

## **BACKPACK SPRAYERS FOR SMALL-SCALE FARMERS – ADDRESSING THE DISCONNECT**

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Small-scale farmers utilize backpack sprayers in many parts of the world. Backpack sprayers are inexpensive and simple in design making them a cost-effective device for small-scale farmers. Unfortunately, there is a disconnect that exists in the utilization of these sprayers. This disconnect refers to the issue that farmers need to acquire information from multiple sources to effectively use backpack sprayers in many instances. The company's manufacturing backpack sprayers generally produce a very limited array of sprayer accessories. There are, however, companies producing a multitude of sprayer accessories allowing farmers to more effectively apply spray materials. Adapting these accessories to the many different styles of sprayers manufactured in various parts of the world is problematic for the farmer. In addition, many crop spray products for farmers have limited directions for use. These products can vary substantially in viscosity and consistency making applications problematic.

- Farmers would benefit from a more turnkey approach to the application of liquid spray products through backpack sprayers. This information is not generally available from agricultural educators. This project was conceived and intended to address this disconnect.
- Many advances in backpack sprayers have been realized over the last 15 years. As noted above, accessories are difficult to obtain and evaluate in a systems approach due to the fragmented nature of the business.
- Our project provides deployable technical resources providing farmers with information regarding types of backpack sprayers and simple modifications to allow accurate, cost-effective application of spray products to small-scale horticultural crops.
- 19 models of backpack sprayers were evaluated objectively [such as pump performance] and subjectively utilizing farmers to evaluate sprayers under field conditions for efficiency and ease-of-use.
- In summary large discrepancies were noted among sprayers evaluated under field conditions regarding parameters such as pumping fatigue, spray efficiency

and overall comfort. The cost of the sprayer did not relate to the overall performance.

- All sprayers were retrofitted with an identical spray handle. This provided a readily available array of spray application accessories such as nozzles, pressure regulators, and strainers to accomplish a multitude of crop application tasks including banding herbicides, foliar application of fungicides and insecticides requiring various spray parameters.
- In summary the best performing sprayers evaluated both objectively and subjectively were neither the highest priced nor the most readily available. The use of the Internet to find and purchase backpack sprayers simplified this task.

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