


A Boom Sprayer Test Bench



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Pesticides have been used for successful and effective plant protection and yield increase in different parts of the world since 1867. It has now become essential to spray the growing crops economically and profitably. Recent advances in plant breeding and genetic engineering for improving resistance of crop plants to insect pests and disease will undoubtedly reduce the need to rely on conventional pesticides. Nevertheless, there will still be the need of applying pesticides as a relatively easy and quick method of regulation and checking the pest population. The performance of locally produced tractor mounted boom sprayers is very poor, as these cannot ensure uniform pesticide application both over and under the crop leaves, in the absence of essentially required components and features.

Machine development

A Boom Sprayer Test Bench has been designed, developed, and fabricated for evaluating the performance of different types of sprayer nozzles used for insect/pest control on crops. The test bench has been developed in the Department of Farm Machinery & Power, University of Agriculture, Faisalabad. Boom sprayer test bench consists of two main parts viz; conventional and vertically moving platform. Conventional part is used to analyze nozzle discharge, cone angle, swath width, spray pattern and spray overlap. Whereas, moving platform is used to evaluate the uniformity of coverage of spray on the lower sides of the water sensitive papers installed at different heights of moving platform at different moving platform linear velocities, spraying pressures, and nozzle angles. Spray images developed on the lower surface of Water Sensitive Papers are scanned on a scanner attached with computer

and analyzed by software developed in Java language for the determination of mean spray droplet size and number of droplets per square cm area. Moreover, horizontal adjustments are also provided to increase or decrease the horizontal distance from the moving vertical platform frame. The spray nozzles are mounted on an adjustable height horizontal frame above the corrugated sheet. The reaching fluid to the channels of the corrugated sheet flows down the slope to graduated cylinders for spray pattern measurement. This spray test bench has been successfully used for standardizing the crop and machine spray parameters. This test bench is very important for university students/sprayer manufacturers/insecticide dealers. Moreover, this machine is really a great invention of national importance. Five nozzles can be tested in one hour.



Nozzle discharge measurement on boom sprayer test bench



For under spraying, inserting water sensitive papers in WSP holders on Vertically moving platform of Boom Sprayer Test Bench

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Website: www.ipo.gov.pk/patent/gazette/11-8-2007.pdf