



# ® KIRAM AT

NUTRITION AND RESISTANCE INDUCTION



**AGRIGES srl**

Contrada Selva di Sotto Zona Industriale  
82035 San Salvatore Telesino (BN) ITALY  
T +39 0824 947065 - F +39 0824 947442  
[www.agriges.com](http://www.agriges.com) | [info.contact@agriges.com](mailto:info.contact@agriges.com)



# KIRAM AT

## Nutrition and resistance induction



### HOW IS IT DONE?

**KIRAM AT** is the result of the stable combination of a biologically active polymer with essential trace elements (Cu, Zn, Mn) whose nutritional properties are enhanced by the particular production technology **DINAMO**.

**KIRAM AT distributes evenly over the treated surface** improving the water exchange between the interior and the exterior and has a high ability to persist on the surface even in the event of adverse environmental conditions.

### WHAT DOES IT DO?

It performs a deep boost of the **plant endogenous resistance** inducing a more intense self-defence response of the latter to stress factors, such as environmental stress and/or caused by attacks of bacteria and phytopathogenic fungi).

### COMPOSITION

	w/w	w/v		w/w	w/v
Total Copper (Cu)	1,8 %	2,0 %	Manganese (Mn) chelated EDTA	0,1 %	0,1 %
Copper (Cu) water-soluble	0,4 %	0,4 %	Zinc (Zn) water-soluble	0,1 %	0,1 %
Copper (Cu) chelated EDTA	0,4 %	0,4 %	Zinc (Zn) chelated EDTA	0,1 %	0,1 %
Manganese (Mn) water-soluble	0,1 %	0,1 %			

**Chelating agent:** (EDTA). **Interval stability of the chelated fraction:** pH from 3 to 9. %w/w equivalent to (w/v) at 20°C..

### WHEN AND HOW?

It is well known that, when undergoing stress, plants respond by producing specific molecular groups suitable for self-defence (e.g. phytoalexins). In the presence of **KIRAM AT** this self-defence response is quicker and more intense.

**KIRAM AT** stimulates the plant to produce:

- ☑ **Dense and amorphous material** that acts as an endogenous barrier to isolate the stress factor outside;
- ☑ **Specific molecular complexes that regulate the stomatic openings;**

**The synergy between these reactions to stimulus has different effects, namely:**

- ☑ It allows the plant to balance its transpiration in the presence of excessive water and/or thermal stress;
- ☑ It causes the plant to be less exposed to the attack of numerous pathogens that exploit the stomatic openings as preferential access ways;
- ☑ It induces the plant to structure and strengthen the exposed surfaces, thereby making them less susceptible to any damage;

**KIRAM AT** is a technical tool that improves the final production **shelf-life** and enhances its qualitative characteristics. It perfectly combines with a sustainable and eco-compatible management of the main crops of agricultural interest, since – playing on the enhancement of the plant metabolism – it improves its agronomic performance and the related responses to all the treatments and stimuli it receives.

### FIELD RESULTS ON DIFFERENT CROPS

**Tomato, pumpkin, melon, spinach, radish, rocket.** **KIRAM AT**, inserted in a normal intervention programme, allowed crops to raise the innate ability to tolerate pathogen-induced stress. The plants responded better to the traditional intervention plans, showing a lush appearance despite the adverse environmental conditions.

**Muscat wine grape variety:** The vineyard subjected to experimentation underwent a strong water and heat stress in an overly hot year. Periodic applications of **KIRAM AT** (every 7 days) allowed recording a tangible improvement in the plant capacity to tolerate high temperatures. The treated plant is found more luxuriant and its bunches are more turgid and healthy (Fig. 1) than the untreated (Fig. 2).

**Vittoria wine grape variety:** The experimental test was conducted in 2014. Production was characterized by an unusual harvesting season (24th September, the period of the first detachment for a notoriously early variety) as well as by the particular features achieved in terms of quality and fruit size. In the course of the last treatment with copper formulations (early August), the usual intervention strategy was supplemented by the addition of **AGRIGES resistance inductors KIRAM and KIRAM AT**. The purpose of this process was to increase the plant endogenous resistance to adverse stress conditions (further intensified by incessant rain showers) and provide it with a valid support capable of: 1- improving the grape shelf-life, 2- maintaining excellent carpometric and organoleptic characteristics despite late harvesting. This is testified by the final production, so much so that the grapes look healthy and the bunches of a "vivid colour (Fig. 3) (<http://www.freshplaza.it/article/68932/Uva-da-tavola-grappo-li-sempre-piu-sensibili-a-fisiopatie-di-pre-raccolta>).



**STRONGER SELF-DEFENCE  
FOR GREATER ENDOGENOUS  
STRESS RESISTANCE**

### DOSES AND ADMINISTRATION

Crops	Foliar application	Dose ml/hl
<b>Tree crops</b> (except for peach tree, plum tree and sensitive apple tree varieties)	<b>Upon onset of factors predisposing to stress</b>	200-250
<b>Horticultural crops</b>	<b>During the growth cycle and in all phases predisposing to stress</b>	200-250
<b>Ornamental crops</b>	<b>Upon onset of factors predisposing to stress</b>	150-200

### PRECAUTION

**The product must be vigorously shaken before use.** The final pH of the solution during application must be acid/subacid in order to avoid separation between the different components. In the event of application on crops not listed in the label and/or on sensitive crops and/or in a protected environment (nursery and greenhouse), check and possibly reduce the doses of use. When mixed with other products, check the miscibility and compatibility on a limited number of plants. Do not apply on sensitive plants with residues of copper products (e.g. Bordeaux mixture, etc.). Perform a n appropriate wetting avoiding dripping.

### EXAMPLES OF CROPS THAT BENEFIT FROM THE APPLICATION OF KIRAM AT



Fig. 1 Muscat grape variety subjected to thermal stress and treated with KIRAM AT



Fig. 2 Muscat grape variety subjected to thermal stress and not treated



Fig. 3 Vittoria grape variety treated with KIRAM and KIRAM AT



Fig. 4 Tomato treated with KIRAM AT



Fig. 5 Actinidia treated with KIRAM AT



Fig. 6 Potted crops treated with KIRAM AT

**Formulation:** soluble liquid - **Package size:** 1 - 5 - 10 l - **Density (T= 20°C):** approx. 1.110 kg/m<sup>3</sup> - **pH (sol. 6%):** approx. 2,5 - **Conductivity (sol. 10%):** approx. 2,2 dS/m.

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