

Innovative Plant Protection Systems

Key Subject Area

Vine Protection by Means of Stem Application

Plant protective agents are an indispensable part of viticulture. In some cases, however, the use of these agrichemicals is problematic. Emissions of plant protective agents into surface waters can pollute the environment. The application of these substances in locations that are steep or extremely steep is very time-consuming and labour-intensive. The use of many agents has already been banned, due to the undesirable effects they have on the environment. A stem application system that can be used for many years could be a solution to these problems.

The prototype

Water flows from a stainless steel tank via an ultraviolet lamp to the feed pump, which transports the dosage medium to the individual inlet pipes on the grapevines (Fig. 1). Plant protective agents enter the inlet pipes via a dosage system. Specially developed needles provide access to the transport tracts in the xylem of the plants.



Fig. 1: Stem application prototype

The effect

Already in the second experimental year, the prototype yielded a sufficient protective effect against downy mildew for both the leaves and the grapes (Fig. 2). This corresponded to the effect of a solo product that was applied by means of spraying for comparative purposes.

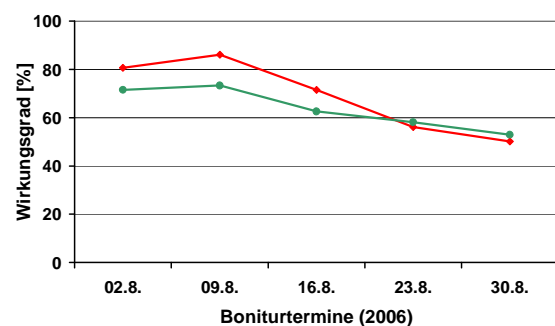


Fig. 2: Comparison of the protective effect of stem application (red) and leaf application (green) with regard to grapes

The potential uses

This method of stem application prevents all kinds of emissions into the environment. For this reason, its use would be primarily suitable for areas in the vicinity of bodies of water and in areas on the outskirts of towns. Thanks to the central application of the plant protective agents and the long-range transport of the agent dosages, such a system could also make work easier in steep areas. Moreover, one could also contemplate the use of substances that have been banned because of the undesirable effects they have on the environment. In this context, for example, it would be interesting to combat vine pest in parent gardens.



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