

### LiDAR, a tool to inform sites-specific spraying: Application in a New York Concord grape production area

Anice Cheraïet, James Taylor, Terry Bates

#### ▶ To cite this version:

Anice Cheraïet, James Taylor, Terry Bates. LiDAR, a tool to inform sites-specific spraying: Application in a New York Concord grape production area. Kimevine 2022, Apr 2022, Montpellier, France. hal-04405538

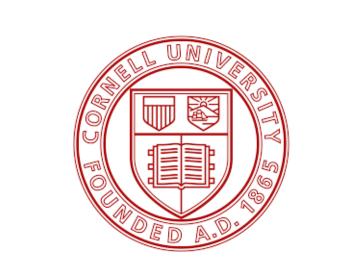
### HAL Id: hal-04405538 https://hal.science/hal-04405538

Submitted on 19 Jan2024

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers. L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.











# LiDAR, a tool to inform site-specific spraying: Application in a

Height (m)

New York Concord grape production area

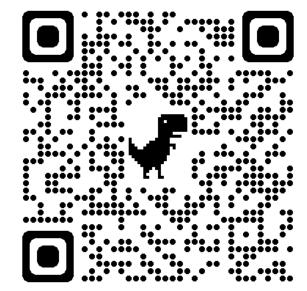
**Objective:** To propose and to test a framework and workflow to analyse LiDAR data to be able to evaluate (via simulation) the application of variable chemical sprays according to vine architecture and grower needs in Lake Erie Concord vineyards.

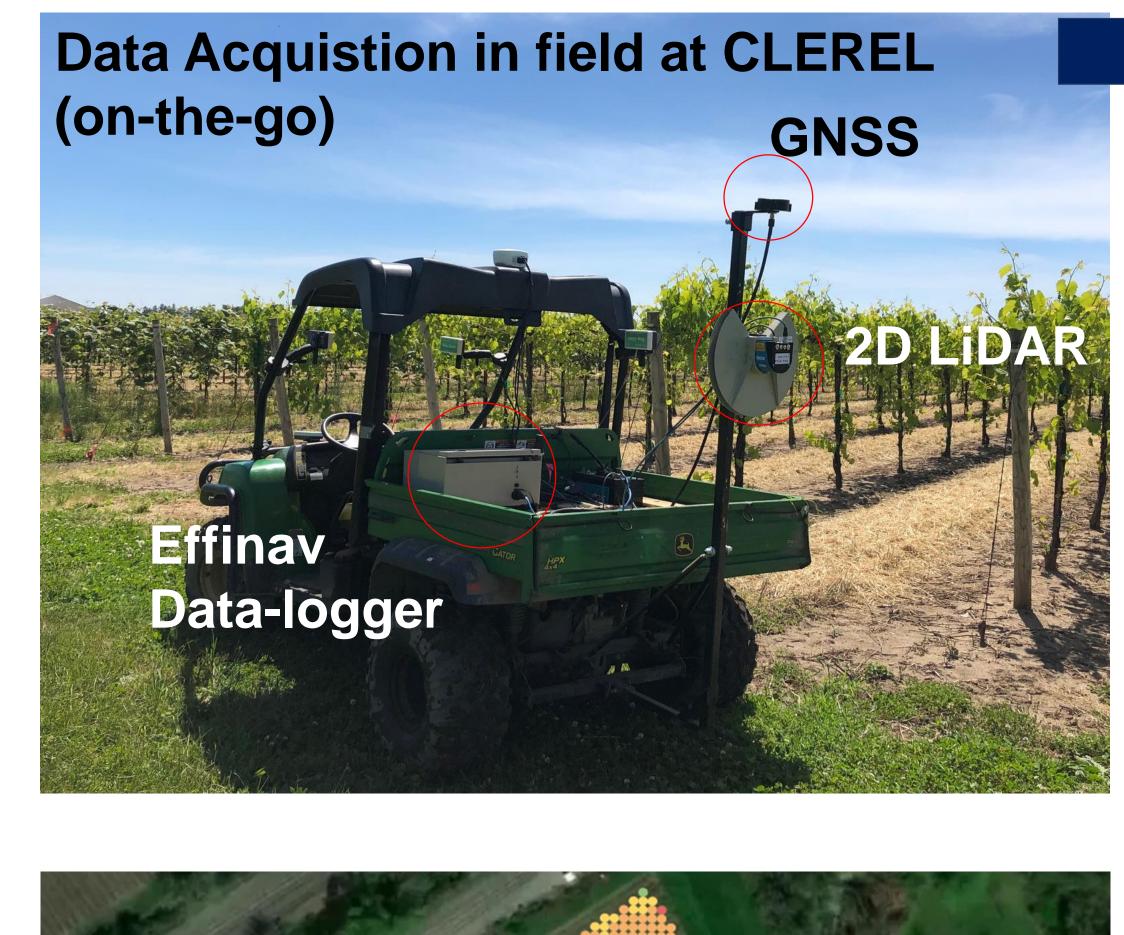
Anice Cheraiet<sup>1</sup>, James Taylor<sup>1</sup>, Terry Bates<sup>2</sup>

<sup>1</sup>ITAP, Univ Montpellier, INRAE, Institut Agro, Montpellier, France

<sup>2</sup>Cornell Lake Erie Research and Extension Laboratory, 6592 West Main St, Portland, NY, 14769, United States









Modelisation

Automated clean-up and canopy modelling using **INRAE algorithms** 

Advancement (m)

**Generates canopy features** (height, width, density) displayed in Cornell's MyEV

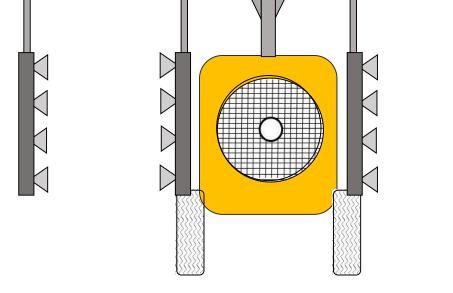
Width (m)



Canopy density map (shown in **MyEv** tools)

### Pretty map vs. Useful information

Percentage of registered rate to be applied (delivered to growers via **MyEv** tools)



**Canopy architecture** 

**Sprayer characteristics** 

**Deposition objectives (grower's intent)** are modelled to test site-specific predicted deposition vs desired deposition

deposition algorithms

Simulation From predictive modelling of spray deposit distribution to a dose recommendation map

	0	Perce	ntage of reg	gistered	rate 💙
		Zone	Min	Max	Area*
		1	39.92332	51.9345	6
		2	52.01479	65.7492	3
the second secon		3	65.83645	76.4975	8
		) 4	76.54571	98.5689	2

(that growers can assess and interact with)

## Site-specific adaptation of spraying:

Optimises local chemical use while ensuring satisfactory crop protection Has economical benefits for a winegrower

This work was undertaken by Dr. Anice Cheraiet during a 4-month stay at the Cornell Lake Erie Research and Extension Laboratory (CLEREL) that was funded under the USDA-NIFA Specialty Crop Research Initiative Award No. 2015-51181-24393. It linked LiDAR processing and spray deposition models developed in France with the Agri-tech and precision viticulture tools at CLEREL.