

Neu 1143F – Results of a joint venture project

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Abstract

*In a collaborative research project to reduce the use of copper in organic fruit growing, the product Neu 1143F was tested for five years in different strategies against apple scab (*Venturia inaequalis*). The trials took place in the four major fruit growing regions in Germany. Over the years Neu 1143F was tested protectively, in moment of germination and curatively. The trial presented in the following report only refers to the protective effect and is given as an example. Used protectively in a copper free whole season version, Neu 1143F reached remarkable degrees of efficiency even in the course of the challenging scab season of the year 2021 in Northern Germany.*

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 pathogens (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, on principle it would be suitable for organic production and could contribute to reduce the use of copper in organic fruit growing.

Material and Methods

Between 2017 and 2021, Neu 1143F was tested by multiple field experiments at different trial stations located in the German main fruit growing areas (Rhine valley, Saxony and Altes Land). First experimental results concerning the notable curative effect and the effect in moment of germination have been already published (Benduhn et al., 2020); therefore, this contribution only focusses on the preventative effect of Neu 1143F. The results of the trial presented are representative for the results of the other partners involved. The experiment was carried out in Northern Germany in 2021. Neu 1143F was applied preventatively in two cultivars, "Wellant" a. "Elstar", between 27 April and 14 July (trial period). The spraying was done by hand (spraying rod) in a randomized plot design with a water volume of 1,875 l/ha. Each version was repeated four times. Spraying was done before expected infections, in total 14 times, the application rate was 20l/ha. Neu 1143F was used solely and in combination with wettable sulphur and was compared to a version using copper and wettable sulphur and the untreated control (Table 1). The amount of wettable sulphur was reduced and the use of copper was suspended during the blossoming period. In addition to the preventative use of Neu 1143F lime sulphur was used four times during the trial period

Table 1: Tested versions (WS= wettable sulphur)

Version 1	Version 2	Version 3	Version 4
UC	Standard version (Co & WS)	Neu 1143F & WS	Neu 1143F (sole)

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in case of heavy infections to avoid too much scab in the trial orchards. The scab on long shoots was rated on 30 July in 2021. All leaves of 80 long shoots per version (20 shoots each repetition) were counted and estimated, the evaluation scheme was scab or no scab.

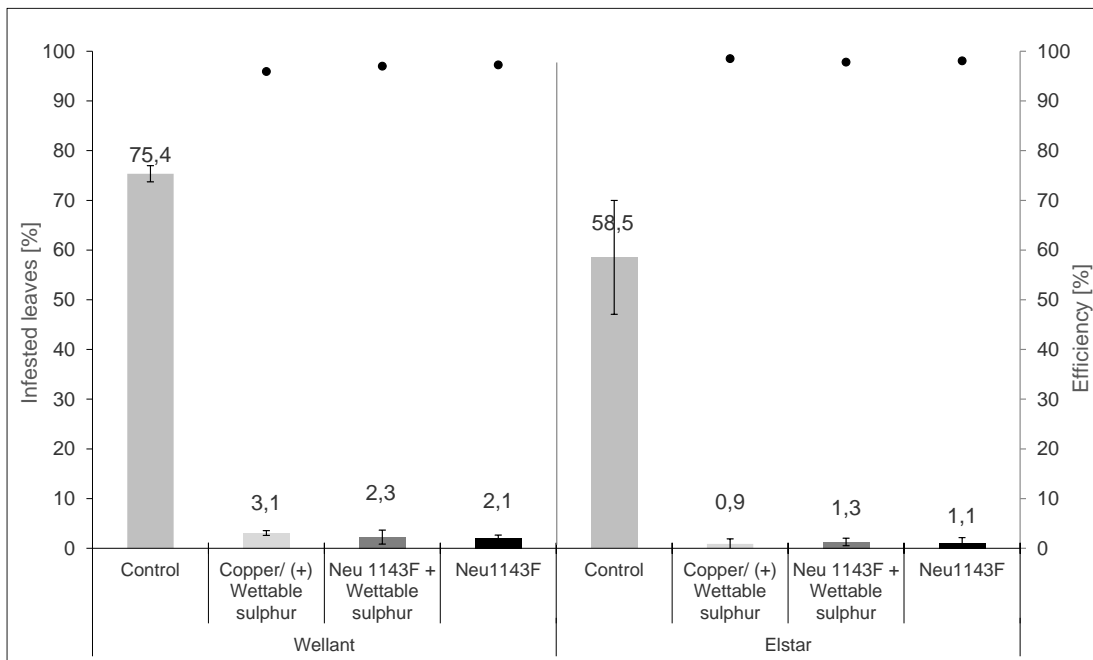


Figure 1: Percentage of scab infestations on long shoots

Results and Discussion

In general, the cultivar “Wellant” seemed to be more susceptible to scab on long shoots than the cultivar “Elstar”. The untreated control in Elstar showed a percentage of 58.5 of infected leaves, “Wellant” seemed to be more susceptible with a percentage of 75.4. All three tested versions produced degrees of efficiency compared to the untreated control between 95 and 99 %. No statistically relevant differences could be found between the treated versions. The combination of Neu 1143F with wettable sulphur could not increase the degrees of efficiency in this trial. In retrospect the application of lime sulphur during the heavy infection periods would not have been necessary, since the infestations in all treated versions were very low.

Conclusion

The constantly and frequently use of the test agent Neu 1143F of Neudorff can successfully prohibit the occurrence of scab infestations in an integrated, preventative plant protection strategy combined with the use of lime sulphur. When interpreting the results, it must be considered, that the spraying was carried out manually with a high amount of water per hectare. To what extent the dose rate of currently 20l/ ha could be reduced in practice, is still an open question. Apart from that the product could contribute to reduce the use of copper in organic fruit growing.

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References

Benduhn, B., Buchleither, S.; Kunz, S., Zimmer, J. & Rank. H. (2020): NEU 1143F, a possible new agent to reduce the use of copper in organicpome fruit growing, results from a joint research project. Ecofruit 2020: 217-218.