



Tsama Allium Program



Tsama Zinc Start
Tsama Caliphos
Tsama Penta S
Tsama Zinc
Tsama Copper

Tsama Product Range

Tsama offers an complete range of micronutrient products and several macro nutrient formulations with the emphasis on foliar feeds and seed treatments. Several of the products are now locally manufactured by a specially chosen, reputable company currently achieving ISO 9001, 1401 and 1801 accreditation and certification and which already has experience in both agrochemical and plant nutrition product formulation and manufacture.

The product range includes suspension concentrates for both foliar and seed dressing, clear liquid formulations and water soluble powders.



The suspension concentrates are:

- formulated from high grade or pharmaceutical grade raw materials milled to distinct particle sizes plus co-formulants which enhance availability, uptake and efficient utilization by the plant,.
- Liquids with high levels of single nutrients or nutrients in combination.
- Safe, effective and have good tank mix ability with many commonly used agrochemicals.

The clear liquid products are formulated from high purity or pharmaceutical grade raw materials, with co-formulants to optimise plant availability and uptake. They too have tank mix compatibility and excellent product efficiency.

The formulated powders are water soluble, effective and mixable with many commonly used agrochemicals



Seed treatment and spray guide for Allium

Onions produce leaf in their first stage of growth. Once the temperature, day length and light intensity are ideal for that variety of onion, the plants switch from vegetative growth to bulb formation. There is a direct correlation to leaf number and bulb size. For every leaf formed, 1 onion ring is formed and the larger the leaf, the larger each ring.

High yields come from early leaf formation and maintained leaf quality. It is therefore important to ensure optimum leaf development and growth during the early stages of vegetative growth. Once bulb formation occurs it becomes important to maintain the existing leaf quality to ensure optimum flow of nutrients from the leaves to the bulb (storage organ) .

The un branched root system of onions is less effective than most crops in extracting immobile nutrients. Foliar nutrition can therefore play an influential role in optimising yield and quality.

Which nutrients and when ?

Phosphate and **zinc** play an important role in root establishment and growth.

Calcium is important for vigorous leaf and root development and canopy growth.

Magnesium, manganese , molybdenum and **zinc** are all important for leaf quality.

Sulfur is important since, like nitrogen , it is used by the plant to make proteins, It is also an essential component of the pungent compounds.

Phosphate , potassium and **calcium** are all important in the bulb filling stage .



Growth Stage	Pre plant seed treatment	1-2 weeks after transplant	Bulb formation	Bulb filling
Tsama Copper				0.5l/ha
Tsama Zinc		1l/ha		
Tsama Caliphos			5l/ha	
Tsama Penta S		1 kg/ha	1kg/ha	
Tsama Bor		0.5 l ha		
Tsama Zinc Start	10l/ton seed			

Some common deficiency symptoms in onions



(Photos provided by APS Press)

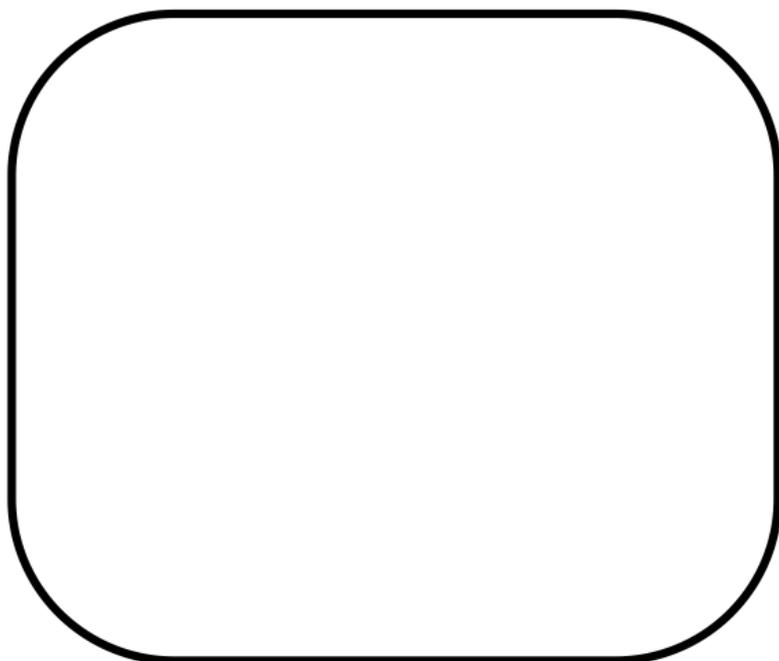
Zinc deficiency (right)
Normal onions (left)



Copper deficiency in onions



Distributed by:



On behalf of:



Crop nutrition specialists

P O Box 1372
Plettenberg Bay, 6600



044 533 1645



044 533 2790



Info@tsama-agric.com



www.tsama-agric.com