

Protocol ID:	2021_Amanzi_SA_Glycine-max_1_Sciarids
Investigator:	Amanzi personnel –C. Lehenen-M. Edriss
Study Objective:	Assess differences in sciarid (Sciaridae) control and crop tolerance following applications Kanne Brottrunk

Product List

Treat ment	Product	Concentr ations	Application rate	Number of applications	Interval
1	Water				
2	Beauveria bass.	0.1 %	3 ml / pot	3 sprays	7 days
3	Kanne Brottrunk spray	5 %	3 ml / pot	3 sprays	3-4 days
4	Kanne Brottrunk spray	10 %	3 ml / pot	3 sprays	3-4 days
5	Kanne Brottrunk in water	5 %		2 / week	
6	Kanne Brottrunk in water	10 %		2 / week	

1. Materials and Methods

Soybean seeds (Glycine max variety Opaline) were sown on 11 March 2021 into Oekohum Tonsubstrat mit Kokos.

- 2 plants per pot, 12 pots per treatment.
- Plants were grown in the grow room with LED grow lights at 25±2 °C.

The grow room was managed to provide good conditions for enhancing the sciarid flies, which looked to be abundant on 19 April.

Spray suspensions were prepared in the lab just before the applications on 19 April and applied in a separate room. The treatments were watered and covered with nets to avoid sciarids moving between treatments.

Date	NOTES	temperature	RH %
11-03-21	The seeds were watered with 1.2L per tray (about 100 ml per pot), and the pots were sprayed to maintain the humidity high.	25±2 °C	24%
13-03-21	Pots were sprayed on to maintain the humidity high .	25±2 °C	45%
15-03-21	The seeds were watered with 1.2L per tray (about 100 ml per pot)	25±2 °C	41%
19-03-21	Most of seeds emerged .	25±2 °C	35%
26-03-21	Plants were watered with 1L per tray.	25±2 °C	42%
01-04-21	Plants were watered with 1L per tray.	25±2 °C	43%
06-04-21	Plants were watered with 600 ml per tray.	25±2 °C	43%
12-04-21	Plants were watered with 1L per tray.	25±2 °C	43%
19-04-21	The trial was conducted according to the protocol (first round). Mosquito nets were installed individually on all treatments to prevent flight of the sciarids between the treatments. Plants were watered with 1L per tray.	25±2 °C	43%
23-04-21	Plants were watered with 1L per tray.	25±2 °C	
26-04-21	Second round of treatment was conducted according to the protocol. Plants were watered with 1L per tray.	25±2 °C	45%
03-05-21	Third round of treatment was conducted according to the protocol. The plants were watered with 1L per tray. The nebulizer was installed to maintain the humidity 90% during 3 hours .	25±2 °C	
07-05-21	The pots were sprayed on to maintain the humidity high .	25±2 °C	47%

10-05-21	The nebulizer was installed to maintain the humidity 90% during 5 hours .	25±2 °C	
14-05-21	Plants were watered with 1L per tray.	25±2 °C	45%
20-05-21	Plants were watered with 1L per tray.	25±2 °C	50%
26-05-21	Plants were watered with 1L per tray.	25±2 °C	60%
31-05-21	The trial was assessed in number of adult sciarid flies (living and dead)		



Fig. 1 and 2: Trial arrangement with mosquito nets.

2. Results and Discussion

The evaluation of the trial was conducted on 31st May, 28 days after the 3rd application. The methodology consisted of removing the trays individually from the trial area into a separate room, which after assessment was washed down completely. The pots were assessed for the number of adult sciarid flies, starting with the living ones due to their mobility, then the dead ones. The results of the assessment are depicted below:

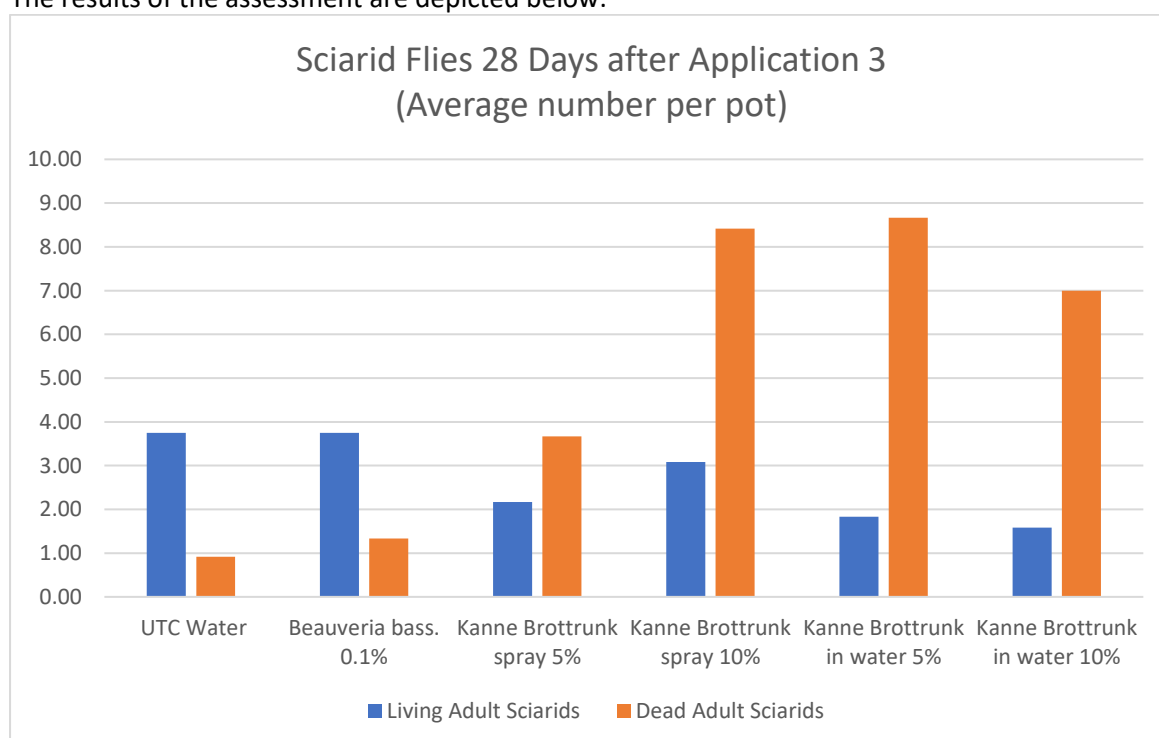


Fig. 3: Average Living and Dead Adult Sciarid Flies per pot on 31st May 28 days after the 3rd application

Treatments 3, 4, 5 and 6 are statistically different from the Untreated Control (Water) and *Beauveria bassiana* treatments. The best results in terms of killed sciarid flies deliver treatments 4 and 5, statistically different from all other treatments.

Kanne Brottrunk controls Sciarid flies successfully, from the results in this trial it appears that Kanne Brottrunk, if applied by spray, requires a higher dose rate (10%), while if mixed with the irrigation water lower dose rates (5%) are preferable.

In view of root development treatment 5 (Kanne at 5% mix with irrigation water) followed by treatment 4 (Kanne at 10% spray) delivered the best results, which is a confirmation of the results shown above. The roots of the treatments are shown below:



Fig. 4: UTC (Water) spray



Fig. 5: Beauv. Bass.



Fig. 6: Kanne Brottrunk 5%



Fig. 7: Kanne Brottrunk 10% spray



Fig. 8: Kanne Brottrunk 5% mix irrigation water



Fig. 9: Kanne Brottrunk 10% mix irrigation water

Treatments 1 and 2 showed important wilting symptoms, while treatment 6 showed the greenest soybean plants, which may be due to nutrition or biostimulant effects of Kanne Brottrunk at the high dose rate (10%) mixed with irrigation water.

3. Summary and Conclusions

Soybeans were sown on 11 March, 2 seeds per Güttinger pot, then treated 19 April after grooming for good sciarid infestation with *Beauveria bassiana* (0.1%) as standard, Kanne Brottrunk at 2 dose rates (5%, 10%) in spray applications and Kanne Brottrunk at 2 dose rates (5%, 10%) in mixing it with the irrigation water into the tray.

28 days after the 3rd application Kanne Brottrunk showed control of sciarid flies significantly different from UTC and *Beauveria bassiana* in all treatments, yet the best performance was seen in the spray application at 10% and the application by mixing it with the irrigation water at 5%.

This grow room trial indicates that Kanne Brottrunk could be recommended for control of sciarid flies with sprays as well as mixing it with irrigation water. We recommend to conduct larger scale trials to confirm these results and to develop a robust recommendation in terms of dose rates as well as application intervals.

07-Jun-21 M. Edriss / C. Lehen

Appendix

Data

	Living Adults														
Treatment	Product	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Rep11	Rep12		Total
1	UTC Water	4	5	3	3	4	4	3	4	3	5	3	4		45
2	Beauveria bass. 0.1%	3	4	5	3	4	4	4	3	4	4	3	4		45
3	Kanne Brottrunk spray 5%	1	2	2	1	2	3	3	3	2	3	3	1		26
4	Kanne Brottrunk spray 10%	2	3	4	3	4	3	4	3	4	2	3	2		37
5	Kanne Brottrunk in water 5%	1	2	2	2	2	2	1	2	2	2	2	2		22
6	Kanne Brottrunk in water 10%	1	2	2	1	1	2	2	2	2	1	2	1		19
	Dead Adults														
Treatment	Product	Rep1	Rep2	Rep3	Rep4	Rep5	Rep6	Rep7	Rep8	Rep9	Rep10	Rep11	Rep12		Total
1	UTC Water	1	1	1	0	1	1	1	1	1	1	1	1		11
2	Beauveria bass. 0.1%	1	2	1	2	1	1	2	1	1	2	1	1		16
3	Kanne Brottrunk spray 5%	3	4	4	3	4	3	4	4	3	4	4	4		44
4	Kanne Brottrunk spray 10%	7	8	9	10	8	8	9	9	8	9	7	9		101
5	Kanne Brottrunk in water 5%	7	9	10	8	9	11	9	10	7	9	8	7		104
6	Kanne Brottrunk in water 10%	6	5	8	7	8	7	6	9	7	7	6	8		84