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Development of a training course on sprayer calibration and settings based on the sprayer inspection database in France.

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NéoPulvé



Overview:

Sprayer application in France



The mandatory sprayer inspection & Neopulvé project

Fields observation of existing training programs and limitations

Neopulvé actions

Data bases major identified defaults

Database extracts

Conclusion

➤ Sprayer application in France

Effective crop protection requires the choice of appropriate equipment, proper calibration, and maintenance to good condition.

Sprayer calibration



- help improve efficiency
- Reduce costs
- Protect the environment
- Yield improvement
- Legal compliance of farmers

Reducing the risks to human health and the environment

- 2009/127/EC
- 2009/128/EC

Guidelines for the impartiality, independence, and confidentiality of inspections, as well as the qualifications & training of inspectors

- EN ISO 16119
- ISO 16122
- (2006/42/EC)
- ISO 17020

Mandatory PAE inspection in France



OTC Pulve

Implemented on Jan 1st, 2009



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➤ The mandatory sprayer inspection & Neopulvé project:

A defaulted sprayer can be calibrated without inspection, and an inspected sprayer can be miss calibrated.

Authorized inspectors & workshops



Nov,2022


MINISTÈRE
DE L'AGRICULTURE
ET DE L'ALIMENTATION
*Liberté
Égalité
Fraternité*

boom sprayer

vine sprayer

orchard sprayer

fixed & semi-
mobile sprayers

Approx. 340,000 sprayers inspected since Jan 1st 2009

Meet the specifications of bio-products AE by providing valuable insights for equipment manufacturers to improve their products

NeoPulvé project aims at exploiting the inspection database



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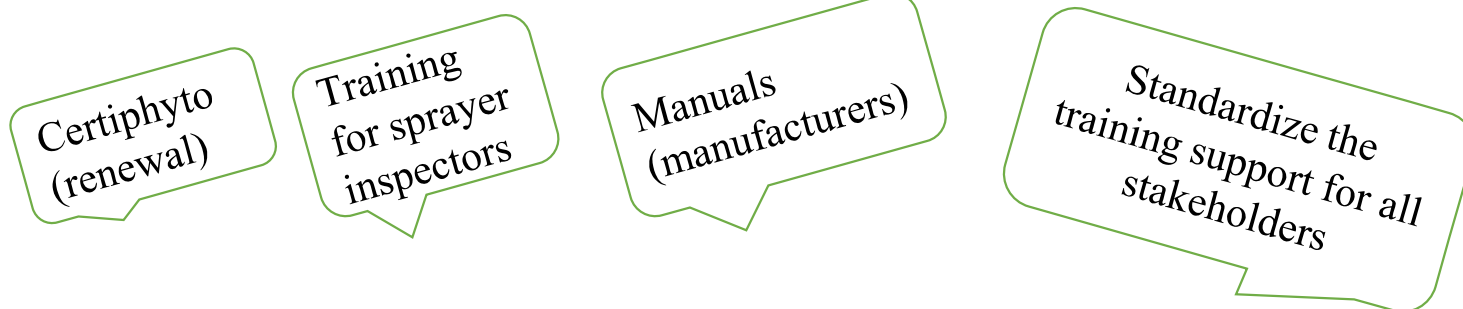
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Methodology :

1. Fields observation of existing training programs and limitations

- the limitations encountered during the sprayer calibration and maintenance
 - Expert advices and their perspectives on sprayer settings
 - Existing information on training programs offered to assist with calibration
- Expert wishes for the project.

Incorporate training :



➤ Methodology :
2. Neopulvé actions:



Data valorization



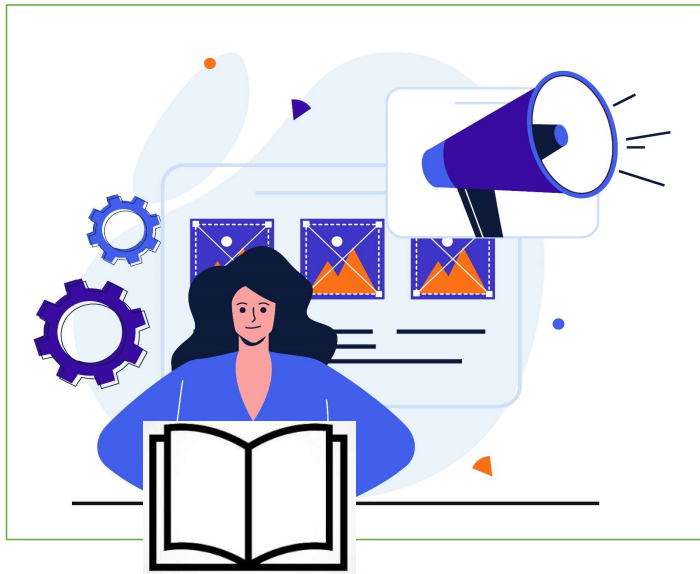
Identify defaults with experts



Run simulations to quantify the impacts

➤ Methodology :
2. Neopulvé actions:

Design & dissemination of training support to the different stakeholders

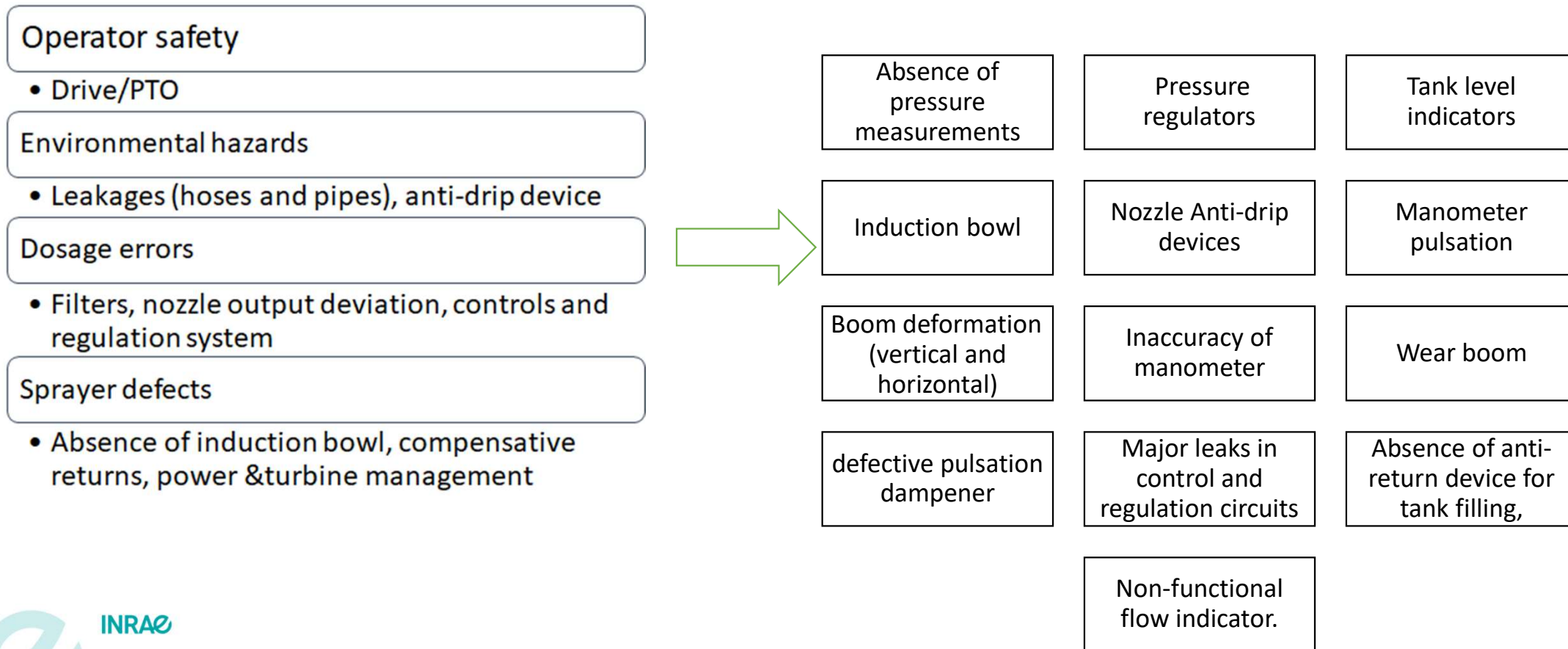


farmers, technicians, inspectors, advisors & students



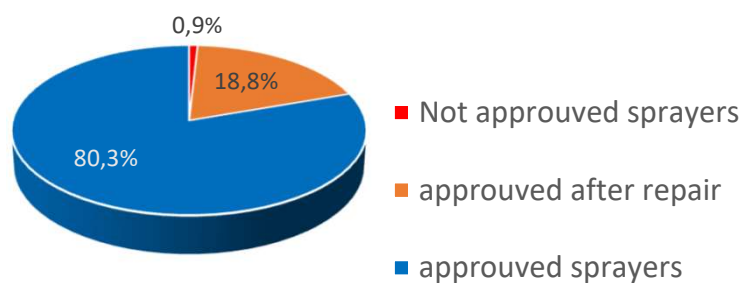
➤ Results :

1. Data bases major identified defaults:

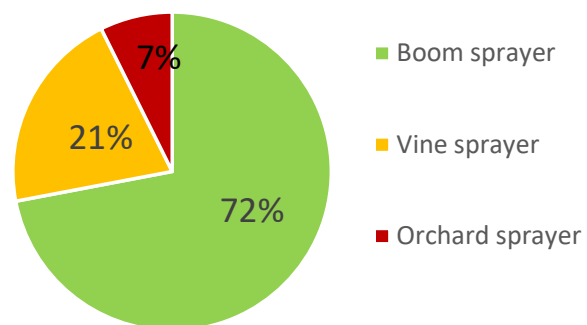


- Results :
- 2. Database extrats:

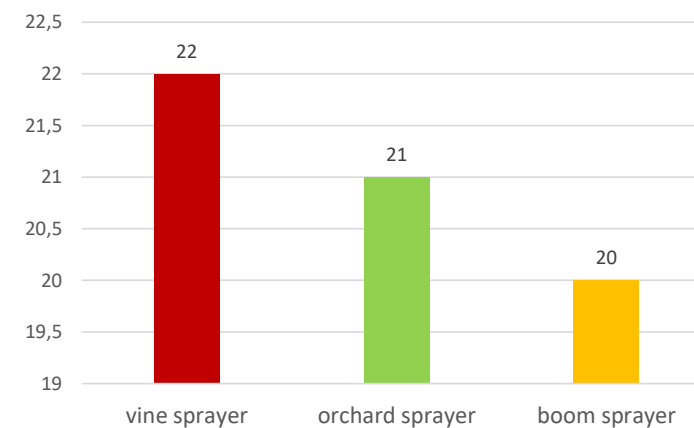
Compliance of sprayers after inspection



Non compliance of sprayers after inspection

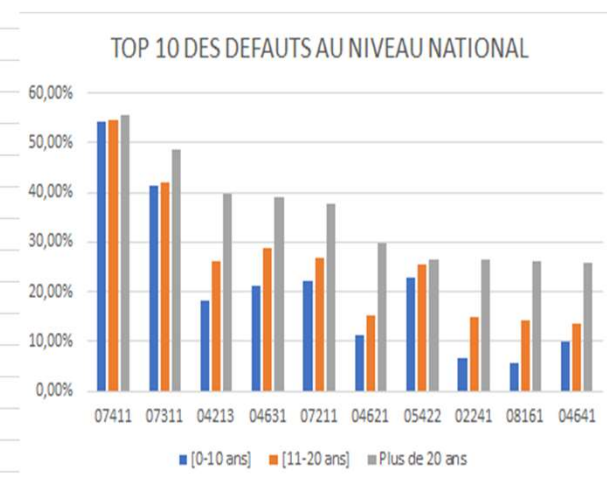


Median age of equipment



➤ Database extracts:

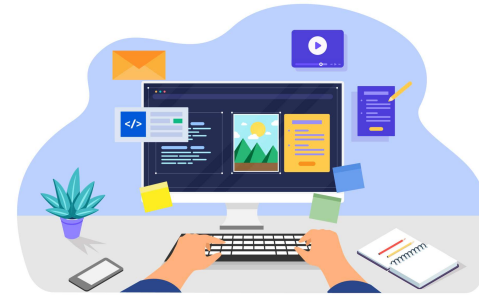
CCLS	defauts	Description	[0-10 ans]	[11-20 ans]	Plus de 20 ans
O	07411	Filtres aux buses absents	51,10%	52,29%	52,88%
O	07311	Filtres au niveau des sections de pulvérisation absents	39,19%	40,58%	45,44%
O	04631	Dispositif de nettoyage externe du pulvérisateur absent	13,30%	26,13%	36,71%
O	04213	Mauvaise lisibilité de l'indicateur de niveau	10,25%	18,92%	31,43%
O	08161	Lésion majeure aux soudures des rampes de pulvérisation ou équipements	5,51%	15,81%	30,53%
O	07211	Filtre central au refoulement absent	14,16%	18,46%	28,97%
O	05422	Imprécision faible de l'indicateur de pression	23,03%	26,62%	28,18%
O	08111	Courbure faible sur un plan vertical des rampes de pulvérisation ou équipements	14,23%	21,03%	27,16%
O	08121	Ecart de position faible des rampes de pulvérisation ou équipements de dis	15,04%	22,39%	27,14%
O	02241	Corrosion mineure du châssis et des pièces de structure	5,15%	13,25%	24,40%
O	04621	Dispositif de nettoyage interne de la cuve de bouillie absent	4,25%	9,93%	24,03%
O	04641	Dispositif de nettoyage des circuits absent	5,26%	10,48%	20,56%
O	08151	Déformation importante des rampes de pulvérisation ou équipements de c	6,89%	13,58%	18,20%
O	08331	Usure des porte-jets	8,45%	12,90%	16,07%
O	04611	Cuve de rinçage absente	1,25%	3,13%	14,44%
O	04321	Dispositif de nettoyage des emballages absent	2,80%	4,68%	13,96%
O	04313	Absence - facultatif	2,54%	4,07%	13,10%
O	06112	Usure mineure des flexibles de distribution	4,61%	9,84%	12,83%
O	03211	Pulsations mineures au niveau de la pompe	5,26%	8,02%	12,38%
O	08211	Lésion majeure sur pièces métalliques des rampes de pulvérisation ou équi	3,25%	7,52%	12,17%
O	08132	Tronçon(s) escamotable(s) défectueux	8,39%	9,94%	11,51%
O	11111	Sorties d'air mal fixées	1,80%	3,84%	11,14%
O	02314	Fuite(s) mineure(s) de bouillie de pulvérisation au niveau des conduites végét	6,20%	9,18%	10,94%



➤ Conclusion

Next step for the NéoPulvé.....

- Identifying defaults with experts.
- Design experiments to quantify the impact.
- Standardize the training support to all stakeholders
- Gathering attention to the final deliverable course.



<https://neopulve.hub.inrae.fr/>



Self training and evaluation app

Approximately 20% of the inspected sprayers are approved only after repair
 $68000 \times 4 \times 5 = 1,36$ million sprayer operation in 5 years



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➤ Thank you for your attention

Any questions?