ARIES FLASH

ISSUE: 01,
APRIL- JUNE 2023

THIS ISSUE

aries
FertiMAX
HD
ARIES NPK RANGE OF
HIGH DENSITY FORMULATION

EDITORIAL TEAM
Dr. Shama Zaidi
Supriya Kamble
Swapnil Mali
Karishma Talekar
Abhishek Hariyan

Aries Vision

Our vision is to create value for “farmers” and all “stakeholders” using cost effective, environmentally safe crop nutrition solutions customized for the specific needs of crops and soils of India and other markets we serve. To do so, we aim to spread knowledge of good agricultural practices and use our products to make balanced crop nutrition a farming imperative.

Aries Mission

Our Mission is to evolve from being India's Plant Nutrition Super-Bazaar to one of the India's largest Agri input companies and to have an ARIES brand in every product category required for specialized agriculture

Introduction

Fertilizers with low solubility cause plants to grow poorly because they cannot absorb enough trace elements. Additionally, some plant nutrients may precipitate or bind with soil colloids and organic matter that further reduce their availability to plants.

Foliar fertilization is an important tool for the sustainable and productive management of crops. Compared with traditional soil-applied fertilizers, foliar applied fertilizers have the advantage of being quickly absorbed by plants, more cost-effective, minimally impacting soil health and can be directly delivered to plant tissues during critical stages of plant growth. Foliar application can provide vitamins and some elements lacking in soils.

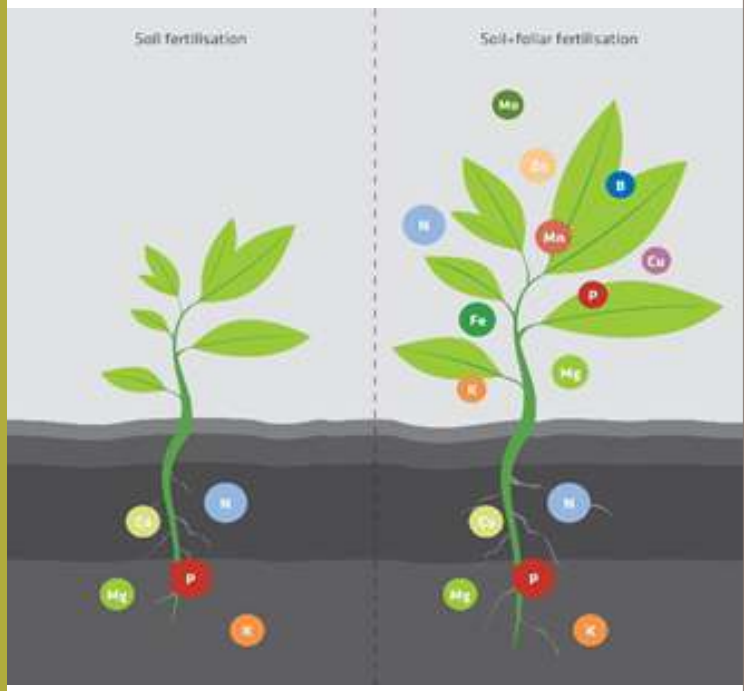
Foliar feeding today plays an important role in crop production. Some crops are fed almost exclusively through the leaves.

Foliar Application

Foliar feeding is a technique of feeding plants by applying liquid fertilizer directly to their leaves. Plants are able to absorb essential elements through their leaves. The absorption takes place through their stomata and also through their epidermis. It is the application of fertilizers to foliage of the crop as spray solution is known as foliar spray.

This method is suitable for application of small quantities of fertilizers, especially micronutrients. Major nutrients can also be applied by this method when there is no adequate moisture in top layer of soil.

Foliar application is not substitute for soil application, but only a supplement to it. More recently, foliar feeding has been widely used and accepted as an essential part of crop production, especially on horticultural crops. Although not as widespread on agronomic crops, the benefits of foliar feeding have been well documented and increasing efforts have been made to achieve consistent responses.



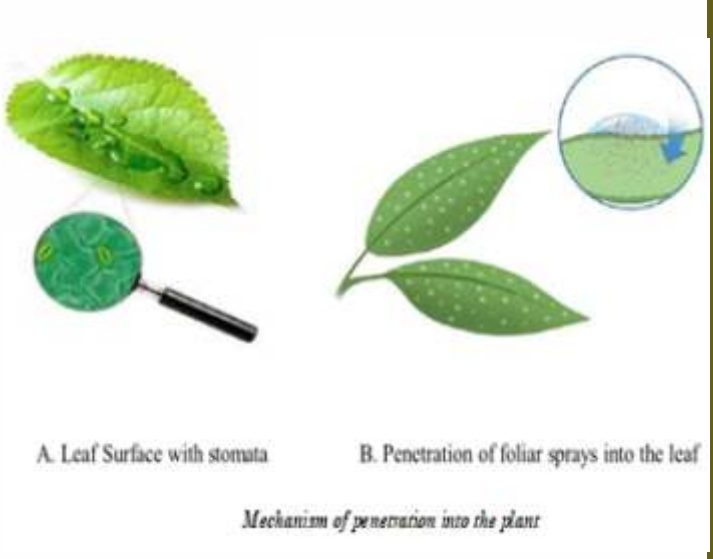
The advantages of foliar feeding in accomplishing the desired crop responses are two-fold.

1. It is a highly efficient and timely method of applying needed and/or critical plant nutrients.
2. It is a means of compensating for soil or environmentally induced nutrient deficiencies.

Mechanism of foliar feeding

Aerial plant surfaces are generally covered by a hydrophobic cuticle and very often possess modified cells such as trichomes or stomata. In order for a foliar fertilizer nutrient to be utilized by the plant for growth, it must first gain entry into the leaf prior to entering the cytoplasm of a cell in the leaf. To achieve this nutrient must effectively penetrate the outer cuticle and the wall of the underlying epidermal cell. Once penetration has occurred, nutrient absorption by the cell is similar to absorption by the roots. Of all the components of the pathway of foliar-applied nutrients, the cuticle offers the greatest resistance.

Aerial plant surfaces and structures are also well adapted to control the passage of water vapour and gases, and to restrict the loss of nutrients, metabolites and water from the plant to the environment under unfavourable conditions. These characteristics of aerial plant surfaces that allow them to protect the plant from environmental stress and to regulate water, gas and nutrient exchange also provide the mechanisms affecting the uptake of foliar applied nutrients.

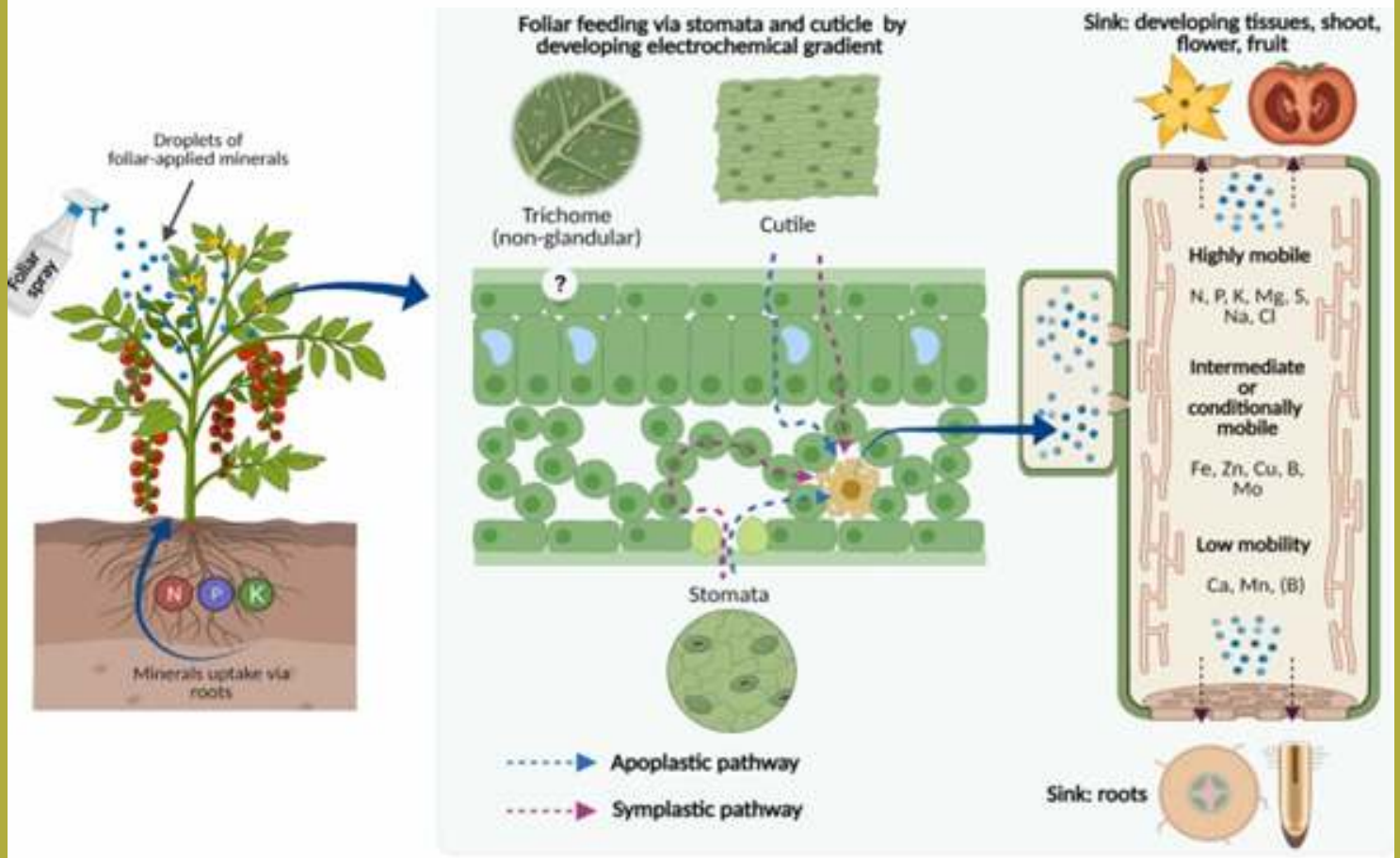


A. Leaf Surface with stomata B. Penetration of foliar sprays into the leaf

Mechanism of penetration into the plant

Stomata and foliar absorption

Stomata permeation and epidermal adsorption and internalization are the main ways in which foliage absorbs metals. Stomata penetration may be the main absorption pathway on leaf surface since absorption through the epidermis is very limited due to its small pore size. It has been reported that particles larger than 20 nm are limited when passing through cell wall pores.



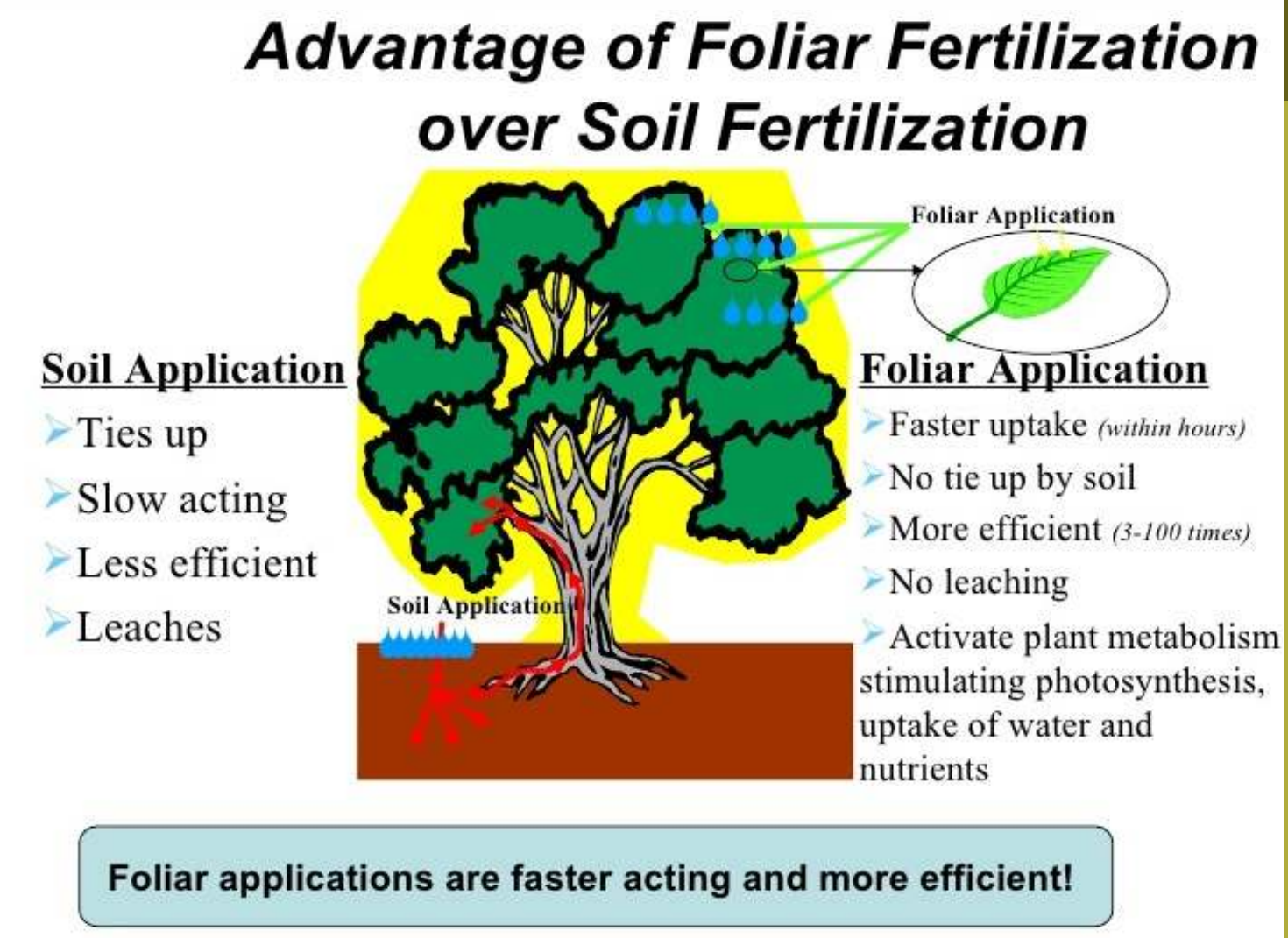
Foliar and secondary micronutrients

Foliar application of these nutrients (secondary: calcium, magnesium and sulfur; micronutrients: zinc, manganese, iron, copper, boron and molybdenum) can be highly effective, but because of difficulties associated with leaf tissue absorption and translocation of some of these nutrients (notably calcium magnesium, iron, boron and molybdenum), choosing the correct fertilizer sources for these nutrients becomes very critical.

Organic chelating agents (including citric and malic acids, amino acids, phenolic acids) have been shown to enhance secondary and micronutrient foliar absorption.

Rates of nutrient absorption into plant tissues-

NUTRIENT	TIME FOR 50% ABSORPTION
Nitrogen (as Urea)	1/2-2 hours
Phosphorous	5-10 days
Potassium	10-24 hours
Calcium	1-2 days
Magnesium	2-5 days
Sulphur	8 days
Zinc	1-2 days
Manganese	1-2 days
Iron	10-20 days
Molybdenum	10-20 days



Effect of the environment on efficacy of foliar-applied nutrients

The two environmental factors that most directly affect the performance of foliar nutrient sprays are *temperature and relative humidity.* Light, humidity and temperature can each affect foliar absorption in several ways:
1) through direct effects on the spray solution prior to leaf absorption,
2) through effects on the leaf developmental processes and
3)by altering photosynthesis, stomatal opening, respiration, leaf expansion and sink activity and consequently changing energy and metabolite availability for the uptake, assimilation and subsequent transport of foliar nutrients.

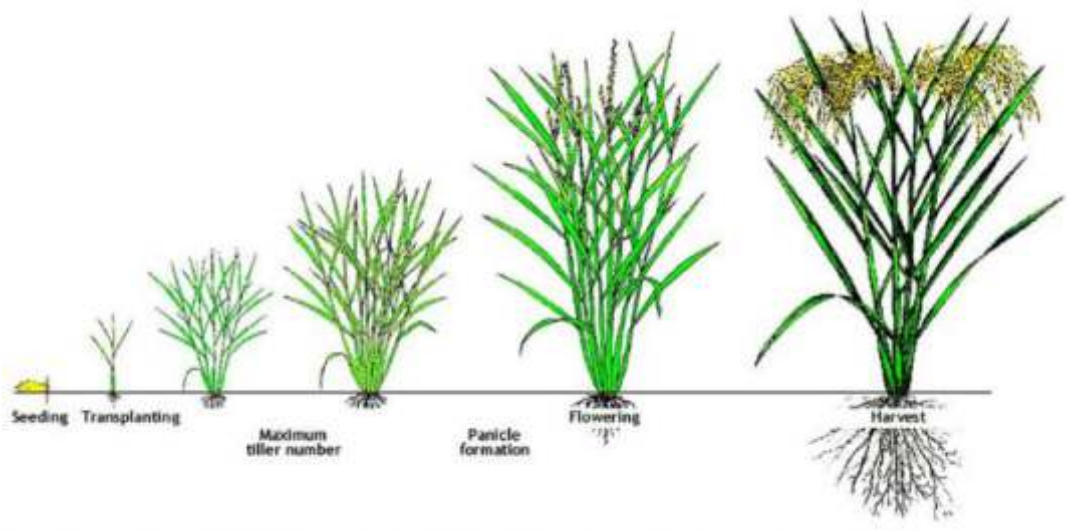
Relative humidity is a major factor influencing foliar uptake of nutrient sprays since it affects the permeability of the plant surface and the physico-chemical responses to applied compounds. At high relative humidity permeability may be increased due to cuticular hydration and the delayed drying of the salts deposited onto the plant surface following the application of a foliar spray.

Temperature will affect various physico-chemical parameters of the foliar spray formulation such as its surface tension, solubility, viscosity or point of deliquescence. In general, increasing temperature range (e.g. from 0°C to 40°C) under any field conditions will increase solubility of the active ingredients and adjuvants, but will decrease viscosity, surface tension and the point of deliquescence. In addition, high temperatures will speed the rate of evaporation from the spray solutions deposited onto the foliage reducing the time until solution dryness occurs when leaf penetration can no longer occur.

Other environmental factors such as may also affect the performance of foliar nutrient sprays. For instance, several Fe(III)-chelates are known to be degraded by exposure to sun-light. On the other hand, the occurrence of precipitation shortly after the application of a foliar spray may rapidly wash-off the treatment. As a consequence, weather forecasts should be taken into consideration prior to foliar spray applications to avoid conditions that can reduce humidity or increase drying speed such as high winds, heavy rain or extremes of temperature at the time of foliar application.

Product Combination Recommended for Foliar Spray in Grains

PRODUCT COMBINATION	STAGES			
	Vegetative	Panicle Initiation	Grain formation	Grain Development
NPK 20-20-20 + Agromin Gold / Agromin Max				
13-0-45 + Hydropro		✓		✓
0-52-34 + Hydropro			✓	
Boron + Chelamin/Chelafer		✓		
Hydropro + HorticaB		✓		
0-52-34 + Chelamin			✓	
0:52:34 + Agripro			✓	
12-61-0 + Agripro		✓		
HD 13-0-45 + Chelacal		✓	✓	
Humiblack + 20-20-20	✓			
Humiblack + 20-20-20 HD	✓			
20-20-20 + Marino / Hydropro	✓			
11.52.00HD+Hydropro Gold		✓		
Marino / Antox / Humiblack + 20:20:20	✓			
Aripotash + Boron 20				✓
Fertisol + Chelamin	✓			
Fertisol + Mobomin			✓	✓
0-0-50 + Hydropro				✓
0-52-34 + Agromin Gold		✓		
0-52-34 HD + Agromin Gold		✓		
Boron + Chelamin		✓	✓	
20-20-20 + Zinc HD	✓			
11-52-00 HD + Agripro		✓		
Mobomin + Chelacal		✓		



Rice crop stages. Image from the International Rice Research Institute (IRRI)-Rice Knowledge Bank.

ARIES- HD Range

Foliar spray fertilizer is a good way to supplement the nutritional needs of your plants. Foliar spray, although not a substitute for healthy soil, can be beneficial when a plant is suffering from certain nutrient deficiencies. Foliar plant spray involves applying fertilizer directly to a plant's leaves as opposed to putting it in the soil.
The HD range of products is highly recommended for foliar feeding. The products are processed to reduce the particle sizes such that it can be easily absorbed through the stomatal openings in the plant.

COMPARISION BETWEEN HD FERTILIZERS AND CONVENTIONAL FERTILIZERS

PROPERTIES	HD FERTILIZERS	CONVENTIONAL FERTILIZERS
Solubility and dispersion of mineral nutrients	**High solubility** as the dosages are reduced due to particle size	Some fertilisers may take time to get completely dissolved
Nutrient uptake efficiency	**Easy uptake** by the stomata due to smaller particle size. Efficient uptake also ensures no residue left on leaf surface.	Uptake can be comparatively slower due to larger particle size
Environmental effects	**Environment friendly** as they do not interact with the soil components and get fixed into insoluble forms.	They may interact with the soil components and get fixed or leached out.
Visible effect	**Better absorption** of nutrients shows **faster visible results**	Visible results may take longer due to delay in uptake
Transport and Storage	**Easy to transport and store** as the dosage are reduced	Large pack sizes makes transport and storage difficult
Cost	**Cost – effective** as they are efficient at $1/4^{th}$ or $1/5^{th}$ quantity of the regular recommended dosages	Comparably more

Fertimax HD 13:00:45

- Fertimax HD 13:00:45 is a high quality source of both potassium and Nitrogen, two essential primary macronutrients for plants.
- Increases yield & quality of final produce.

Contents: w/w

Total Nitrogen (all in Nitrate form)	13.0%
potassium (as K_2O)	45.0%

Dosage:

- Foliar spray @ 200gm per acre

Available Packs:

200 gm X 2 (suggested dosage is 200 gm per acre)

Fertimax HD 11:52:00

- Highly efficient at lower dosages
- Easily absorbed by the plant through stomata
- Provides nutrient to the crops in readily available form
- Have good effects on plant growth & reflects in greater yield

Contents:

Moisture percent by weight, maximum	01.0%
Total nitrogen all in ammoniacal form percent by weight, minimum	11.0%
Available phosphorus as (P_2O_5) percent by weight, minimum	52.0%
Water soluble phosphorus (as P_2O_5) percent by weight, minimum	44.5%
Particle size-Minimum 90 percent of the material shall be retained between 1 mm and 4 mm IS sieve	

Dosage:

- Foliar spray @ 200gm per acre

Available Packs:

200 gm X 2 (suggested dosage is 200 gm per acre

Fertimax HD 00:52:34

- Fertimax HD 00:52:34 is a fully water-soluble fertilizer, and a highly efficient source of Phosphorus & Potassium for plants
- Early in the growing season, Phosphorus and Potassium are needed at high rates for the establishment of root system & flowering too.

Contents: w/w

Phosphorus as P_2O_5	52.0 %
Potassium as K_2O	34.0 %

Dosage:

- Foliar spray @ 200gm per acre

Available Packs:

200 gm X 2 (suggested dosage is 200 gm per acre

Fertimax HD 00:00:50

- Helps in the maturity of the crops
- Improves quality parameters like color, weight, size & shelf life of grain fruits and vegetables
- Contributes to overall development & improves the resistance of the crop

Contents:

Moisture percent by weight, maximum	01.5%
Water soluble potassium (as K_2O) percent by weight, minimum	50.0%
Sulphate Sulphur (as S) percent by weight, minimum	17.5%
Sodium as NaCl percent by weight, maximum	02.0%
Total Chloride (as Cl) percent by weight, maximum	02.5%

Dosage:

- Foliar spray @ 200gm per acre

Available Packs:

200 gm X 2 (suggested dosage is 200 gm per acre)

MacroFert HD 20:20:20

- Imparts green color & helps in photosynthesis
- All the macronutrients are in equal proportion
- Provides nutritional support during the initial phases of the crops

Contents:

Total Nitrogen per cent by weight, minimum	20.00%
Water soluble Phosphate (as P_2O_5)per cent by weight, minimum	20.00%
Water soluble Potash (as K_2O) per cent by weight, minimum	20.00%

Dosage:

- Foliar spray @ 200gm per acre

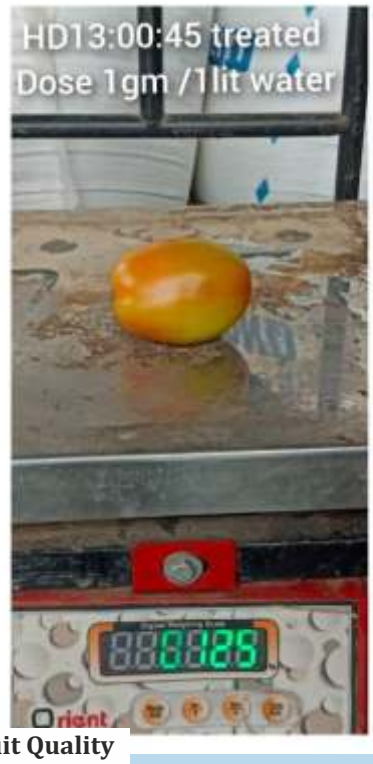
Available Packs:

200 gm X 2 (suggested dosage is 200 gm per acre)

Effect On Fruiting

Effect On Vegetative Growth

HD TRIALS



Effect On Fruit Quality

HD TRIALS SUMMARY

20:20:20HD
Brinjal-1gm/lit
Betel wine-1gm/lit
Marigold-1gm/lit
Tomato-2gm/lit
Chilli-2gm/lit
Tomato-2gm/lit

13:00:45HD
Chilli-1gm/lit
Chilli-2gm/lit
Tomato-1gm/lit

11:52:00 HD
Soybean 1gm/lit
Brinjal 2gm/lit

00:52:34HD
Lady finger-2gm/lit
Lady finger-1gm/lit
Chilli-1gm/lit

00:00:50HD
Chilli-1gm/lit
Pointed guard-1gm/lit

TRIAL- DATA CREDITS
North region- Vishal, Ahishek Mishra

South Region- Dr. Mohan Sunder

Maharashtra- Pratik, B.T.Lad, Shashikant Jadhav, Balu Vaidya

ARIES - Agribot Drone

India is by large an agricultural economy. A report by the Australian Agriculture's research Centre indicates that the demand for agri-foods in India will surge by 136% by 2050. With such a gigantic quantum of food grain to be produced, can existing agricultural techniques meet the requirement?
Realizing the inadequacy of existing farming management techniques, farmers are now getting inclined towards techniques which are more advanced as well as cost-efficient.

In past two decades, Drones are being widely considered as a game changer in areas such as Agriculture. These aerial vehicles have the latest sensors and technology to tack and improve everything from irrigation, to the amount of fertilizers required and as well as the spacing in between crops to achieve the highest yield.
Foliar application of nutrients helps in better utilization and translocation of nutrients. It absorbs 8 to 20 times more nutrient than nutrients applied to the soil. It nourishes plants, improves photosynthetic efficiency, reduces nutrient losses and increases yield.

The conventional method of foliar spraying requires more labour with high input cost. Non-availability of labour and hike of labour cost are the major constraints faced by farmers. In this context, agricultural drones can be used for foliar spraying of nutrients. Drones are known as unmanned aerial vehicle system that is remotely controlled used for spraying of agro-chemicals with an automated pre-programmed GPS system.
The drone gives the best solution as it reduces number of labour and cuts down the production cost in conjunction with increased productivity and faster application rate thus saving time. Foliar application of nutrients using drone needs to be studied thoroughly for its feasibility.

Model Name- Aries Agribot

KEY FEATURES:

Structure	Hexacopter structure, more stable and reliable
Flight Modes	Fully Autonomous, Semi-Autonomous, & Loiter Mode
Return to Launch (RTL)	Empty tank, Battery drained, mission complete
Spraying Capacity	Up to 8 acres/Hour.
Battery fly time	Up to 20 minutes with pay load
Spray in 20 minutes	1 hectare (2.5 acres)
Spraying capacity per day(8 Hours)	30 Acres with multiple battery sets
Flying Range of GCS	Flies up to 5 Km (LOS) using Ground Control Station
Smart battery fails safe	The amount of energy left and return back to home.
Resume Mission	Autonomuos resume mission within 50cm accuracy.
Live video streaming on GCS	2MP FPV Camera mounted on drone
Stability	High Stability during the flight and against the wind speed up to 15 knots

AIRCRAFT:

Aircraft Maximum Takeoff Weight	24.9 KG
Diagonal wheelbase of Frame	1200 mm
Folded size (Lx Bx H)	762mm* 762mm* 483mm
Maximum Speed	8 m/s
Maximum Height	10 Meters
Maximum Flight Time	Up to 18 minutes (with payload)
Maximum Hovering Time	Up to 25 minutes (without payload)
Operating Temprature Range	0^{0}C to 50^{0}C

SPRAY SYSTEM:

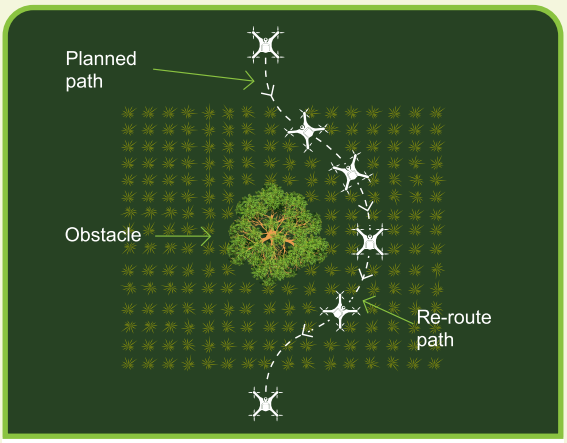
Tank Volume	10 L
Max payload carrying capacity	10 KG
Nozzle Type	High Pressure Flat Fan Spray (Supported nozzles - Hollowcone & high pressure air injected nozzle) : World's top nozzle companies
Quantity	8 m/s
Maximum spray speed per nozzle	10 Meters
Spray Width	Up to 4m.

BATTERY:

Capacity	18,000 mAh / 22,000 mAh
Voltage	44.4 V (12S - 2 batteries connected in series)
Connector	AS150U / XT 90 (for heavy duty applications)
Charging Time	30 ~ 40 minutes (Fast Charger - 1 KW)

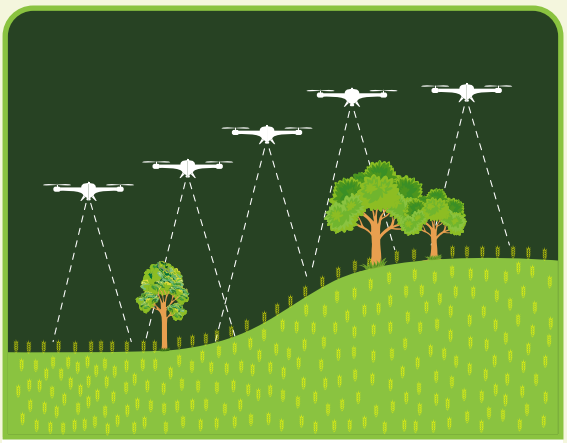


SMART FEATURES



RADAR Based Collision Avoidance

Detects trees, poles, wires etc in Autonomous mode (22 meter) & re-route the path



RADAR Based Terrain Following

Detects trees, poles, wires etc in Autonomous mode (22 meter) &re-route the path

DRONE VS KNAPSACK VS BOOM SPRAY

	Drone	Knapsack Spray	Boom Spray
Spray Time	7 Min / Acre	2 Hours / Acre	30 Min / Acre
Precision & Accuracy of Spray	High	Low	Moderate
Water Consumption	10 L / Acre	120 L-150 L / Acre	120 L-150 L / Acre
Chemical Wastage	◔	◕	◕
Human Exposure	X	✓	✓
Precision Farming	✓	X	X
Dependency on Labour	Low	High	Medium
Crop Adaptability	Adaptable for all crops	Not Adaptable for tall crops & bushy crops	Not Adaptable for tall crops bushy crops, clay soil & Paddy

THE 'CHELAMIN' JOURNEY

1st January 1979, 44 years ago India's first Chelated Zinc & Our Flagship Brand CHELAMIN was Born

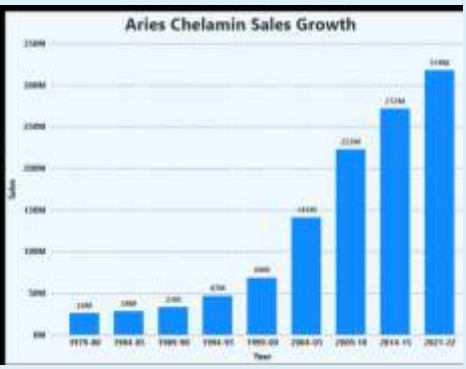
Chelamin's first year of sale

155 CASES

Farmers Started Adopting a Pioneering Idea, way ahead of Its Time.

In 2022 we have sold almost 16,95,573
Packs in 27 states

4 Decades of Consistent Growth



53 years of
- **Trust**
- **Quality**
- **Innovation**

Indias 1st and only chelated zinc with ISI mark

Percentage yield increase in respective crops by using Aries-CHELAMIN

(Recorded by different Agricultural Institutes, India)

Crops	Name of the Institute	% Yield Increase
Paddy	Bangladesh Rice Research Institute	+42.90%
	Crop Research Centre, Pnatnagar	+63.56%
	Director of Agriculture, Barabani, Uttar Pradesh	+23.31%
	Indian Council of Agricultew Research, Orissa	+24.42%
Wheat	Department of Agricultural Testing & Demonstration Centre, Nainital	+31.05%
	Director of Agriculture, Barabani, Uttar Pradesh	+35.28%
	Office of the Agronomist, Dept.of Agriculture, Rajasthan	+97.92%
	Government Farm, Ajmer	+122.83%
Tea	Tea Research Association, Tocklai experiment station, Assam	+21.12%
Onion	Bidhan Chandra Krishi Vishwavidyalaya Farm, Kalyani	+16.10%
	Assam Agricutural University, Dept.of Horticulture	+125.32%
Potato	Bidhan Chandra Krishi Vishwavidyalaya Farm, Kalyani	+48.80%
Cotton	Ramkrishna Mission Ashram, Ranchi	+9.10%

INDIA'S FIRST & ONLY CHELATED ZINC WITH

IS:13921:1994

CM/L-6300180780

Aries Chelamin gets first BIS certification for chelated zinc

The Hindu Bureau

HYDERABAD

ఏరీస్ సంస్థ సీఎండీకి సన్మానం

ఐఎస్ఐ ధ్రువపత్రంతో
ఏరీస్ సంస్థ సీఎండీ రావులో మీద్వందాలు, కంపెనీ ప్రతినిధులు

Aries Chelamin BIS Certification Ceremoney

at Hyderabad

చిలామిన్ జింకుకు ఐఎస్ఐ మార్క్ గుర్తింపు

Aries Agro set to launch drone tech for farmers

Flagship brand Chelamin made at TS facility receives ISI mark

Biz Buzz

6 Feb 2023 11:50 PM IST


JAI KISAAN
INDIA'S FIRST & ONLY CHELATED ZINC
WITH ISI MARK


aries agro limited

Annual Strategy Meeting 2023-2024 at Nagpur