FiBL
Lucius Tamm, Thomas Amsler, Hansjakob Schaerer, Dominique Lévite and Andreas Häseli,
Research Institute of Organic Agriculture, CH-5070 Frick, Switzerland

Current downy mildew control strategies in Swiss organic vineyards

The currently used downy mildew control strategies in vitis vinifera in Switzerland are based on the use of acidified clay products combined with copper and sulphur. Data from 1997-2003 show that acidified clay products are a valuable alternative to control downy mildew of grapevine in conditions of medium rain fall, good spray timing and with a good application technique.

Introduction

Since the early nineties, alternatives to copper against *Plasmopara viticola* have been evaluated in Europe. Today, products based on acidified clay (e.g. Myco-San, Myco-Sin) are the most widely used alternatives in Swiss commercial vineyards. The aim of this study was to (i) evaluate the efficacy of acidified clay minerals under various climatic conditions and (ii) to integrate these products into a crop protection strategy which covers all important disease complexes.

					May			June			July		August
		01	07	03	15	53 -57	60	65	69	75	77	81 -83	85 -89
		bud swelling	bud burst	E	5-6 leaves	inflorescence development	begin of flowering	full flowering	late flowering	berries small	berry touch	véraison	berry ripening
		B	C	E	F	G	H	I	J	K	L	M	N
	Risk period												
Strategy combined Myco-San	Copper metal					0.4	0.5	0.6				0.8	0.8
	Myco-San				3-4				8.0	9.0	10.0		
	Thiovit				2-3	4.0	4.0	4.0	2.0	3.0	3.0		
	Fenicur											5.0	5.0
Strategy combined Myco-San	Copper metal					0.4	0.5	0.6				0.8	0.8
	Myco-San				2-3				6.0	7.0	8.0		
	Thiovit				2-3	4.0	4.0	4.0	4.0	5.0	6.0		
	Fenicur											5.0	5.0
Copper-free Myco-Sin	Copper metal												
	Myco-San				3-4	5.0	6.0	7.0	8.0	9.0	10.0	10.0	10.0
	Thiovit				2-3	2.0	2.0	2.0	2.0	2.0	3.0		
	Fenicur												
Copper-free Myco-Sin	Copper metal												
	Myco-San				3-4	4.0	5.0	6.0	6.0	7.0	8.0	8.0	8.0
	Thiovit				3.0	3.0	4.0	5.0	5.0	5.0	5.0	2.0	
	Fenicur												
Copper only	Copper metal				0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Myco-San												
	Thiovit				2-3	4.0	4.0	4.0	4.0	5.0	6.0		
	Fenicur											5.0	5.0

Table 1. Plant protection strategies against Plasmopara viticola and Uncinula necator in Frick, Switzerland. Numbers indicate kg/ha and application. Base=1000L/ha and application.

Materials and Methods

Field trials were conducted in the FiBL screening vineyard (cv Riesling x Sylvaner, 5BB) in Frick, Switzerland between 1997-2003. All trials were set up as complete randomized block design with 4-9 replicates. Fungicide applications were made with knap-sack sprayers (base volume 1000 L/ha) according to good farming practice, based on the disease warning system provided by the weather station Lufft HP-100.

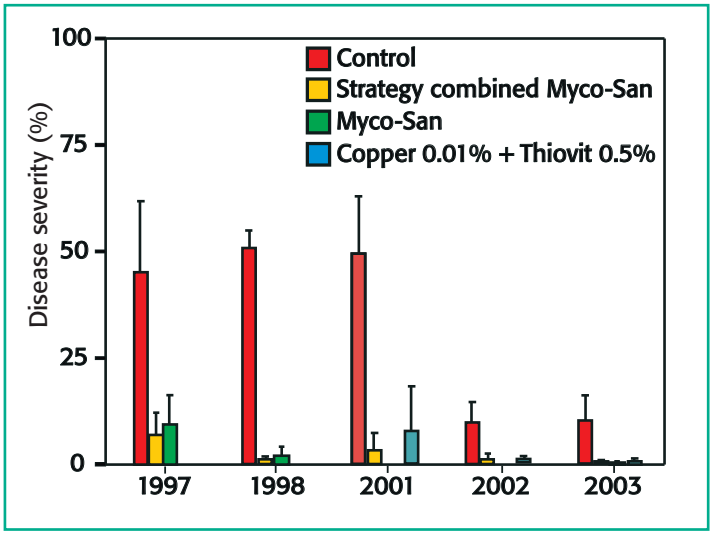

Figure 1. Comparison of plant protection strategies against Plasmopara viticola in Frick, Switzerland during several seasons.

Results and conclusions

We evaluated selected, commercially available products alone and in combined strategies during 5 years. All strategies provided good protection against downy mildew (Fig. 1).

The strategies included copper-intensive, intermediate and copper free treatments. All of the strategies are currently used in Switzerland. In combined strategies, the change between copper and acidified clays may lead to phytotoxicity. We therefore recommend to switch between products only after a minimum of 15 mm of rainfall (Tamm et al., 2004) Our results show that acidified clay products are a valuable alternative to control downy mildew of grapevine in conditions of medium rain fall, good spray timing and with a good application technique. The limits of these products show under heavy rain conditions and when there is high disease pressure.

This work was supported by the Ministry of Agriculture of Switzerland (BLW) and Gebrüder Schaette GmbH.

Tamm, L.; Fuchs, J.G.; Böger, N.; Mühletaler, L.; Amsler, A.; Levite, D. and Häseli, A. (2004) Properties of acidified clay preparations: the Swiss experience. Intervitis Stuttgart, Stuttgart, 12.-13. Mai 2004, page pp. 27-36.