranged on a vertical plane, and potential bystander dermal exposure was estimated with cotton cloth disposed on flat human shaped manikins. For this study on vine fields, sedimentary drift was collected between 1.25m and 20m from the last sprayed row, the vertical plane for collecting airborne drift was placed at 5m, and the manikins were placed between 3m and 20m.
- Spray drift was evaluated with regards to physical effects that are not product specific using a spray mixture of water and tracer. The three types of spray drift data (sedimentary drift, airborne drift, potential exposure of bystanders) were simultaneously acquired as in [2]. In this specific study, standardized conditions of wind and vegetation were obtained outdoors using the EoleDrift artificial wind system and the EvaSprayViti artificial vine (described hereafter). These conditions support robust comparisons as well as interpretation.
- The diversity of drift sampling measures that were simultaneously collected within the CAPRIV project should contribute to the development of new data, new knowledge and new models within an applied physics approach. The drift sampling scheme from CAPRIV project was applied to three crop types: trellised grapevine, trellised fruit crops and field crops. Spraying modalities differed according to crop. A harmonised database was built [1] and its contents for viticulture are presented in this data paper.
- The drift data can be compared according to spray technologies and drift mitigation measures for supporting decision-making at various levels: growers, specifications for production, regulations by public authorities, incentives for sustainable production methods.
- The drift data can be exploited to develop and enhance risk assessment methods and databases related to the use and homologation of phytosanitary products used in grapevine production. In particular, such risk assessment methods might embed contrasted technologies, settings and drift mitigation means and eventually support differentiations between production cases in decisions and regulations that fit the reality of farming practices.

2. Background

Drift of pesticides during spraying in field crops and perennial crops is an important issue that has motivated a number of studies and research worldwide. One major concern for European authorities has been the protection of freshwater within the framework of the EU Directive 2000/60/EC on water quality. This motivated many studies on drift deposited on the ground downwind of the treated field referred hereafter as “sedimentary drift”. One other major concern is the protection of people in the vicinity of crops, which are referred to hereafter as “bystanders” and “residents” [3]. Studies related to exposure of bystanders as a consequence of spray drift have usually been conducted on people or manikins to assess dermal exposure [4]. Finally, the study of the airborne fraction of spray drift is often done with specific collectors in a vertical plane in order to minimize flow disruption [5].

The motivation of the CAPRIV project was to combine the evaluation of these three different spray drift effects in a common protocol involving a unique fluorescent tracer and three types of collectors. This data paper presents a dataset obtained with trials carried out for grapevine on a test bed located outdoors. A data paper on the dataset concerning trials with field crops is available [2].

3. Data Description

The data in this article is distributed in two main csv files (separator semi-colon), CAPRIV_Viti.csv with 4795 lines containing, for viticulture sector, the data from individual collectors for a set of trials which are individually identified, and a table SAMC_Viti_CAPRIV.csv

that details the parameters of spraying methods which were evaluated. Two complementary tables that are common to data of the whole CAPRIV project complement the information, one (units_maintables.xlsx) details the signification of column names for CAPRIV_Viti.csv and provides information on units, and one (units_samctables.xlsx) provides similar information for SAMC_Viti_CAPRIV.csv. These tables are provided in the 'data' directory within the dataset [1]. A directory named 'weather' contains raw weather data for traceability.

In the following tables, the column name has a format N-XX, where N designates the table (number, 1 for CAPRIV_Viti.csv, 2 for SAMC_Viti_CAPRIV.csv) and XX designates the column in their order of appearance. Two groups can be identified: metadata in Table 1 (including wind and other weather characteristics), and results in Table 2.

4. Experimental Design, Materials and Methods

4.1. Tests implementation and conditions

All the measurement described in the dataset were performed on the "EoleDrift" test bed located in INRAE facilities in Montpellier France. The test bed is composed of a wind generator system and four rows of artificial vines located on a concrete slab as depicted in Fig. 1 [6]. It features two weather stations.

The wind generator is a wall of fans of 5 m wide and 5 meters high. It is composed of an assembly of 25 fans with an individual diameter of 1 m (Figs. 2 and 3). At the outlet of the fans, the wind speed is about 8m/s. In the center of the artificial plot it is about 5m/s.

The artificial vegetation mimics four rows of vines of 10 m long with a row spacing of 2.5 m. All four rows were sprayed during the drift trials. This artificial vegetation is composed of a steel structure and nets chosen so that their aeraulic porosity mimics that of the vine. It can mimics three different growth stages (early, medium and full development). Trials presented in

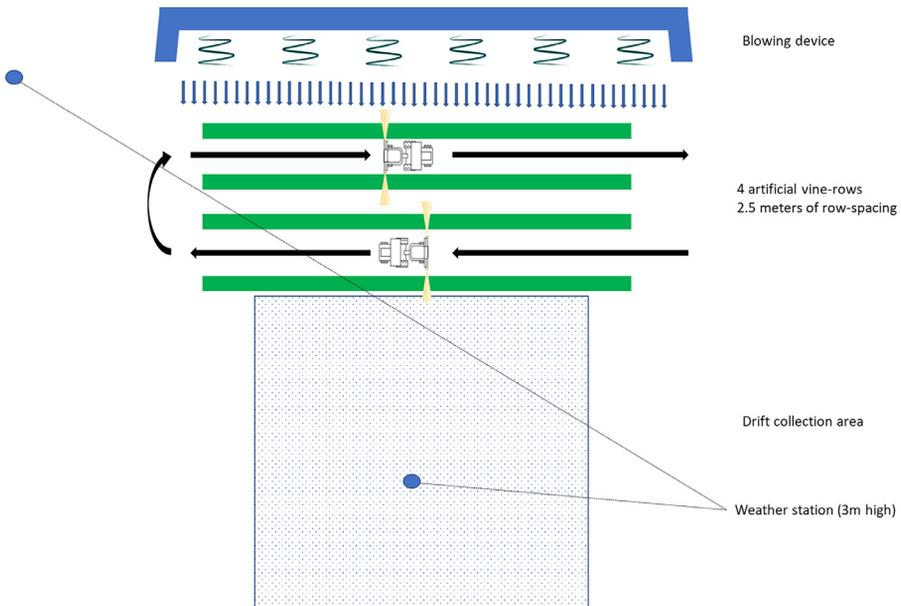


Fig. 1. Schematic representation of the EoleDrift test bed in top view.

Table 1
Metadata of trials.

Column name	Field name	Description	Unit	Comments/possibilities
1-A	prod_sector	Production sector		"viticulture"
1-B	crop	Crop		"artif_vineyard"
1-C	growth_stg	Growth stage (BBCH scale) of crop		2 possibilities on the BBCH scale: 17 (7 leaves unfolded), 79 (full growth stage)
1-D	trial_ref	Trial reference		A string that should be considered meaningless. Is unique for each trial.
1-E	trial_date	Date of the trial	UTC+2	Date when the trial was made
1-F	trial_time	Time of the trial	UTC+2	Time when the trial was made
1-G	wsno	Wind station North offset	°	Always 180 here as the north of wind station was aligned with geodesic south and origin of artificial wind
1-H	wpd	Wind preferred direction	°	Perpendicular to spray path. Related to north of wind station. Always 0 here as the trial were made on a fixed testing platform.
1-I	prop_enough_windspeed	Proportion of wind vectors with a value greater than 1 m/s	%	Should be more than 90 % according to ISO 22866:2005.
1-J	mean_wind_dir	Average value of wind direction (from where the wind comes from)	°	Related to north of wind station. According to ISO 22866:2005 has to be between $\pm 30^\circ$ around wpd
1-K	prop_wrong_wind_dir	Proportion of wind vectors whose angle value is out of range (+/- 45° with respect to wpd)	°	According to ISO 22866:2005, this proportion has to be less than 30 %
1-L	mean_wind_speed	Average wind speed during the test	m/s	
1-M	percent_hygrometry	Average hygrometry during the test	%	Can range slightly over 100 % due to sensor calibration.
1-N	temperature_celsius	Average temperature during the test	°C	According to ISO 22866:2005 has to be between 5 and 35°C
1-O	anemometer_height	Height of the anemometer from the soil (in meters)	m	The anemometer was set at 3 m height
1-P	weather_comment	Reason why a trial has been considered valid or not		Always empty here, used for other crops
1-Q	weather_conformity	Conformity to the ISO standard		'yes' or 'no'
1-R	weather_valid	Trial considered valid for analysis		'yes' or 'no'
1-S	SAMC	Correspondence between Table 1 and Table 2		Spray Application Method Code
2-A	SAMC	Correspondence between Table 2 and Table 1		Spray Application Method Code
2-B	sprayer_type	Type of sprayer		3 possibilities: "Arch sprayer", "Multirow side by side sprayer" or "Tunnel sprayer"
2-C	sprayer_trade_name	Trade name of sprayer		4 possibilities: "Dhugues Koleos", "Dhugues Helios", "Calvet Face par face Eco+", "Hardi voute Optimus "
2-D	spraying_techno	Technology		2 possibilities: "Air assisted with nozzles" or "Pneumatic"
2-E	nozzle_type	Type of nozzle		2 possibilities: "flat fan air induction" or "NA" for pneumatic technology
2-F	nozzle_trade_name	Trade name of nozzles		2 possibilities: "Lechler IDK 90 01" or "NA" for pneumatic technology

(continued on next page)

Table 1 (continued)

Column name	Field name	Description	Unit	Comments/possibilities
2-G	SPM	Spray Path Method		2 possibilities: "standard" and "towards interior", see description in the text
2-H	pressure_setting	pressure setting in bars		Checked on the sprayer manometer
2-I	speed_setting	Speed setting in km/h		2 possibilities: 5 or 6.5 for tunnel sprayer.
2-J	air_flow_setting	Describes the air-flow setting carried out on the considered sprayer		Information necessary and sufficient to reproduce the setting of the machine used for the test. Set according to most common practices.
2-K	volume_rate_setting	Chosen volume rate per ha		Set accordingly to most common practices in the French context according to growth stage and spray application technique modality
1-T	HedgeNet	Indicates if there is a hedge or not used for the trial		2 possibilities: "Hedge" or "None"
1-U	drive_speed	Actual drive speed of the sprayer	km/h	Potted plants were used to form a hedge on the test platform. Speed calculated from the measurement of the travel time of the sprayer in operation using a stopwatch.
1-V	vol_ha_applied	volume by hectare applied	l/ha	Calculated from flow rate manual measurement done before each spray test and drive_speed
1-W	nb_pass	number of passings		Varies between 3 and 7. Number of times the artificial plot has been treated with accumulation of the drift deposition generated at each pass on the same collectors

Table 2
Results of trials.

Column name	Field name	Description	Unit	Comments/possibilities
1-X	spectro_date	Date of spectrofluorometer analysis	UTC+2	
1-Y	spectro_time	Time of spectrofluorometer analysis	UTC+2	
1-Z	collect_dist	Distance of the collector from the treated area from the position of the last treated row	m	Petri dishes and manikins are placed at several distances. All wires are on the same vertical plane
1-AA	collector_type	Type of the collector		3 possibilities: petridish, wire manikin
1-AB	collector_area	Collection area associated with each collector	m ²	All Petri dishes have same size All wires have the same size All manikins have the same size according to body_part
1-AC	wire_length	Length of sampled wire	m	Applies only on PVC wires
1-AD	collector_index	Letter associated with each collector at the same distance		
1-AE	body_part	Part of the body		arms or torso (manikins)
1-AF	wire_height	Height from the ground of sampled wire	m	Ranges between 0.5 and 6 m with 0.5 m steps
1-AG	tracer	Short name of the tracer used		“BSF” or “SRB”
1-AH	reg_coeff	Directing coefficient of the regression line between rfu and concentration of sprayed mixture into dilution water	ml/ml (volume of dilution per volume of concentrated solution)	At least one value for each trial. Dilution ranges were made using the sprayed mixture of each trial.
1-AI	rfu	RFU relative fluorescence unit		Measured with the spectrofluorometer
1-AJ	blank	RFU measured with the spectrofluorometer for blank		RFU measured on extraction water after rinsing a clean collector. Used when necessary, see text, otherwise zero.
1-AK	dilution_vol	volume of deionized water used for tracer extraction	ml	
1-AL	di	drift index		Measured tracer deposition, normalized by vol/ha and collection area. See text for details.



Fig. 2. and **Fig. 3.** EoleDrift wind generator.

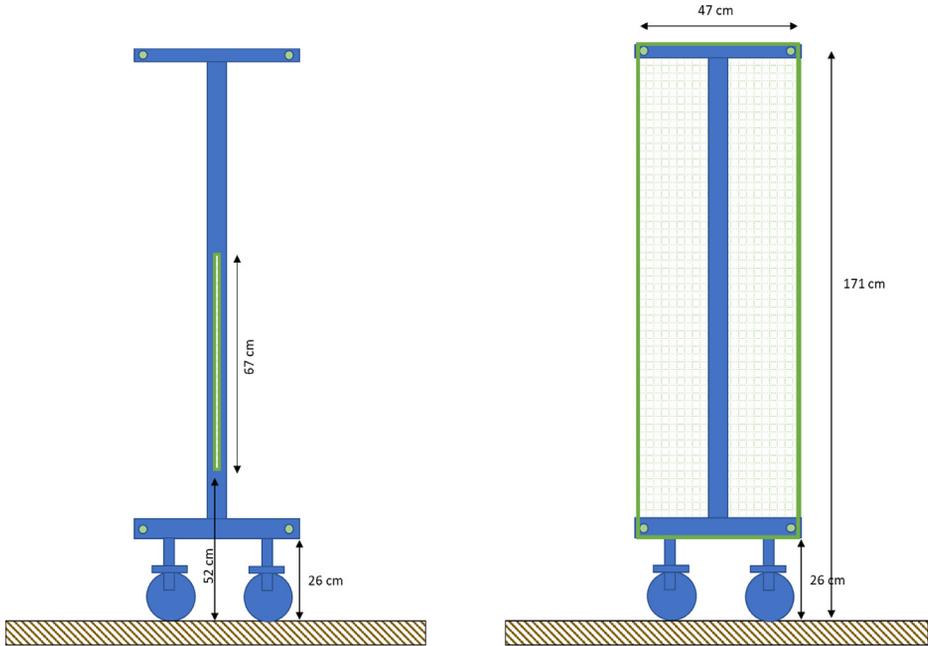


Fig. 4. and **Fig. 5.** Schematic representation of artificial vegetation in side view at the beginning and full vegetation. The blue elements represent the steel structures located on either side of the device. The green elements represent the net stretched between the two ends.

the dataset were only carried out at early and full growth stage. At early growth stage, the total height of vegetation is 119 cm and its thickness is close to 0 (net thickness), see Fig. 4. At full growth stage, the total height of vegetation is 171cm and the thickness is 47 cm (between two passes of the net), see Fig. 5.

Meteorological conditions were recorded using the two weather stations of the test bed. The three components of the wind vectors as well as temperature and humidity were recorded at a frequency of 30 Hz. The first weather sensor was installed at 3m height and 5.5 m from the last sprayed vine-row. It served to check the conformity to ISO 22866:2005. The second sensor was positioned at 3 m height outside the blowing system's field of influence.

The weather records enabled to calculate the weather condition conformity indicators according to ISO 22866:2005 that are:

- Proportion of wind vectors superior to 1 m/s (has to be more than 90 %);

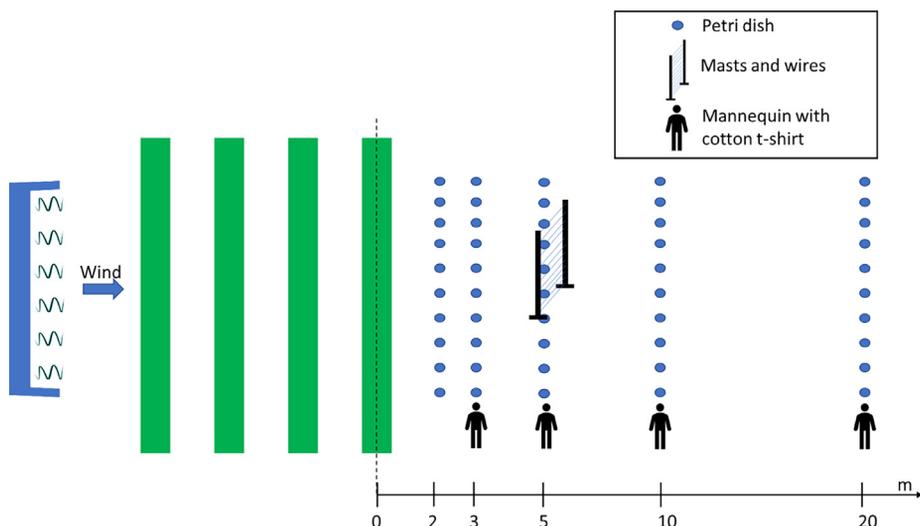


Fig. 6. Schematic representation in top view of the various drift collection devices implemented.



Fig. 7. Picture of the collecting area with the three types of collectors.

- Proportion of wind vectors with an angle outside the range $[-45^\circ, +45^\circ]$ from the direction perpendicular to vine-rows (has to be less than 30 %).
- Average wind direction (has to be in the range $[-30^\circ, 30^\circ]$ from the direction perpendicular to vine-rows)
- Temperatures: between 5 and 35°C.

The main data table for viticulture in the dataset [1] provides corresponding indicators. Raw weather data are provided in separate files in the same data set.

The choice of the number and positioning of the collectors for the sedimentary and air-borne drift was made following the recommendations given by the ISO 22866:2005 standard and based on work carried out previously [5,7–10].

Fig. 6 offers a global schematic view of the different drift collection devices used for this experimentation. It shows their relative position from the last sprayed row and Fig. 7 is a photograph of the collection area hosting the different types of collectors.

4.2. Drift collectors

Overall, the drift collectors were the same as described in [2], following the CAPRIV project common protocol. Their placement and numbers could nevertheless be adapted differently according to specificities of crops, and hedges. All required information on this topic is briefly described here for convenience.

The diameter of Petri dishes used to collect sedimentary drift was 14 cm (surface 0.0154 m^2). 5 lines of 10 Petri dishes numbered from "a" to "j" were respectively placed at 2, 3, 5, 10 and 20 m from the last sprayed vine-row. They were placed on the bare ground, without elevation. Once collected, the Petri dishes were closed and placed in the dark. For some tests, adaptations of a few tens of centimeters of the smallest collection distances (2 and 3m) were made to prevent the collectors from being crushed by the tractor wheels or to make room for the hedge. The database specifies in the "Collection distance" field the exact value for each collector for each test.

The wires used to collect airborne drift were entirely made of PVC and had a diameter of 2mm. 12 wires were stretched between two masts placed at 5 m from the last sprayed vine-row treated and 5 m from each other. The first wire was set at 0.5 m from the ground. A wire was stretched every 50cm high up to 6m high. After the spraying, each wire was separated into 3 sections of 1.33 m numbered "a", "b", and "c". Considering their diameter and their length, the surface area of a section of wire was evaluated at 0.00836 m^2 (the whole of the outer surface of the wire, perimeter x length, was considered and not the surface projected in the vertical plane).

The wood manikins were flat and 1.85 tall. They were dressed in a 95 % cotton T shirt (Fig. 8). The fluorescent tracer was extracted from the t-shirt which was renewed after each trial. For each manikin the two sleeves of the t-shirt were placed together in a closed box and the torso was placed in another closed box, all the boxes were placed in the dark. 1 manikin was set at each distance 3, 5, 10 and 20 m. For some tests, adaptations of a few tens of centimeters of the smallest collection distances (3m) were made to make room for the hedge. The collection area considered for both sleeves of the t-shirt was 0.173 m^2 and the area of the torso was 0.485 m^2 .



Fig. 8. Manikin used to measure drift deposition on bystanders.



Figs. 9, 10 & 11. Potted laurel hedge used for the drift trials.



Fig. 12. Complete view of the drift test platform during the trials carried out in the presence of the hedge.

4.3. Hedge

The edge used for drift trials was a potted laurel hedge positioned 2.5 m from the last row of treated artificial vines. It was on average 2.7 m high. The pictures (Figs. 9–12) display the complete drift test platform at the time of the trials carried out in the presence of the hedge.

4.4. Spray application techniques and modalities of trials

Four different sprayers and several ways to use them were tested. A total of 10 combinations of sprayers/methods of use were tested. Each modality was tested through several replicates. 3 of these 10 combinations were tested in presence and in absence of the hedge (Dhugues Helios arch sprayer in pneumatic and air assisted configuration and the multirow side by side sprayer Calvet Eco+). The 7 others were tested only in the absence of a hedge.

4.4.1. Arch sprayers “Dhugues Helios” and “Hardi vôite Optimus”

4.4.1.1. Spraying technology. Both arch sprayers “Dhugues Helios” and “Hardi vôite Optimus” have been tested associated with two different spraying technologies: the standard configuration with pneumatic outputs and the air assisted configuration with air induction nozzles.

“Dhugues Helios” sprayer has been converted from the standard configuration (pneumatic) to the air assisted configuration by switching the outputs thanks to a kit provided by the manufacturer. “Hardi vôite Optimus” sprayer has been converted from pneumatic to air assisted configuration by switching the liquid supply pipe to the spray output in the way intended by the manufacturer.

4.4.1.2. *Number and position of opened spray outputs.* For all the modalities of use of these two sprayers at early growth stage of vegetation, only one diffuser out of two was open in accordance with good agricultural practices as this is schematized in Fig. 13.

Only “Hardi vôite Optimus” sprayer in pneumatic configuration was also tested at full growth stage. For this trial all the outputs of the sprayer were opened.

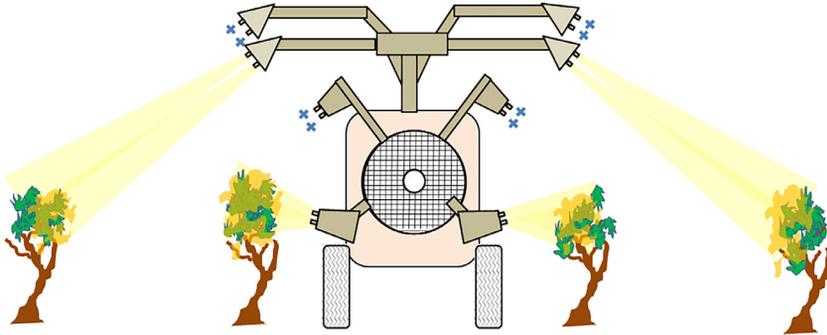


Fig. 13. Schematic representation of the position of open diffusers during tests with arch-type sprayers carried out at early growth stage.

4.4.1.3. *Path procedure through the artificial vine-plot.* The Figs. 14 and 15 show the two different possibilities of path taken by these arch sprayers to treat all four rows of artificial vines on the test bench.

Both sprayers with both spray technologies modalities were tested with the standard path procedure described in Fig. 14: When passing through the middle of the rows, the spraying was opened on both sides, whereas when passing along the edge of the plot, only the side facing the vegetation was opened.

Only the “Hardi vôite Optimus” sprayer for both spraying technologies modalities has been also tested with the “towards the interior” path procedure described in Fig. 15. For both passages in the artificial vine-plot, only the outputs of the sprayer directed towards the interior of the plot were opened. Each passage was doubled to maintain the same volume rate as in the standard path situation.

4.4.2. *Multirow side by side sprayer “Calvet face par face Eco+”*

4.4.2.1. *Spraying technology.* The only spraying technology associated with this sprayer is “air assisted with nozzles”. For the tests carried out with this sprayer, it was associated with air induction nozzles.

4.4.2.2. *Number and position of opened spray outputs.* The multirow side by side “Calvet face par face Eco+” sprayer was only tested at early growth stage of vegetation. Only two heights of nozzles were opened as shown in Fig. 16.

4.4.2.3. *Path procedure through the artificial vine-plot.* The treatment of the four rows of the artificial vine-plot of the test bed was ensured by following two different path procedures: the standard path procedure described on Fig. 17. and the “towards interior” procedure described on Fig. 18.

4.4.3. *Tunnel sprayer “Dhugues Koleos”*

4.4.3.1. *Spraying technology.* The only spraying technology associated with this sprayer type in the study is “air assisted with nozzles”. For the tests carried out with this sprayer, it was associated with air induction nozzles.

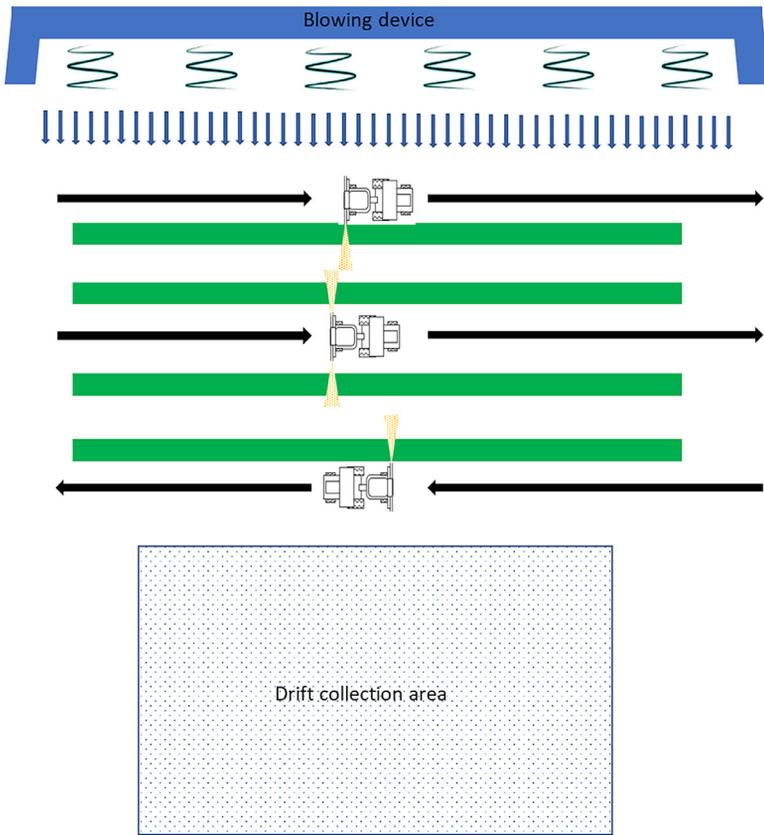


Fig. 14. Schematic representation of the standard path procedure through the artificial vine-plot of the test bed for arch sprayers.

4.4.3.2. *Number and position of opened spray outputs.* The tunnel “Dhugues Koleos” sprayer was only tested at early growth stage of vegetation. Only two heights of nozzles were opened as shown in Fig. 19 below.

4.4.3.3. *Path procedure through the artificial vine-plot.* The treatment of the four rows of the artificial vine-plot of the test bed was ensured by following the standard path procedure for this kind of sprayer including two passages. This standard path procedure is similar to the one followed for the “Calvet face par face Eco+” sprayer represented on Fig. 17.

4.5. Procedure for carrying out test sprays

The spray mixture was a water solution of BSF at a concentration of about 1 g.l⁻¹ or of SRB at a concentration of about 0.5 g.l⁻¹.

Before and after each spraying (replicate), the flow rate of the sprayer was measured manually and a sample of the spray mixture was taken.

For each replicate, the forward speed of the sprayer was measured by measuring the time to cross a 15m section on the platform of the test.

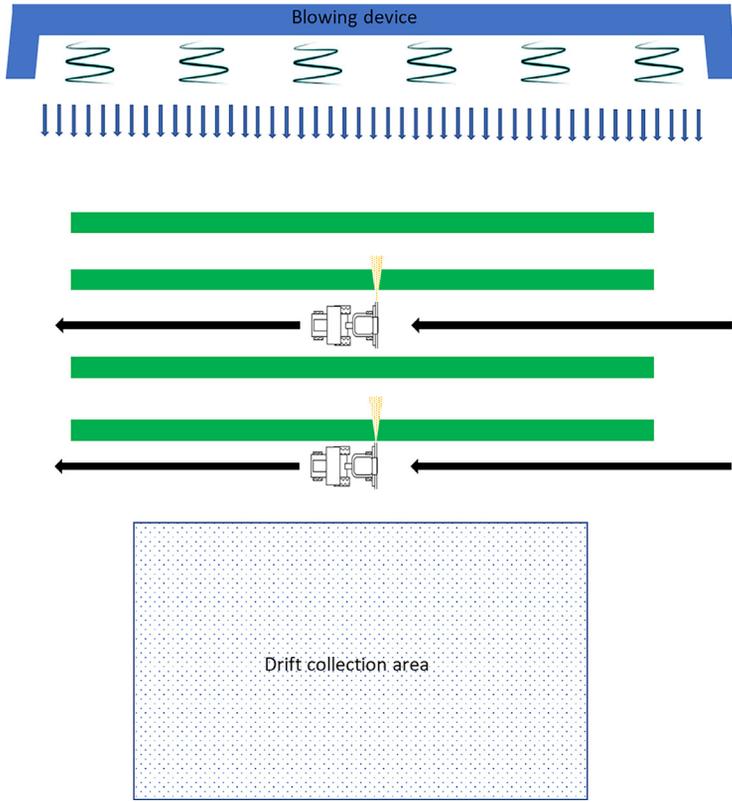


Fig. 15. Schematic representation of the “towards the interior” path procedure through the artificial vine-plot of the test bed for arch sprayers.

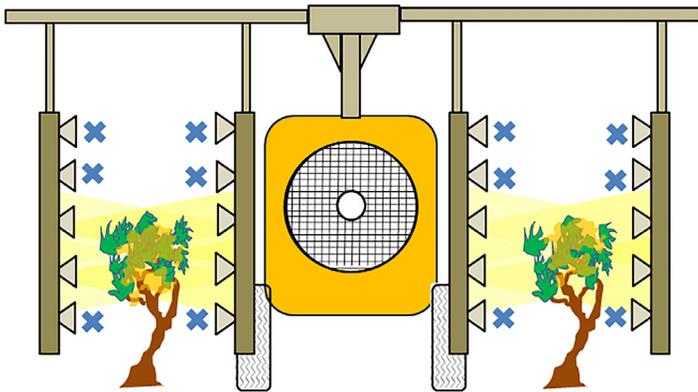


Fig. 16. Schematic representation of the position of opened diffusers during tests carried out with the multirow side by side “Calvet face par face Eco+” sprayer at early growth stage.

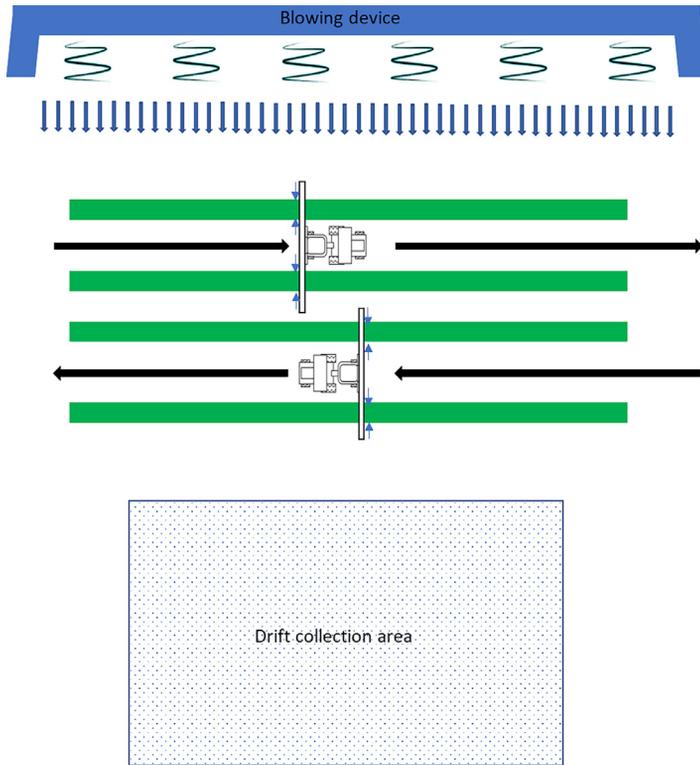


Fig. 17. Schematic representation of the standard path procedure through the artificial vine-plot of the test bed for the multirow side by side “Calvet face par face Eco+” sprayer. Spraying both side of each vine-row.

The normalization of drift deposition measured in these experiments was done according to the measured forward speed and flow rate and the measured concentration of the sample of spray mixture.

4.6. Laboratory analysis

The amount of fluorescent tracer deposited on the different collectors was analysed in the same way for all experiments carried out in the framework of the CAPRIV project. The analysis methods used for each type of collector are detailed in the article dedicated to field crops measurements [2]. The method to construct the calibration curves used as well as the assessment of the extraction rate of the tracer deposited on the cotton t-shirts used as collectors on manikins are also described in [2].

4.7. Expression of the results

The results were expressed as explained in [2]. For quick reference, considering the field names provided in Table 2, the normalized drift index (d_i), was calculated according to the

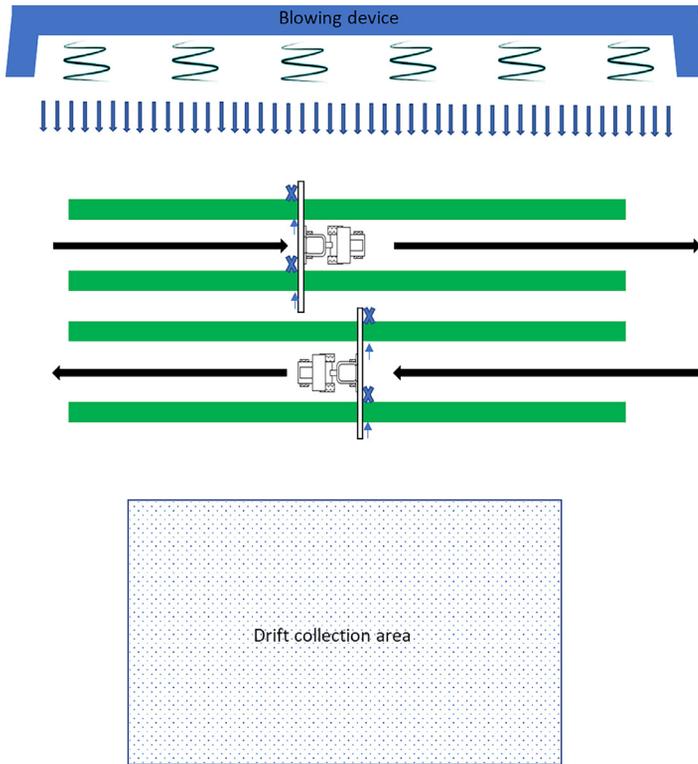


Fig. 18. Schematic representation of the “towards interior” path procedure through the artificial vine-plot of the test bed for the multirow side by side “Calvet face par face Eco+” sprayer. The sprayer outputs directed towards the outside of the artificial vine-plot were closed. As a result, vine rows were sprayed only from one side. Passages were doubled to ensure the same volume rate as standard procedure.

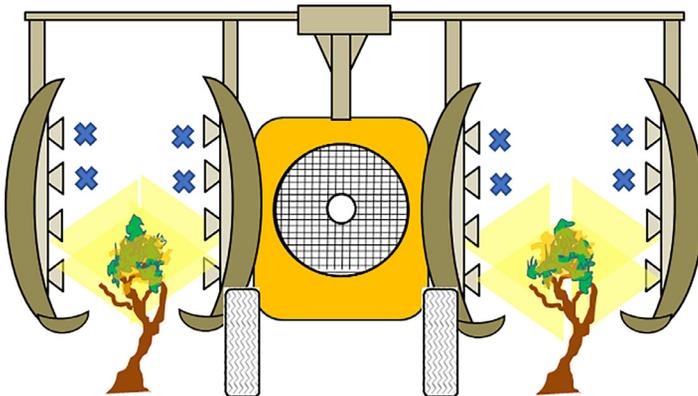


Fig. 19. Schematic representation of the position of opened diffusers during tests carried out with the tunnel “Dhugues Koleos” sprayer at early growth stage.

following equation:

$$di = \frac{(rfu - blank) \times V_{dil}}{b \times s \times V \times N} \times 10^3$$

with: 'di', 'rfu' and 'blank' as from [Table 2](#), V_{dil} is 'dilution_vol', b is 'reg_coeff', s is 'collector_area', V is 'vol_ha_applied' and N is 'nb_pass'.

5. Limitations

Lines with Nan values for RFU (rfu) can be found in the main table, when an incident on a given sample was encountered, (e.g overturned Petri dish). These lines were kept for traceability reasons. There are 94 data lines (1 line is 1 value for a collector) per trial in the main table for viticulture.

Some issues were encountered during the extraction of the BSF tracer from the cotton (see section Laboratory analysis). In 2021 Brilliant Sulfaflavine (BSF) extraction rates from cotton were <75 % and variable. The results obtained in terms of exposure of bystanders when this tracer was used should be considered with caution. Concerning the Sulforhodamine B (SRB) extraction rates were >90 % and very stable from one cotton cloth to another. The exposure results for bystanders should be considered with more confidence than the results obtained with BSF as tracer. More detailed information on this subject can be found in [2].

Ethics Statement

The authors have read and follow the ethical requirements for publication in Data in Brief. The current dataset does not involve human subjects, animal experiments, or data collected from social media platforms.

CRedit Author Statement

Adrien Vergès: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Data Curation, Writing – Original Draft. **Sébastien Codis:** Conceptualization, Methodology, Writing – Original draft. **Elodie Trinquier:** Investigation, Data Curation. **Benjamin Perriot:** Conceptualization, Methodology. **David Pasquier:** Conceptualization, Methodology. **Yoan Hudebine:** Conceptualization, Methodology. **Florence Verpont:** Conceptualization, Methodology. **Jean-Paul Douzals:** Conceptualization, Methodology, Validation, Writing – Review & Editing, Supervision. **Carole Bedos:** Conceptualization, Methodology, Validation, Writing – Review & Editing, Supervision. **Sonia Grimbuhler:** Conceptualization, Methodology, Validation. **Marianne Sellam:** Project administration, Funding acquisition. **Olivier Naud:** Conceptualization, Methodology, Software, Validation, Formal analysis, Data Curation, Writing – Original Draft, Supervision.

Data Availability

[Drift data from French CAPRIV project \(Original data\)](#) (Recherche Data Gov).

Acknowledgments

This research was partially funded by OFB (Office Française pour la biodiversité) with the credits attributed to funding CASDAR. The authors would like to thank the French Ministry of

Agriculture and Food Sovereignty. The authors would also like to thank all the people who participated directly or indirectly in obtaining these data and especially: Guilhem Pouxviel, Kelvin Sage, Xavier Ribeyrolles, Victoria Ruiz, Eric Cotteux, David Bastidon.

Declaration of Competing 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.

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