

## Environmentally Friendly Fertilization Products as Pest Resistance Enhancers

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### Abstract

The aim of the experiment is to elaborate new, environmentally friendly fertilization products and methods for vegetables that are relevant to organic farming. A further aim is to investigate the possible effect as immunity increasing conditioners, which can enhance the resistance against fungal diseases.

Different combinations of fertilization products are used during organic field tomato growing. The combinations of the following products were used in the treatments: AVA (glass- structured non- crystal mineral fertilizer), AS-4/20 (bacterium fertilizer), AS-Melasz (sugar industry waste product), AS-BTF (certain metabolites of *Arthrobotrys oligospora*, *A. conoidus*, *Paecilomyces funosoreus*, *P. lilacinus*, *Verticillium chlamydosporium*, and *Mycothecium verrucaria*), AS-Arrest (*Talaromyces flavus*), NOVOSIL (natural plant extract, mixture of tri- terpenol acids), AS-Plex (*Azotobacter vinelandii*, *A. bejiernicki*, *A. croococcum*), AS-BAG (*Trichoderma harzianum*, *Trichoderma lignorum*, *Gliocladium virens*, *Bacillus subtilis*), AS-BR (*Beauveria bassiana*, *Metarhizium anisopliae*, *Verticillium lecanil* and *Bacillus polimyxa*), and AS-B.sub (*Bacillus subtilis*).

Treatments	Investigated products	Use
1. Untreated control	-	
2. Organic plant protection	Biomit, Bioplasma, Hungavit U, Dipel, Rézoxiklorid 50 WP	Plant treatment
3. Trifender WP	<i>Trichoderma asperellum</i> (technical agent)	Soil treatment
4. Trifender	<i>Trichoderma asperellum</i> (prepared product)	Soil treatment
5. Trifender WP + organic plant protection	<i>Trichoderma asperellum</i>	Soil treatment
6. Trifender + organic plant protection	<i>Trichoderma asperellum</i>	Soil treatment
7. AS I. combination	AS-4/20, AS-Melasz, AS-BTF, AS-Arrest	Soil treatment
	NOVOSIL, AS-Plex, AS-Melasz, AS-Arrest	Plant treatment
8. AS II. combination	AS-4/20, AS-Melasz, AS-BAG	Soil treatment

	AS-Plex, AS-Melasz, AS-BAG, AS-BR	Plant treatment
9. AS III. combination	AVA, AS-4/20, AS-Melasz, AS-BAG	Soil treatment
	AS-4/20, AS-Melasz, AS-BR	Plant treatment
10. AS IV. combination	AVA, AS-4/20, AS-Melasz, AS-B.sub	Soil treatment
	AS-4/20, AS-Melasz, AS-B.sub, AS-BR	Plant treatment

*Table 1: Applied combinations and treatments*

*The experiment is carried out on organic experimental field of the Department of Ecological and Sustainable Farming Systems, Corvinus University Budapest in Central Hungary, in Soroksár. Every treatment is carried out in four repetitions on 25 m<sup>2</sup> plots. The growth rate of plants, yield, state of health, pH, and inner quality of crop is measured. Measuring method is visual survey to assess the health condition of plant and fruit.*

*The products had different effects on the life cycle and the parameters of tomato, though these effects were not significant in 95% significance level, except that of treatments seven, eight, nine, and ten, where the number of fruits were proven to be lower than of other treatments.*

*The highest yield was given by the plot treated with Trifender WP and supported with organic plant protection.*

*The amount of diseased fruits was the highest in case of control plots without any treatment; the number of damaged fruits was the highest on the plots supported by treatment nine. However, no significant difference was found between treatment data.*

*The experiment will be continued in the next year for eliminating the influencing effect of weather and for concluding tendencies.*

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