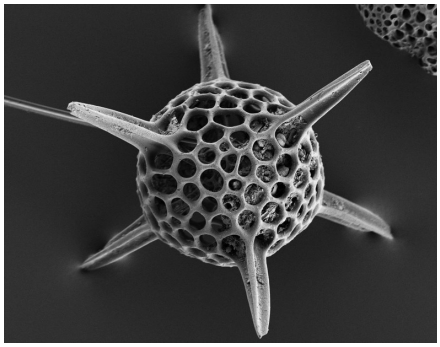
Almina

Geothermal Biomineral





Almina is a Geothermal Biomineral composition of organic origin rich in Silicon and Alginic Acid content.

Biominerals in Almina are supplied from the mining site located in Turkey's largest Geothermal Field. They are enriched naturally by trace elements and rare earth elements carried by superheated steam and boiling water over thousands of years, and they are called Geothermal Biominerals.

Almina:

- Provides resistance to biotic/abiotic stress conditions.
- Increases yield by stimulating plant growth and development.
- Increases nutrient and water uptake from the soil by inducing root growth.
- Increases photosynthesis by accelerating the formation of chlorophyll.
- Increases sprouting and improves flowering and fruit setting processes.
- Provides homogenisation for fruit growth
- It strengthens the defense mechanism of the plant.
- It provides balanced and long-term intake of macro and micro nutrients.
- Nurtures plants affected by cold damage back to its health by reconstructing and rehabilitating damaged cells.

CHEMICAL ANALYSIS	
CONTENT	%
SiO_2	52,50
CaO	8,10
SO_3	3,70
MgO	3,00
Fe_2O_3	1,10
ALGINIC ACID	1,80

CONTACT US

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Processing Facilities

Sakarya Mh, Tarım Cd, No:13 Tariş
Sarayköy/Denizli

Almina

Geothermal Biomineral

Application Instructions

Product	Spring	Foliar	Seed	Granule
Fruit Trees	-	1,5 kg / 100 liters 3-4 week intervals 3-6 applications	-	0,5-1 kg / tree 50-150 gr / sapling
Field Crops	2-3 kg / da 2-4 Week intervals At every irrigation	0,5-1 kg / da 2-4 week intervals 1-3 applications	Apply on seed directly 3-4 kg / 100 kg seed (for grains)	10-15 kg / da while planting or cultivating
Vines	-	1,5 kg / 100 liters 3-4 week intervals 3-6 applications	-	10-15 kg / da with other fertilisers
Greenhouses	-	1,5 kg / 100 liters 3-4 week intervals 3-6 applications	Apply on seed directly 3-4 kg / 100 kg seed	10-15 kg / da with other fertilisers

How to Use

Agricultural Spraying Machine

- Fill the tank halfway with water.
- Water down the product in a different container.
- Activate the mixer in the tank and add the watered down mix to the tank.
- Fill the rest of the tank with water.
- Do not deactivate the mixer until application is finished.

Grain Seed Coating Application

- Put seeds in a mixer or on a plastic sheet for manuel mix.
- Add 3-4 kg of Almina for every 100 kg seed
- Mix to homogeneity.
- Add mix to grain drill.

Contact Us

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Almina

Corn

Evaluation Report of Trial of the Product Named Almina
Established in Ceylanpınar district of Urfa by Minitalya Tarım (01.02.2023)

The effects of Almina (Granule) soil conditioner product on Pioneer 32 T 83-grain maize were tested in the study carried out in Urfa Ceylanpınar TİGEM in the Akrepli region parcel no. 24.

On 10 June 2022, the application and control plots, located side by side in the field, were determined.

- **18 Kg/da DAP** in the control plot,
- **18 Kg/da DAP** and **15 Kg/da Almina (granules)** in the application plot

were applied from the soil.

The results of the leaf analysis taken in the last green state of the leaf 2 weeks before the harvest are given in the table below.

Analysis Parameters	Unit	Method	Control	Almina	Difference
Nitrogen (N)	%	Kjeldahl	2,46	2,68	9%
Phosphorus (P)	%	Wet Burning - ICP	0,15	0,26	73%
Calcium (Ca)	%	Wet Burning - ICP	0,72	1,08	50%
Magnesium (Mg)	%	Wet Burning - ICP	0,40	0,52	30%
Iron (Fe)	ppm	Wet Burning - ICP	109,80	130,80	19%
Manganese (Mn)	ppm	Wet Burning - ICP	52,60	104,10	98%
Zinc (Zn)	ppm	Wet Burning - ICP	16,90	40,90	142%
Copper (Cu)	ppm	Wet Burning - ICP	6,30	10,50	67%



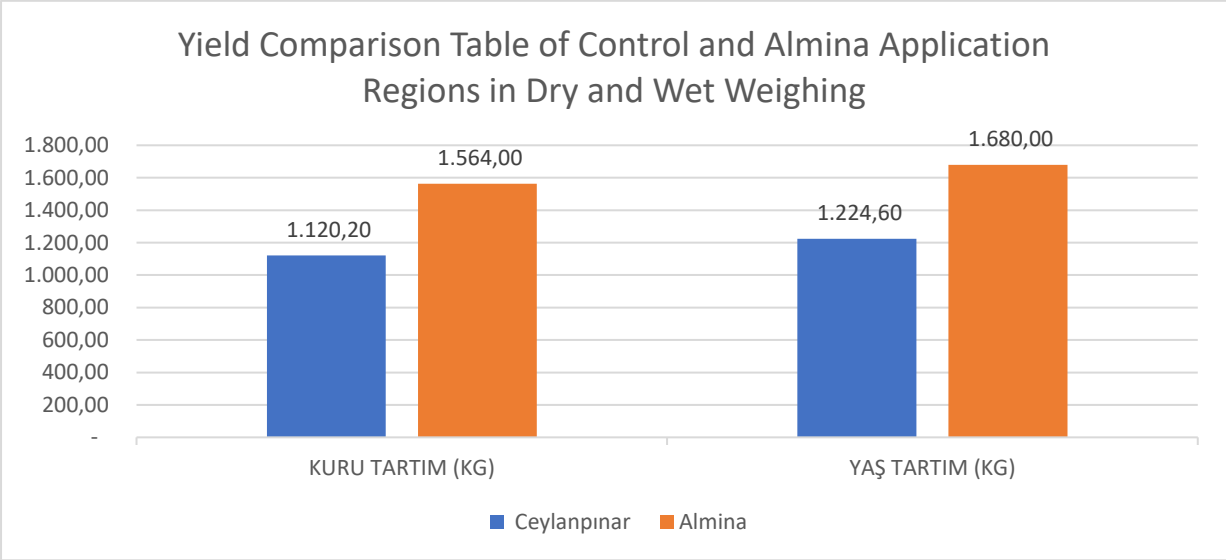


View from Trial and Control Plots on 28.09.2022

As a result of the observations, it has been proven that the Almina application liberates the nutrients and minerals that are bound and cannot be taken in the soil and enables the plant to take it. Apart from this, it has been observed that thanks to its porous structure, it loosens and ventilates the soil with water/air circulation and benefits the development of the plant with its rich content.

In the examinations and evaluations made by us in the process until the harvest, the applied parcel took the process ahead of the control part in terms of height, root, stem thickness and ear structure throughout the entire development process.

Analysis Parameters	Unit	Method	Control	Almina	Difference
Yield % 19 Humidity	KG	WET Weighing	1.224,60	1.680,00	37%
Yield % 15 Humidity	KG	DRY Weighing	1.120,20	1.564,00	40%



**Ceylanpınar = Control, **Kuru Tartım (KG) = Dry Weighing, ***Yaş Tartım = Dry Weiging*

In the harvest measurements, approximately 1200 kg/da of corn was obtained from the control plot and 1600 kg/da of corn was obtained with **an increase of approximately 33% from the application plot.**

Conclusion: This study, which resulted in the release of minerals bound in the soil, is proof that the product will also be beneficial in other plant species. This experience gained under the supervision of Ceylanpınar Agricultural Enterprises will also benefit almost all other products produced in the agricultural sector.

We would like to thank Ceylanpınar Agricultural enterprises for enabling this study to be carried out and the engineers involved with their devoted efforts.

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Zeytinlik Mah. Altınyol Arsa Koop. 7754 Sk. No:21 Altınova / ANTALYA

Rapor tarihi-Syf. no	10 EKİM 2022 (1/1)
Laboratuvar no	Y-22-928
Lab.giriş tarihi	03.10.2022
Deney tarihi	03.10.2022-07.10.2022
Numune sahibi	CEYLANPINAR TARIM İŞLETME MÜDÜRLÜĞÜ
Adres-tel	Şanlıurfa Ceylanpınar **Mevki:Normal**
Numune cinsi	Yaprak
Ürün	Mısır
İstenilen analiz	Mikro
Ambalaj şekli,miktarı	--

YAPRAK ANALİZ SONUÇLARI

Analiz Parametreleri	Birim	Metotlar	Analiz Sonucu	Değerlendirme
Azot (N)	%	Kjeldahl	2,46	**Noksan**
Fosfor (P)	%	Yaş yakma-ICP	0,15	**Çok Noksan**
Potasyum (K)	%	Yaş yakma-ICP	2,08	**Yeterli**
Kalsiyum (Ca)	%	Yaş yakma-ICP	0,72	**Fazla**
Magnezyum (Mg)	%	Yaş yakma-ICP	0,40	**Yeterli**
Demir (Fe)	ppm	Yaş yakma-ICP	109,8	**Yeterli**
Mangan (Mn)	ppm	Yaş yakma-ICP	52,6	**Yeterli**
Çinko (Zn)	ppm	Yaş yakma-ICP	16,9	**Noksan**
Bakır (Cu)	ppm	Yaş yakma-ICP	6,3	**Yeterli**

Not: Sonuçlar Kuru madde esasına göre verilmiştir.

Değerlendirme: İncelenen bitki analiz parametrelerine göre, Mısır bitkisinin yeterlilik düzeyleri esasında; N, P ve Zn içeriklerinin yeterlik düzeylerinin altında (noksan/çok noksan), diğer bitki besin içeriklerinin yeterli/fazla düzeyde olduğu belirlenmiştir.

Not 1. .Bu analiz raporunun hiç bir bölümü tek başına veya ayrı ayrı kullanılamaz.
Not 2. Analiz sonuçları yukarıda belirtilen numune için geçerlidir.
Not 3. İznimiz alınmadan raporlarımız çoğaltılamaz ve yayınlanamaz. İmzasız ve mühürsüz raporlar geçersizdir.
Not 4. Numune laboratuvarımız tarafından alınmamıştır

Laboratuvar Personeli
Laboratory personnel
Melis KAYA
Ziraat Mühendisi /Agriculture Engineer

Laboratuvar Sorumlusu
Person in charge of laboratory
Sermin İŞBAKAN
Ziraat Mühendisi /Agriculture Engineer

Dijital olarak imzalayan SERMİN İŞBAKAN
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Laboratuvar Müdürü
Laboratory Manager
Yasemin TOPÇULAR
Kimyager/*Chemist*

Website : www.laben.com.tr e-posta : laben@laben.com.tr
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Zeytinlik Mah. Altınyol Arsa Koop. 7754 Sk. No:21 Altınova / ANTALYA

Rapor tarihi-Syf. no	10 EKİM 2022 (1/1)
Laboratuvar no	Y-22-927
Lab.giriş tarihi	03.10.2022
Deney tarihi	03.10.2022-07.10.2022
Numune sahibi	MİNİTALYA MADENCİLİK ENERJİ İTHALAT İHRACAT SANAYİ VE TİCARET ANONİM ŞİRKETİ
Adres-tel	Şanlıurfa Ceylanpınar **Mevki:Deneme**
Numune cinsi	Yaprak
Ürün	Mısır
İstenilen analiz	Mikro
Ambalaj şekli,miktarı	--

YAPRAK ANALİZ SONUÇLARI

Analiz Parametreleri	Birim	Metotlar	Analiz Sonucu	Değerlendirme
Azot (N)	%	Kjeldahl	2,68	**Noksan**
Fosfor (P)	%	Yaş yakma-ICP	0,26	**Yeterli**
Potasyum (K)	%	Yaş yakma-ICP	1,79	**Yeterli**
Kalsiyum (Ca)	%	Yaş yakma-ICP	1,08	**Fazla**
Magnezyum (Mg)	%	Yaş yakma-ICP	0,52	**Fazla**
Demir (Fe)	ppm	Yaş yakma-ICP	130,8	**Yeterli**
Mangan (Mn)	ppm	Yaş yakma-ICP	104,1	**Fazla**
Çinko (Zn)	ppm	Yaş yakma-ICP	40,9	**Yeterli**
Bakır (Cu)	ppm	Yaş yakma-ICP	10,5	**Yeterli**

Not: Sonuçlar Kuru madde esasına göre verilmiştir.

Değerlendirme: İncelenen bitki analiz parametrelerine göre, Mısır bitkisinin yeterlilik düzeyleri esasında; N içeriğinin yeterlik düzeylerinin altında (noksan), diğer bitki besin içeriklerinin yeterli/fazla düzeyde olduğu belirlenmiştir.

Not 1. .Bu analiz raporunun hiç bir bölümü tek başına veya ayrı ayrı kullanılamaz.
Not 2. Analiz sonuçları yukarıda belirtilen numune için geçerlidir.
Not 3. İznimiz alınmadan raporlarımız çoğaltılamaz ve yayınlanamaz. İmzasız ve mühürsüz raporlar geçersizdir.
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Sermin İŞBAKAN
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Dijital olarak imzalayan SERMİN İŞBAKAN
Tarih: 2022.10.10 17:07:29 +03'00'

Laboratuvar Müdürü
Laboratory Manager
Yasemin TOPÇULAR
Kimyager/*Chemist*

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Almina

Wheat

Evaluation Report of Trial of the Product Named Almina

Established in Boztepe area of Aksu in Antalya by Minitalya Tarım (01.02.2023)

In Aksu Boztepe Village, Tokan Engin's field was planted with the West Mediterranean Agricultural Research Institute registered product Koç 2015 wheat seed by using Almina soil conditioner in granule form and the differences and effects were tested.

On November 18, 2021, the application and control plots, located side by side in the field, were determined.

- 20 kg /da fertilizer in the control plot,
- 20 kg/da fertilizer and 15 kg/da Almina (granules) in the application plot

were applied from the soil.

In this study, Koç 2015, the registered seed wheat of the Western Mediterranean Agricultural Research Center (BATEM), was preferred and the analyses were made in BATEM. As a result of this yield, the analyses were prepared and carried out under the supervision of Ali Koç, who gave the name to the registration.

Analysis Parameters	Unit	Control	Almina	Difference
Nitrogen (N)	%	1.74	1.97	13%
Protein	%	10.12	11.46	13%

As a result of the observations, it has been proven that the Almina application liberates the nutrients and minerals that are bound and cannot be taken in the soil and enables the plant to take it. Apart from this, it has been observed that thanks to its porous structure, it loosens and ventilates the soil with water/air circulation and benefits the development of the plant with its rich content.







In the examinations and evaluations made by us in the process until the harvest, the applied parcel provided superior characteristics compared to the control part in terms of height, root, stem thickness, ear structure and tillering throughout the entire development process.

Analysis Parameters	Unit	Control	Almina	Difference
Yield/da	KG	605	782	29 %

In the harvest measurements, approximately 605 kg/da of wheat was obtained from the control plot and 782 kg/da of wheat with an increase of approximately 29% from the application plot.

Conclusion: This study, which resulted in the release of minerals bound in the soil, is proof that the product will also be beneficial in other plant species. The success demonstrated in this study will also benefit almost all other products produced in the agricultural sector.

We would like to thank Tokan ENGİN, who made this study possible, and the Batı Akdeniz Agricultural Research Institute, which was the guide in directing our work, and the relevant engineers who contributed to the studies.

T.C.
TARIM VE ORMAN BAKANLIĞI
Tarımsal Araştırmalar ve Politikalar Genel Müdürlüğü
Antalya Batı Akdeniz Tarımsal Araştırma Enstitüsü Müdürlüğü

Sayı : E-27179708-560-5909357 09.06.2022

Konu : Buğday Analiz Sonucu (496-497)

TOPRAK VE SU KAYNAKLARI BÖLÜMÜ

Toprak, Bitki, Su ve Gübre Analiz Laboratuvarı
Buğday Analiz Sonucu

Numune (Örnek) No	496			
Makbuz / Fatura	Tarih	31.05.2022	Seri / No	22271

Adı Soyadı	MİNİTALYA A.Ş	İli	ANTALYA
Yetiştirilen Bitki	-	İlçesi	AKSU
Bitki Yaşı	-	Köyü-Mevkii	STANDART
Numune Geliş Tarihi	31.05.2022	Rapor Tarihi	09.06.2022

Analiz Sonuçları	
Laboratuvar Numarası	496
% N	1,74
% Protein	10,12

Numune (Örnek) No	497			
Makbuz / Fatura	Tarih	31.05.2022	Seri / No	22271

Adı Soyadı	MİNİTALYA A.Ş	İli	ANTALYA
Yetiştirilen Bitki	-	İlçesi	AKSU
Bitki Yaşı	-	Köyü-Mevkii	UYGULAMA
Numune Geliş Tarihi	31.05.2022	Rapor Tarihi	09.06.2022

Analiz Sonuçları	
Laboratuvar Numarası	497
% N	1,97
% Protein	11,46

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Doğrulama Kodu: CF4813E1-AEAC-42BF-8357-6C8E1E04966B Doğrulama Adresi: https://www.turkiye.gov.tr/tarim-ebys

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Bilgi için:Memiş Ensar
ERTÜRK
Laborant

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Almina

Grape

Evaluation Report of Trial of the Product Named Almina
Established in Alaşehir district of Manisa by Minitalya Tarım (01.02.2023)

The effects of Almina (Granule) soil conditioner product were tested in the study carried out in Sultaniye grape in Alaşehir district of Manisa.
On March 26, 2022, application and control plots, located side by side in the form of 10-decare plots in a 20-decare vineyard, were determined.

- **25 kg /da DAP** and **40 kg Potassium Sulphate** in the control plot**,**
- **25 kg/da DAP**, **40 kg Potassium Sulphate and 16 kg/da Almina (drip system)**

were applied from the soil. Apart from these, there is no difference between the drip and foliar feeding products in the control and application plots. The only variable in the treatment and control plots is the Almina product.

Almina drip application: mixer in working condition, at doses of 2 kg/da from the fertilizer tank. It was given as a total of 16 kg in 8 irrigations in 15-day periods.

Almina application made from leaves was applied at doses of 1.5 kg/100 liters after the first application of 3 kg/100 lt. Since the application did not have a mixing problem with the product, it was integrated into the spraying program and made a total of 5 times with minimum labour.

In the examinations and evaluations made by us in the process until the harvest, the applied parcel took the process ahead of the control part in terms of height, root, leaf development, stem thickness and cluster structure throughout the entire development process. It provided a homogeneous development in fruits.

Amount of product obtained in accordance with commercial sale at harvest:

Analysis Parameters	Unit	Control	Almina	Difference
Yield (suitable for commercial sale)	Kg/da	3260	3830	%17.48

It has been observed that the application of Almina made from leaves gives the plant resistance to biotic and abiotic stress conditions. It has been proven that the Almina application made from the soil releases the nutrients and minerals that are bound and cannot be taken and enables the plant to take it. Apart from this, it has been observed that the high water absorption capacity gained by the porous structure, loosens and ventilates the soil with water/air circulation and benefits the development of the plant with its rich content.

The findings on the effects of the Almina product in the examinations carried out until the harvest;



Almina leaf application coating image

- Due to the amorphous silicon contained in Almina; It has been stated that it increases the leaf chlorophyll content and plant metabolism, increases the tolerance of the plant against environmental stresses such as cold, heat, sunburn, and drought, increases the mechanical endurance of the plants by strengthening the nutritional imbalance and cell walls in plants, and increases the yield and quality. It has also been determined that silicon stimulates the activity of endurance-related components (compounds such as chitinase, peroxidase, polyphenol oxidases, flavonoid phytoalexins).

- Promoted photosynthesis by increasing root and plant biomass (especially under stressful growing conditions such as drought, soil salinity, pests and disease): resulting in greater carbon capture with increased plant biomass.

The findings after the soil applications are as follows:
It has improved soil health at chemical, physical and biological levels. It increases the water holding capacity of the soil.

By increasing the cation exchange capacity (CEC) in the soil by 300%, Almina accelerated the transport of NPK and trace elements from the soil to the plant and provided the availability of locked nutrients. As a result, the increase in energy with healthy photosynthesis caused an increase in vegetative development. It made a difference in root stem and leaf development and provided a healthy and resistant structure against disease.

It has been determined that since the alginic acid contained in Almina has a high degree of polymerization, it prevents phosphorus from precipitating in the soil with calcium, iron and other nutritional elements and passing into the form that cannot be taken. In addition, it binds to phosphorus-bearing minerals, causing an increase in the available phosphorus concentration in the soil solution.

It has optimized the retention and release of water and nutrients to the critical root zone.

It increased plant resistance against salt stress by preventing sodium absorption.

It caused a significant increase in cluster length.



Development Process



Maturation Process



Application site visit of Uzbekistan delegation

We would like to thank the Manisa Viticulture Research Institute, Arıkan Tarım, Batı Akdeniz Agricultural Research Institute, Doluca Winery, Oragro institutions, valuable academics and agricultural engineers who contributed to the evaluation of the findings.

Almina

Apple

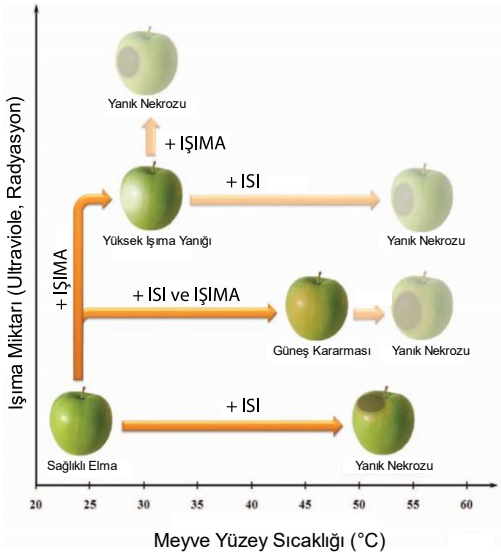
Evaluation Report of Trial of the Product Named Almina
Established on Yahyalı, Kayseri by Minitalya Tarım (01.02.2023)

The effects of the use of Almina from soil and leaves and the differences in Grannysmith apples in the apple orchard with 368 trees per Decare in Yahyalı district of Kayseri province were investigated.

In April 2022, the application and control plots, located side by side in the garden, were determined.

- All maintenance and applications throughout the garden are the same, and the only difference between the control plot and the application plot is the Almina applications.
- Almina application was made from the drip system of 2 kg/da in 8 repetitions in 2-week periods starting from March in the garden.
- In this study, starting in April, Almina was applied from leaves at a dose of 1.5 kg / 100 lt during the awakening-before-flowering-fruit set-fruit growth-maturation stages.
- In this study, the hardness and tonnage values of the harvested products were examined in the Fruit Master warehouse by harvesting separately from the application and control plots in the second week of September.

After the application, a difference of about 7-8 degrees was detected in the temperature measurements made on the fruit surface. This temperature difference is very important. As a result of the high nighttime temperatures in apples, relatively smaller fruits appear because the necessary carbohydrates are spent by transpiration. In case of a decrease in humidity, as the loss of water lost by sweating will increase in parallel with the increase in temperature, growth and development decrease. There is shrinkage, thickening and inability to fully develop color in fruits. During sunny hours, plants get heat stress at 37.5 degrees and stop photosynthesis. This temperature difference created by the application of Almina causes an increase in the amount of photosynthesis in 24 hours by delaying the plant's entry into heat stress and accelerating its exit. Therefore, a positive difference was observed in green parts and fruit development compared to the control plot.



Applied from the soil, Almina releases the minerals in the soil that cannot be taken up and stores them in the form that the plant can take. Almina Loosens and ventilates the soil and keeps it moist thanks to its superior water retention. It significantly supports plant root development, ensures the formation and fringing of new capillary roots, prepares them to take nutrients and encourages them.

In regions with high temperatures, orchards should be irrigated more carefully. By keeping the soil moisture in apples at an appropriate level when the fruits start to grow and approach maturity, 20-40% increase in fruit size can be achieved compared to the unfavourable situation.

Analysis Parameters	Unit	Control	Almina	Difference
Stored Fruit Hardness	kg	6.5	8.1	%24.62
Commercial Yield	kg/da	5186	6020	%16

In the examinations made, it has been proven that Almina application increases the cation exchange capacity in the soil, liberates the nutrients and minerals that are bound and cannot be taken, and enables the plant to take it. Apart from this, it has been observed that thanks to its porous structure, it loosens and ventilates the soil with water/air circulation and benefits the development of the plant with its rich content.

List of Benefits as a summarry:

- Increase in shoot growth
- Darkening of leaf color
- Thickening and enlargement of leaves
- Minimizing sunburns
- Increase in apple caliber and quality
- Improvement in apple color (dark green)
- Increase in storage hardness



Almina

Olive

Evaluation Report of Trial of the Product Named Almina

Established in Karataş region of Adana by Minitalya Tarım (01.02.2023)

At the Bozdoğan farm in Adana Karataş region, on 12-year-old Gemlik-type Olive trees. The applications started with a dose of 1 kg of Almina per tree, applied to the crown projection area. Starting from 2 weeks before the flowering phase, 5 foliar applications were made at a dose of 1.5 kg Almina / 100 lt water in 3-week periods.

Effects of the Application on the Olive Trees



Thanks to Almina, the development and general physiological appearance of the plants have progressed positively. Despite a semi-arid season, especially on a seasonal basis, no nutritional deficiency symptoms were observed in the plants. On the other hand, it was determined that there were 28% to 39% positive differences in the number of shoots and shoot lengths compared to the untreated (control) trees.

Thanks to the silicon and other trace elements it contains, Almina creates strong shoot growth and strong stem structure in addition to yield and quality.

As a result of the application of Almina from the soil, the nutrients bound in the soil which cannot be taken by the plants were transformed into the form that the plants can take. Almina also ensures the preservation of soil moisture with its water-retaining structure.

Almina provides protection against heat stress on the leaf surface of the plant. It creates an effective shadow effect on the leaf surface by refracting the sun's rays with its 'translucent' structure in terms of preventing the heat on the plant surface, which occurs in hot weather, and creating an air layer with its porous structure. In addition, it absorbs the dew drops formed on the leaf surface and prevents burning by lens effect, and also prevents moisture loss. All these features allow the stomata to remain open longer and create a more efficient photosynthetic environment.



Effect of Application on Yield and Quality :

Average yield of treated trees	:	33 Kg / tree
Average yield of untreated trees	:	24 Kg / tree
Effect of Almina on yield	:	37,5 % difference

Effect on oil yield :

Oil ratio of olives in the treated trees	:	1 Lt oil / 5,8 Kg Olive
Oil ratio of olives in untreated trees	:	1 Lt oil / 7,1 Kg Olive
Effect of Almina on oil yield	:	22,4 % difference





Oil Acidity Ratio (Lower is better)

Acidity level of the oil obtained from the applied olives	:	%0,3 (3 diziem)
The acidity of the oil obtained from untreated olives	:	%0,5 (5 diziem)

Olive Size:

Average 100 olive kernel weight of the treated trees	:	381 gr.
Average 100 olive kernel weight of trees that cannot be treated	:	295 gr.
Effect of applied Almina on grain size	:	29 % difference



The application of Almina to the olive tree during the formation of the core house positively affects the size of the fruit.

Almina application is very important in terms of yielding every year because it causes the elongation of the shoots and the formation of fruit budding locations that will hold fruits next year.

The fact that the olives do not fall and remain on the tree in the examination we have made after the hail is an indication that the grain stalk increases the binding strength. In addition, it has been determined that the traces in the grains with weak dents minimize the hail damage in the following days.

Blackening on the branch:



The olive fruit that does not darken during the harvest period, no matter how large it is in terms of caliber, cannot be offered for sale as olives and is necessarily subject to oil extraction in the status of olives for oil. In other words, if your grain does not darken, it becomes a product that is evaluated as an olive oil and evaluated at low prices, not as table olives that find market value at a high price.

Blackening in olives begins with the secretion of a substance called anthocyanin. The earlier and more intensely this substance is secreted in trees, the higher the blackening of olives.

Almina ensures homogeneous maturation and darkening of the olive branch.

The effect of olive shake off on Polyphenol:

The average number of fruits shaken off from trees that are not treated is 243/tree,

The average number of fruit shaken off from the treated trees is 67/tree.



Another effect seen in the application is that the olive stalks are very strong. It has been observed that the stalks holding the fruit are usually removed from the tree with the fruit and remain on the olive. The high amount of silicon in the product provides a very high strength in the stem of the berry, causing the stem of the olive to remain on the berry, not on the tree. It has been determined that due to Silicon in Almina increasing the strength of the fruit stalks, the shaking off of the fruits decreases and the profitability of the producer increases significantly.

In addition, the oxidation begins as soon as the olive is cut from the stem. When oxidation begins, Oleuropein (Polyphenol), which has volatile properties in the fruit and is known as the world's strongest antioxidant, begins to move away from the olive grain. It has been determined that the stalk remaining on the olive, thanks to Almina, continues the nutrition of the olive grain and prevents the removal of these volatile polyphenols from the olive grain.

CONCLUSION:

When evaluated in terms of plant nutrition, Almina has proven once again with this study that it has a very rich content in terms of supporting the necessary nutrients for olives. It has been clearly seen that Almina is effective in the physiological growth of plants, as well as in yield and quality increase. Almina, with its natural and completely organic structure, has an important place in both the protection of human health and the development of resistance of the plant against biotic and abiotic stress conditions.

- There is no risk of negative residue or toxicity as a result of the application.
- Almina is a reliable product for organic production and certified producers.
- Provides protection against sunburn.
- It increases photosynthesis.
- It provides an increase in the oil rate, decreases the fatty acid, increases the polyphenol rate.
- Alginic Acid is present in the structure of Almina, which has completed the biomineralization phase.
- It contains more than 50% Silicon.

When the mechanism of action is examined, it can be underlined that the use of the Almina in other areas of agriculture is of high importance.

Almina

Cotton

Evaluation Report of Trial of the Product Named Almina
Established in Reyhanlı district of Hatay by Minitalya Tarım (01.02.2023)

The differences and effects were tested by planting with ST 468 coded cotton seed of MAY company using Almina Soil Conditioner in granule form in Hatay Reyhanlı.

On May 4, 2022, the application and control plots located side by side in the field were determined.

- **15-15-15 at 40 kg/da** in the control plot,
- **40 kg/da 15-15-15** and **15 kg/da Almina (Granule)** in the application plot,

were applied from the soil.



In this study, besides soil fertilizer, as top fertilizer, starting from the 68th day (11 July);

- CAN (26% N) fertilizer in the control plot,
- CAN (26% N) fertilizer and 1.5 kg/da Almina (Powder) in the application plot

were applied as foliar once every 3 weeks.



Applied from the soil, Almina releases the minerals in the soil that cannot be taken up and stores them in the form that the plant can take. Almina Loosens and ventilates the soil and keeps it moist thanks to its superior water retention capacity. It significantly supports plant root development, ensures the formation and fringing of new capillary roots, prepares them to take nutrients and encourages them.

On the other hand, foliar applied Almina provides protection of the plant against Biotic and Abiotic stress conditions.

As it is known, the cotton plant grows best at 32 °C and temperatures above 35 °C harm plant growth. If the 45 °C limit is exceeded, the cocoon formation decreases to almost 0 in the early period. Especially during the flowering period, high temperature affects fertilization and reduces the yield.

If the cotton plant is not protected against abiotic stress conditions, dry matter production is low at low temperatures, and accumulation of it is low at high temperatures due to excessive respiration.

Results of the observations made during the plant development process;

- Leaf color is darker than the control plot,
- Better branching and leaf width
- When irrigation is delayed, the plant tolerates drought and water stress better,
- Thanks to the protective film layer created by the Almina leaf application on the plant in scorching temperatures, the plant is resistant to heat stress with a difference of 6-7 °C.
- Cocoons shaken off were reduced by 50-60% and the plant held more bolls,
- Unseed Cotton was obtained from the control plot at 538 kg/da and from the application plot at 612 kg/da.



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The differences between the application and control plots are shared in the table below:

Parameters (Average of 10 Plants)	**Control**	**Almina**	**Difference**
Number of Cocoons	13,52	15,28	%13,01
Number of Fruit Branches	11,30	12,20	%7,96
Plant Length	96,41 cm	105,28 cm	%9,20
Cotton Mass Yield	538 Kg/da	612 Kg/da	%13,75
Cotton Gin Yield	%43,28	%43,84	%1,29
Fiber Yield	**232,84 Kg/da**	**268,30 Kg/da**	**%15,22**



Color and development difference image from Antalya Aksu application

In addition to these changes, up to 15% enlargement in the leaf palm size of the plant, up to 10% growth in the root zone and obvious darkening in the leaf color were detected. This indicates plants that are both more resistant to biotic/abiotic stresses and have a higher photosynthetic capacity.

Almina

Sunflower

Evaluation Report of Trial of the Product Named Almina
Established on Konya Aksaray Road by Minitalya Tarım (01.02.2023)

Differences and effects were tested by planting Pioneer sunflower seeds by using Almina soil conditioner in granule form in the field of İsmail Atarlar at the 10th kilometer of the Konya-Aksaray road.

In May 2022, the application and control plots, located side by side in the field, were determined.

- 24 kg /da fertilizer in the control plot,
- 24 kg/da fertilizer and 15 kg/da Almina (granules) in the application plot

were applied from the soil.

In the observations made, it was determined by the parties that the region where Almina application was applied showed superior performance in terms of height, color darkness, plate width, fullness rate and root development compared to the control plot.

It has been proven that the application of Almina releases the nutrients and minerals that cannot be taken in the soil and allows the plant to take it. Apart from this, it has been observed that thanks to its porous structure, it loosens and ventilates the soil with water/air circulation and benefits the development of the plant with its rich content.





Analysis Parameters	Unit	Control	Almina	Difference
Yield/da	KG	330	414	25 %

In the harvest measurements of Sunflower, approximately 330 kg/da Sunflower was obtained from the control plot and approximately 414 kg/da Sunflower was obtained from the application plot. As a result, the benefit of Almina was determined with a 25% increase.

Conclusion: This study, which resulted in the release of minerals bound in the soil, is proof that the product will also be beneficial in other plant species. The success demonstrated in this study will also benefit almost all other products produced in the agricultural sector.

We would like to thank İsmail Atarlar for enabling this study to be carried out, Gökhan Tosun who was our mentor in directing our studies, and the relevant engineers who contributed to the studies.

Almina

Beet

Evaluation Report of Trial of the Product Named Almina
Established in Akkaş Village of Aksaray by Minitalya Tarım (01.02.2023)

The effects and differences were tested by using Almina soil conditioner in granule form in the beet field in Akkaş Village of Eskil District in Aksaray.

In May 2021, the application and control plots, located side by side in the field, were determined.

- All maintenance and applications throughout the field are the same, and the only difference between the control plot and the application plot is the application of 15 kg/da Almina (granules) to the soil in the application plot.
- In this study, the polar and tonnage values of the products were examined in the Honey Cube receiving center by harvesting separately on 6 decares of land from the application and control plots.

Analysis Parameters	Unit	Control	Almina	Difference
Polar	%	15.61	16.22	0.61
Yield (Kg/da)	Kg	4084.5	5004.1	920

As a result of the observations, it has been proven that the Almina application liberates the nutrients and minerals that are bound and cannot be taken in the soil and enables the plant to take it. Apart from this, it has been observed that thanks to its porous structure, it loosens and ventilates the soil with water/air circulation and benefits the development of the plant with its rich content.





In the examinations and evaluations made by us in the process until the harvest, the applied parcel provided superior characteristics compared to the control part in terms of height, root, stem thickness, vegetative part development and color throughout the entire development process.

In the periodic controls, the vegetative part development seen in the application plot is darker in color, longer in length, with wider leaves and healthier than the control plot.

It was observed that root development in the plant samples in the application plot was larger, longer, heavier and healthier than the control plot.

Analysis Parameters	Unit	Control	Almina	Difference
Yield/da	Kg	4084	5004	23 %

In the harvest measurements, approximately 4084 kg/da of beet was obtained from the control plot and 5004 kg/da of beet was obtained with an increase of approximately 23% from the application plot. When the economic return is calculated, it not only increased the tonnage of the beet, but also increased the polar value of 15.61, which was below the standard, to 16.22, which was above the standard, and enabled it to reach commercial values.



Almina

Potatoes

Evaluation Report of Trial of the Product Named Almina
Established in Konaklı district of Niğde by Minitalya Tarım (01.02.2023)

The effects and differences were tested by using Almina soil conditioner in granule form in a potato field in Konaklı district of Niğde.

The effects and differences were tested by using Almina soil conditioner in granule form in a potato field in Konaklı district of Niğde. In May 2021, the application and control plots, located side by side in the field, were determined.

- All maintenance and applications throughout the field are the same, the only difference is the 25 kg/da Almina (granule) application made to the soil in the application plot.

- In this study, separate harvests were made from the application and control plots and compared.

As a result of the observations, it has been proven that the Almina application liberates the nutrients and minerals that are bound and cannot be taken in the soil and enables the plant to take it. Apart from this, it has been observed that thanks to its porous structure, it loosens and ventilates the soil with water/air circulation and benefits the development of the plant with its rich content.





In the periodic controls, the vegetative part development seen in the application plot is darker in color, longer in length, with wider leaves and healthier than the control plot.



It was observed that root development in the plant samples in the application plot was larger, longer, heavier and healthier than the control plot.

Harvest started on October 28 and the area where we applied Almina was harvested separately and a yield of 5,960 kg per Decare was obtained. In the control group, the Decare yield was 5.440 kg of potatoes.

Considering the post-harvest yield, 10% improvement, but considering the quality distinction, seed or small caliber potato tubers, which we describe as 15-20% discard, were found in the control group. In the area where we apply Almina, this rate is around 8-10%.



When we examine yields per decare, 5.300 kg of potatoes of the quality demanded by the market entered the sacks in the parcel where Almina was applied and reached the sale, while 4.500 kg of the potatoes in the control parcel entered the sacks, returning %17 net increase in yield.

Almina

Tomatoes

Evaluation Report of the Application of Product Named Almina
Established in Afyon Soilless Greenhouses on Tomatoes by Minitalya Tarım (01.02.2023)

GREENHOUSE WHERE ALMINA WAS USED:

NET LTD Greenhouse is a unit with double opening 50 mesh mosquito nets, windows, surrounded by polycarbonate on the sides, built on a single piece of 25 Decare of land. It is a modern greenhouse in the Afyonkarahisar geothermal energy center region, which takes its heating support from geothermal resources. It contains 84,000 plants. This greenhouse is also a contracted agricultural greenhouse by Türk Şeker.

METHOD OF APPLICATION:

Almina was applied in weekly periods in the form of 1.5 Kg Almina / 100 liters of water in the first two applications, then 1 Kg Almina / 100 liters of water.

It is important that this mineral, which has a contact effect, reaches all parts of the plant. Almina should be applied to the entire surface of the plants by wettable spraying. Periodic covering of the developing main stem and branches and new leaves and fruit surfaces as the plant grows is important for effectiveness.

It has been observed that, thanks to the high content of Alginic Acid and Silicium, Almina darkens the color of the plant and leaf, expands the leaf blades, increases the thickness of the leaf wall, thus providing a supportive effect on the photosynthesis ability of the plant.





In addition, it has been observed that thanks to the Silicon and Trace Elements in its content, it provides high resistance against breakage and bending, increases the resistance of the stem connections of the bunch stem, and supports the repair of injured plant stems.



Foliar applications leave a fine powder coating on the plant surface. These coatings, which consist of minerals reaching nanometric dimensions, are partially absorbed by the plant, and partially lost by mechanical friction. Although this coating can hold on to the leaves more tightly, it cannot hold on Tomatoes, which grow and increase their volume and have a smooth surface. In order to encourage browning for the tomatoes at harvest time, the leaves are taken and therefore the product on leaves do not cause a problem in the harvested fruit.



Almina strengthens the immune system of the plant thanks to the minerals it contains.

Advantages of ALMINA in Tomato Cultivation in Open Field Agriculture:



In open field agriculture, biotic and abiotic stress conditions are much more severe.

In these areas, the use of Almina is carried out both weekly from the leaf (1.5 kg / 100 Lt. water) and from the soil as granules (15 Kg / Da) during planting. Thanks to the Alginic Acid in its content and the physical structure of the particles, its effectiveness in increasing root development and the availability of fertilizers is reflected in both yield and durability.

Unlike the greenhouse, it will increase the quality of production by minimizing the damage caused by sunburns with its protective coating.