

July 2022

## **Advantages of Fertilizing Avocado with Biostimulant Additives**

The “hot news” in plant nutrition is fertigation with biostimulants, as additives to traditional fertilizers.

### What are biostimulants?

Biostimulants are a large group of organic compounds such as amino acids, humic acids, fulvic acids, seaweed extract, etc. Also, infections done from a bacterial or fungicidal source (like mycorrhiza).

Imagine it were possible to “inoculate” the avocado tree against heat strokes or frost, or dehydration resulting from an irrigation malfunction! What an advantage.

The activation systems of biostimulants have not yet been fully researched. In some cases, they act like Phyto-hormones, but it’s already known that as biostimulants are applied, it’s possible to detect unusual RNA expression that “prepares” the plant for stressful situations, and in various ways influences growth success, such as early ripening, fruit size, and more.

### Avocado


Species: *Persea Americana* Mill. Varieties – Mexican, Guatemalan, West Indian.

Origin – Central America, from Southern Mexico to Southern North America.

This tree has spread (by humans) into sub-tropical niches: South Africa, Chile, Israel, Spain.

The primary growing regions in Israel are – Western Galilee, Ramot Menashe, Carmel Coast, Sharon Coast, Emek Hefer and around the Sea of Galilee. These areas have a moderate climate avoiding extreme cold or heat.

The different avocado varieties may be divided into three main families according to plant stock: Mexican, Guatemalan, and sturdy West Indian. Of these three varieties, the West Indian stock is better suited to Israel’s soils’ water and climate, and is considered relatively resistant to salinity problems and high lime levels, enabling transition to irrigation with recycled wastewater. On the other hand, it is more sensitive to frost than the Mexican stock.



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In the avocado's original growth zones, the soil is acidic, enabling high availability of micro elements.

When growing avocado in Israel, the orchard's trees are exposed to heat and cold, to which they are not naturally resistant. In experiments we have conducted at Gat Fertilizers, we found that using the "Algea 30" additive (biostimulant), we succeeded in growing vegetables under extreme heat and dry conditions, without harming the plants and their yields.

When using "Bio-humigat" (biostimulant) we managed to achieve early ripening and larger fruit (and total yield weight) with table grapes. These two compounds are provided along the fertilizer solutions, together with the regular fertilizing program.

In a 3 year experiment conducted in Maagan avocado plantation, we added to the standart fertilizer solution 2 biostimulants – Biohumigat and Gat algae 30. The plot was planted in 2016 and received these treatments from planting time to the first picking season (Nov 2020).

Maagan avocado plantation - Biohumigat & Algea 30 treatments									Nov-20
treatment	weight kg		nu of fruit		fruit weight kg	weight %	nu of fruit %	avg fruit weight %	
gat algea 30	111.4	ab	520.3	ab	0.215	b	120.8	129.7	92.8
biohumigat	130.8	a	614.0	a	0.212	b	141.8	153.0	91.8
control	92.2	b	401.3	b	0.231	a	100.0	100.0	100.0
standard deviation								Standard deviation %	
gat algea 30	16.9		79.1		0.003		15.1	15.2	1.2
biohumigat	20.2		94.2		0.001		15.5	15.3	0.4
control	20.4		97.1		0.005		22.1	24.2	2.2

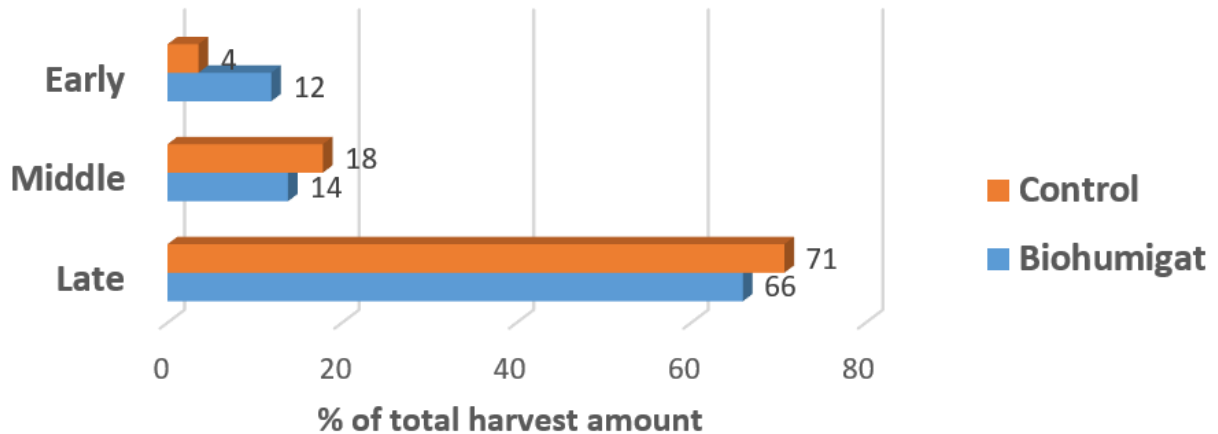
The results show that the Biohumigat treatment showed a significant rise in the number of fruit, thus enhancing the total fruit weight.

In a previous experiment with Biohumigat, conducted on greenhouse table grapes, in the years 2017-2018, the results show an interesting phenomenon – the fruit ripened earlier than the control treatment, thus creating better time to market and higher revenue to the grower.

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### Harvest dates distribution (% of total amount)



Furthermore, considerable efficiency has been found when using “**Blu**” solutions which combine **nitrogen stabilizer** in the fertilizer with its double action –

1. Conserving the nitrogen applied for a long time in the root zone area without being drained.
2. Reducing the pH in the rhizosphere and increasing microelement availability in the soil water solution.

Contact our district agronomist to receive a recommendation for successful combining of the above solutions in your orchard.

**Shachar Tavor, Agronomist**

[info@gatfertilizers.com](mailto:info@gatfertilizers.com)



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Sources –

1. Biohumigat for table grapes in the greenhouse – getting ahead of everyone

<https://deshengat.co.il/%d7%91%d7%99%d7%95%d7%94%d7%95%d7%9e%d7%99>

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2. Using Biostimulants (growth stimulants) from Seaweed in combined fertilizer, for intensive crops.

<https://deshengat.co.il/%d7%a9%d7%99%d7%9e%d7%95%d7%a9->

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3. Seaweed Extracts as Biostimulants of Plant Growth and Development

4. <https://link.springer.com/article/10.1007/s00344-009-9103-x>

4. Agricultural uses of plant biostimulants

<https://link.springer.com/article/10.1007/S11104-014-2131-8>