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Evaluating plant propagule spread by vehicles, and the effectiveness of vehicle wash units used to contain them.

Few data exist concerning the potential spread of plant propagules by vehicles, particularly differences between vehicle types and the surfaces on which they were driven. Logically, more propagules are likely to be collected by vehicles driven off-road than on gravel or paved roads, and by tracked or all-terrain vehicles than wheeled vehicles, but there are no quantitative data to support this hypothesis. In addition, there are numerous commercially available relocatable vehicle washing units which are contracted to wash vehicles but the relative efficacy of these systems is not known. We are evaluating both these issues in a number of controlled and field studies. To compare the effectiveness and efficiency of relocatable vehicle washing units controlled experiments have taken place this summer. Three different types of vehicle were assessed: light 4-wheel drive vehicles; heavier all-wheel-drive trucks; and, tracked vehicles which all drove a set manipulated control course before being washed and the soil waste weighed. In a separate post-wash study to quantify how much seed could have been lost in the wash and filtering system process, a known amount of soil and seed were placed in a containment tank and processed by the wash unit's filtering system. Waste samples (greater than 75 μm) were saved, placed in a greenhouse and germination is being recorded. Data from these controlled studies can be used to provide baseline information for field studies. With the information from these controlled studies an additional study was performed to evaluate field conditions. Light 4-wheel drive and heavier all wheel drive military vehicles were driven along gravel roads for known distances and the waste contained. These samples are in the greenhouse and germination of all species is being recorded. Twenty-three different species have germinated in the first 4 months and comparisons between results for different vehicles types will be made. This latter study will be repeated in future years with different road and vehicle types to provide an improved understanding of the potential of plant propagules to be spread by vehicles.