

NEU 1143F, a possible new agent to reduce the use of copper in organic pome fruit growing, results from a joint research project

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Abstract

*In a collaborative research project to reduce the use of copper in organic plant protection, the product Neu 1143F is being tested for three years in different strategies against apple scab (*Venturia inaequalis*) so far. The trial took place in the four major fruit growing regions in Germany, Neu 1143F is tested protectively (before germination), in moment of germination and curatively. In a trial which took place in 2019 on three of the four involved trial stations, the agent was tested and compared to lime sulphur either in moment of germination or 6, 12 or 24 hrs. later. Using Neu 1143F it was able to control scab infections at all times in the course of the infection. Both, Neu 1143F and lime sulphur showed adequate degrees of efficiency. Even 24 hrs. after the time of infection no loss of efficiency could be found. This project is funded by "Bundesprogramm Ökologischer Landbau und andere Formen nachhaltiger Landwirtschaft".*

Keywords: Apple scab, *Venturia inaequalis*, limitation of copper use, organic fruit growing

Introduction

Only a few products to replace the use of copper controlling apple scab are available in organic apple growing. One of the few available test agents is *Neu 1143F*, a product by Neudorff. It's a fatty acid fungicide with a broad-spectrum efficacy against a variety of fungal diseases (apple scab, rust, powdery mildew, leaf spot diseases, peach leaf curl). Due to its unspecific mode of action, the risk of resistance development is low. The agent has no fungicide authorisation so far, but basically would be suitable for organic production and could contribute to reduce the amount of copper used in organic fruit growing.

Material and Methods

Between 2017 and 2019 *Neu 1143F* was tested in multiple field experiments at DLR Rheinpfalz (Rhine valley), KOB Bavendorf (Lake Constance area), LfULG Dresden-Pillnitz (Saxony) and ÖON (area Altes Land). Among further trials, *Neu 1143F* was being tested and compared with other products at different times during the course of scab infections.

Table 1: Tested versions, always compared to an untreated control

Version 1	Version 2	Version 3	Version 4
Neu 1143F in moment of germination	Neu 1143F 6 hrs. after germination	Neu 1143F 12 hrs. after germination	Neu 1143F 24 hrs. after germination
Lime sulphur in moment of germ.	Lime sulphur 6 hrs. after germination	Lime sulphur 12 hrs. after germination	Lime sulphur 24 hrs. after germination

One of the trials, which took place simultaneously in 2019 at three of the four involved trial stations aimed on finding the best application moment for *Neu 1143F* in the course of the

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infection. Neu 1143F was used in four versions: In moment of germination, 6,12 and 24 hours later. Parallel, Lime Sulphur was used in the same versions as comparison. The application rates were 8l lime sulphur and 10l Neu 1143F, each per ha and meter crown height. These treatments were performed three to four times during primary scab season and therefore only in case of heavy infections. Apart from these trial intern treatments, the Orchards were being treated according to usual organic plant protection strategy. This also includes the Version "Untreated Control", what means, "untreated" only relates to the experimental treatments.

Results and Discussion

Both, Neu 1143F and lime sulphur each were able to reduce the scab infections on the leaves of the long shoots. Among the involved trial stations, some differences became obvious (see figure 1). At DLR Rheinpfalz, the efficiency reached was relatively highest, for both agents. In moment of germination and 12 hrs. later Neu 1143F showed slightly higher efficacy. Especially at ÖON the application of lime sulphur at all times led to better results, from moment of germination up to 24 hrs. later. At none of the trial stations no loss of efficacy 24 hrs. after the moment of germination occurred. In all, the results of 2019 show, that Neu 1143F has a capability to reduce scab from moment of germination up to 24 hrs. after the infection took place.

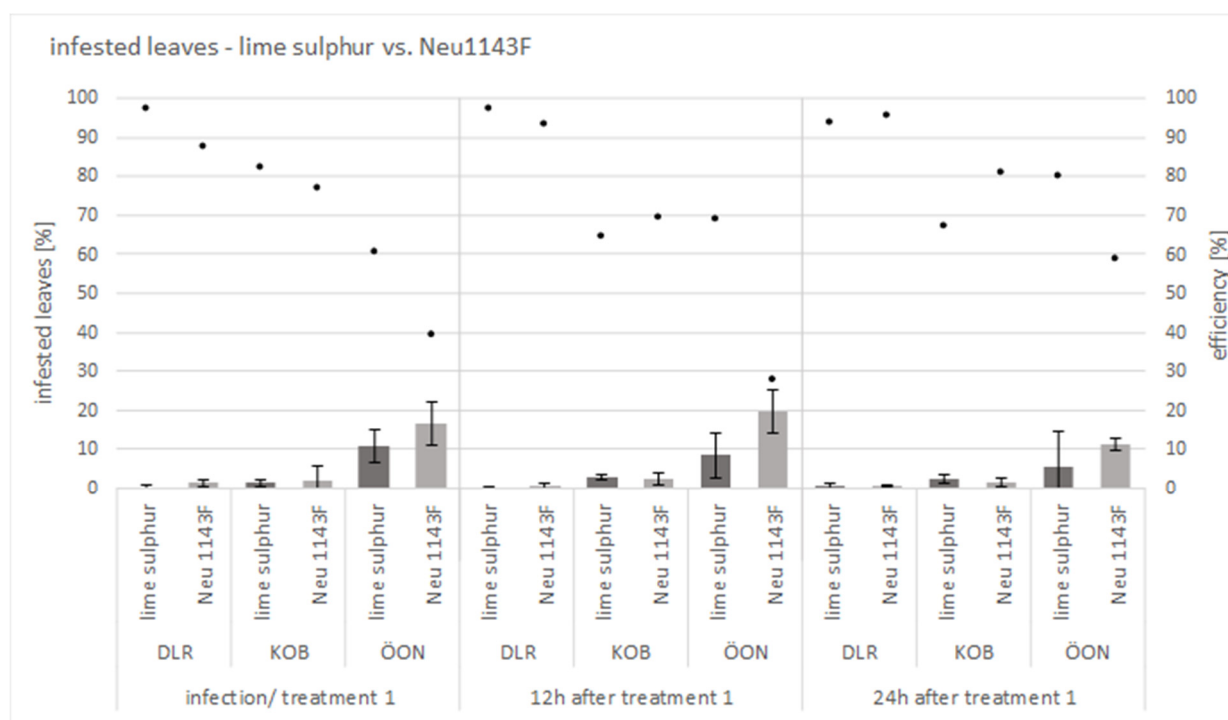


Figure 1: Fruit scab infestations, lime sulphur and Neu 1143F were used in different points of time. The shown degrees of efficiency are related to the untreated controls at the respective trial locations

Conclusion

In three different German fruit growing areas, the product Neu 1143F showed promising results in scab control. Even if the efficiency could not always reach the level of lime sulphur, the research work should be continued.

Citation of the full publication

The citation of the full publication will be found on Ecofruit website as soon as available.