

果树农药精确喷雾技术

Review of the pesticide precision orchard spraying technologies

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中文摘要:

精确喷雾是以最低农药喷施成本和对环境的最小影响实现田间生态平衡。该文从基于地图和传感器以及机器视觉和图像处理三个方面综述了这一技术的研究进展。由传感器构成的喷雾控制器和果园喷雾机组成果园果树精确喷雾系统, 在果园喷雾中调整喷雾参数, 根据特定果树树冠的位置、形状针对性喷雾, 实现对农药喷雾量的控制。近些年来, 果树农药精确喷雾技术有较大的发展和各种不同形式应用。文章介绍了各项技术发展和实际应用效果。

英文摘要:

Pesticide precision spraying embraces the concept of creating a balanced ecosystem in the orchard with lowest cost and minimum environmental impact. From three aspects this article reviews the technical development on orchard pesticide precision spraying. And the development results and their great efficiency were presented. The pesticide precision spraying in orchard includes two technologies. One is based on map, the other is based on the real time sensor. Various techniques such as ultrasound and infrared sensor, machine vision, global positioning system, geography information system and so on were applied. Sensor-controlled spray systems were composed of sensors, onboard computers and orchard sprayer. With this system the amount of pesticide delivery to individual tree canopies can be tailored. So the quantity of spray materials used without compromising effectiveness and the potential pollution arising from off-target deposition can be greatly decreased. This technology has a lot of recent development and good applications. Some problems and the further study of the orchard pesticide precision spraying in China were briefly recommended.

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