



AUTUS

GROWTH

BIOACTIVE CARBON

REGENERATION

BIOSTIMULANTS



AMAVA

THOUGHT LEADERS

Agriculture Sector

Biostimulants

- **Autus Fertiliser** is the largest supplier of humic substances to the agriculture sector in Africa, serving established customers.
- **Bioconnect** provides specialised humate offerings to the animal health and nutrition sector, via coatings, drinking water additives, feed additives and beddings.

Mining Sector

Mining & Benefication

- **Amava Alloys** utilizes exothermic reactions for smelting niche alloys for the global market.
- **Amava Metals** via its joint venture with Jubilee Metals (AIM and AltX listed company), processes chrome and Platinum Group Metals (PGMs).
- **A4G Holdings** owns and operates several subsidiaries and mines producing chrome and vanadium bearing material.
- **Mineral Zone** supplies metals, minerals, ore, and services to the metallurgical and mining sectors in South Africa and internationally.

Construction Sector

Infrastructure Development

- **Aqua Plan** is a market leader in water treatment engineering, providing turn-key solutions for over 20 years.
- **Bendolite Construction** specialises in construction projects.

IT Sector

Information Technology

- **Alviva** is a leading provider of information and communication technology products and services in Africa.
- **HR Focus** offers a blend of locally developed and international human capital management solutions.



“Investing in people
is as crucial
as investing in
industries.”

PUTTING WORDS INTO ACTION

Our mission is to unlock a new paradigm in Agriculture designed to -

- Reduce and Reverse the impact of climate change
- Promote Soil Health through regeneration and sustainability for human health
- Deliver effective and practical solutions to the Agriculture industry

Biostimulants are defined as “a substance or micro-organism that, when applied to seeds, plants, or on the rhizosphere, stimulates natural processes to enhance or benefit nutrient uptake, nutrient use efficiency, tolerance to abiotic stress, or crop quality and yield.” (2018 USA Farm Bill)

BIOSTIMULANTS - the future of soil health in Agriculture

Did you know? Biostimulants are broadly categorised as -



Seaweed Extracts



Amino Acids



Organic Compounds



Biologicals e.g. fungi, bacteria



Inorganic Compounds



We produce a range of Organic Compound Humates and Fulvates to improve soil, plant, and human health

The **Biostimulant industry** was valued at US\$ 3.4 billion in 2023, and projected to reach US\$4.5 billion in value and 446 000 metric tons in volume by 2025 and likely to grow very strongly into the future as **more environmentally friendly and greener technologies** become favoured.



WHAT ARE HUMATES?

Humates are the most chemically active compounds in soils and are the major component of soil organic matter. Humates are formed in nature through the humification of plant matter over a long period of time.

There are **three major components of humates**: Humic Acid (soluble above pH of 4), Fulvic Acid (soluble at any pH), Humin (insoluble).

Presence of **multiple functional groups** is the key to quality of manufactured humates.

Global research papers in the public domain and current ongoing research concludes clearly that **humates can also be very beneficial in the animal health and nutrition.**

The key areas of humate research focuses on Production Parameters, Mucosal Protection, Detoxifying Agents and NPN (non protein nitrogen) stabilisation.

Including humates in animal nutrition is now believed to improve **gut health, mineral uptake**, boost the **immune system**, and provide **anti-inflammatory properties.**

Autus is currently embarking on an animal health research program.

[Read more on autusgrowth.com](https://autusgrowth.com) →



FUNCTIONAL GROUPS

Autus Growth contains 6 different functional groups. The slow brewing design of the Autus production process is a key to building an activated humate product containing a good mix of these functional groups.

CARBOXYL



ALDEHYDE



KETONE



PHENOL



QUINONE



PROTEINS/
PEPTIDES



FOR LARGE SCALE SUCCESS

The Autus Product Range of Humic and Fulvic Acids are available in a wide range that can accommodate agricultural operations at any scale.

[Visit our website for full product brochures](https://autusgrowth.com) →





KYNOCH ETG	INTELIGRO/ WINFIELD UNITED
METSON	MULTIGREEN
D FERT	LTS - LOWFELD TRADING SOLUTIONS
INTROLAB	NUTRIGRUN
LIMPOPO BIOFERTILITY	VS AGRI/ NUTRIBIO
WINFERT	Ongoing R&D with customers



Benefits of using Humates



Improved plant health and crop yields



Better seed germination



Increased root vitality



Improved nutrient uptake



Stimulates beneficial microbial activity



Increased fertiliser uptake, lower leaching



Increased chlorophyll synthesis

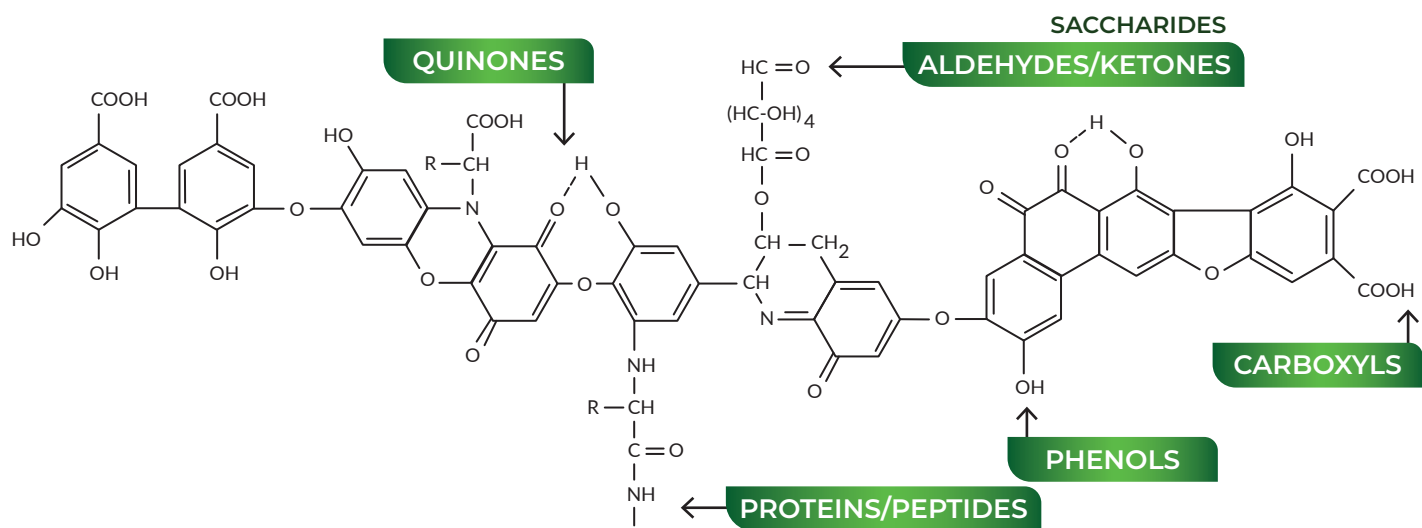


Adds organic matter to organically deficient soil



AUTUS
GROWTH

COMPLEX STRUCTURES OF HUMATES



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INCORPORATING HUMATES

INTO AGRICULTURAL PROGRAMMES:

-  Coating of Urea and MAP
-  Liquid fertilisers e.g. with UAN
-  Foliar Spray
-  Direct application to soil via fertigation
-  Coating / application with granulated lime, gypsum and other granular products
-  Seed dressing
-  Crop chemicals
-  Animal Nutrition



Application Case Studies available on our website →



AUTUS
GROWTH

PRODUCT CATALOGUE



AUTUS BLACK

Registration Number M419, Act No 36 of 1947

FERTILIZER GROUP 3



A liquid fertiliser containing humic and fulvic acid.
Use in agriculture as a fertiliser.
Read the label before use.
Use only as directed.

AUTUS BLACK is a proprietary humate with a wide range of applications.

Suitable for Maize, Sweetcorn, Sorghum, Millet, Barley, Oats, Rye, Dry Bean, Green Bean, Soybean, Lentils, Lupins, Clover, Alfalfa, and Peanut.

-  Improved plant health and crop yields
-  Better seed germination
-  Increased root vitality
-  Improved nutrient uptake
-  Stimulates beneficial microbial activity
-  Increased fertiliser uptake, lower leaching
-  Increased chlorophyll synthesis
-  Adds organic matter to organically deficient soil

Registration Holder and Supplier
Autus Fertilizer (PTY) Ltd
Registration Nr | 2011/130411/07

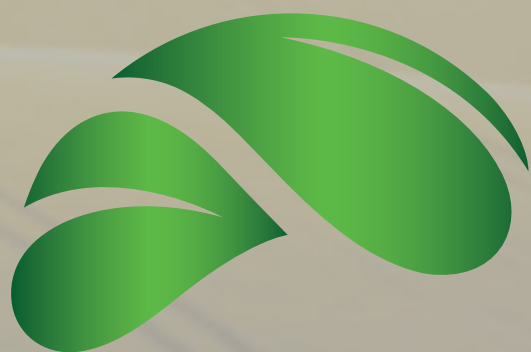
TOTAL HUMATES	15.0% (by mass)
HUMIC ACID	12.0% (by mass)
FULVIC ACID	3.0% (by mass)
ORIGIN	extract from coal via oxidation
COUNTRY OF ORIGIN	South Africa
POTASSIUM (K)	3.0%
pH	11.0 - 12.0
SPECIFIC GRAVITY	1.08 - 1.10 g/cm ³
APPEARANCE	Dark brown to black liquid



AUTUS GROWTH

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t: +27 11 234 8153
www.autusgrowth.co.za

Emergency Contact Numbers: 082 506 7818



AUTUS YELLOW

Registration Number M427, Act No 36 of 1947

FERTILIZER GROUP 3



A liquid fertiliser containing humic and fulvic acid.
Use in agriculture as a fertiliser.
Read the label before use.
Use only as directed.

AUTUS YELLOW is a proprietary humate with a wide range of applications.

Suitable for Wheat, Barley, Rye, Oats, Cabbage, Lettuce, Broccoli, Brussel Sprout, Spinach. Different application rates are recommended.



Improved plant health and crop yields



Better seed germination



Increased root vitality



Improved nutrient uptake



Stimulates beneficial microbial activity



Increased fertiliser uptake, lower leaching



Increased chlorophyll synthesis



Adds organic matter to organically deficient soil

FULVIC ACID	10.0% (by mass)
ORIGIN	extract from coal via oxidation
COUNTRY OF ORIGIN	South Africa
pH	1.0 - 2.5
SPECIFIC GRAVITY	1.01 - 1.05 g/cm ³

APPEARANCE	Light brown to yellow liquid
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AUTUS GOLD

Registration Number M417, Act No 36 of 1947

FERTILIZER GROUP 3



A liquid fertiliser containing humic and fulvic acid.
Use in agriculture as a fertiliser.
Read the label before use.
Use only as directed.

AUTUS GOLD is a proprietary humate with a wide range of applications.

Suitable for Dry Bean, Green Bean, Soybean, Lentils, Lupins, Clover, Alfalfa, Peanut



Improved plant health and crop yields



Better seed germination



Increased root vitality



Improved nutrient uptake



Stimulates beneficial microbial activity



Increased fertiliser uptake, lower leaching



Increased chlorophyll synthesis



Adds organic matter to organically deficient soil

TOTAL HUMATES	18.0% (by mass)
HUMIC ACID	15.0% (by mass)
FULVIC ACID	3.0% (by mass)
ORIGIN	extract from coal via oxidation
COUNTRY OF ORIGIN	South Africa
TOTAL NITROGEN (N)	0.5%
POTASSIUM (K)	4.5%
pH	9.0 - 11.0
SPECIFIC GRAVITY	1.08 - 1.10 g/cm ³

APPEARANCE	Dark brown to black liquid
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AUTUS GROWTH

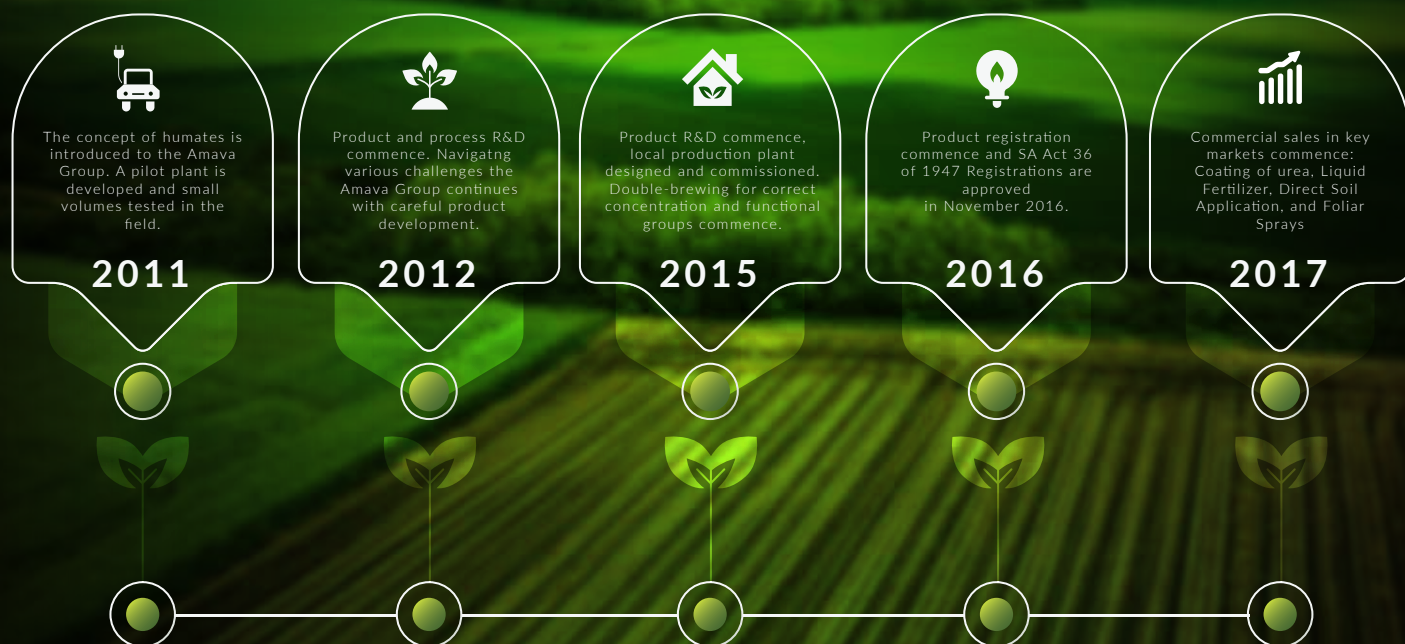
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THE AUTUS GROWTH DEVELOPMENT TIMELINE



CHALLENGES FACED IN THE R&D PROCESS

- Credibility (local SA production of these products were not regarded as possible).
- Limited recognized laboratories equipped or skilled to test humates (SA and globally).
- Skepticism around high quality locally manufactured product.
- QC variations beyond norms.
- Poor quality snake oils offered in the market. Poor results as high costs led to low application rates.

The production process currently used by Autus can best be described as slow brewing.

A carefully selected source of coal provides the solid foundation on which this very deliberate process is built. This coal is slowly oxidized to build the humic and fulvic acid in the form of oxidized humate and oxidized fulvate.

THE AUTUS PRODUCTION PROCESS

CONSISTENCY

REPEATABILITY

FUNCTIONAL QUALITY

Diligent care is taken during the slow brewing stage to ensure that brewing temperatures are well controlled to prevent a reduction in quality of these temperature sensitive organic acids and functional groups. The critical temperature of 80C cannot be exceeded. The production team follows this very disciplined process for every batch produced – a high quality product with excellent consistency is the result.

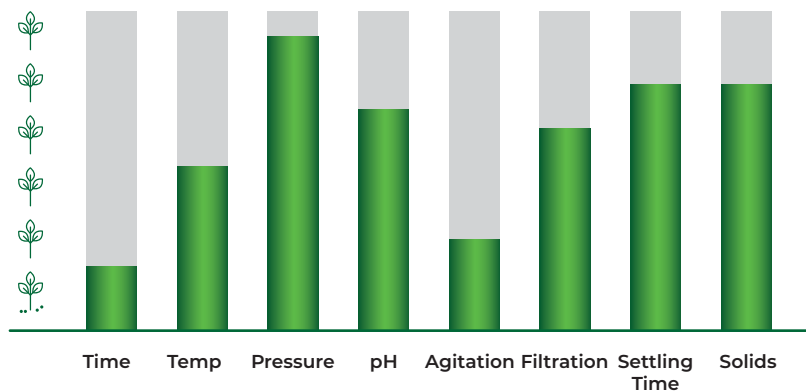


Key process and control parameters during the production process:

- Batch preparation of the coal.
- Oxidative Polymerization, which is the rebuilding of the humic and fulvic acid molecules, using an oxidizing agent.
- Extraction of fulvic acid (at a low pH) creating Autus Yellow.
- Increasing the pH to solubilize the humic acid, which is then extracted yielding Autus Black.
- Autus Gold is produced without removal of the fulvic acid – hence the richer blend of both fulvic and humic acid.

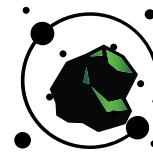


A fundamental understanding of how all of the above process variables impact on the quality and functionality of the Autus products was developed through process R&D over a number of years.



Natural
State

AUTUS ENGINEERED PROCESS



Active
State

- Batch preparation of the coal.
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GLOBAL PERSPECTIVES ON HUMATES IN AGRICULTURE



1
kg

1 kg of humic acid concentrate can contain the equivalent humic value of 30 tons of organic manure.

2X

"Using optimum amounts of humic materials in the soil, plants can grow twice as fast". Geoffrey Davies, Professor of Chemistry at North Eastern University USA.

Applying humic acids to soil with fertiliser significantly increases the amount of water soluble phosphate available and increases P uptake and yield by 25%. (Wang et al., 1995).

Humic acids significantly increase plant enzyme activity.



Humic acids aid in seed germination making it an ideal seedbed fertiliser.



Humic acids help convert key nutrients into plant available nutrients.



22
%

Dry matter yield of roots and shoots increased by 22% in the presence of humic acids (Kausar et al., 1985).

Dan Olk and Dana Dinnes (2016) reported in a USDA funded trial that plant yield and root growth was increased on all crops using humic acid products over a 3 year period.

Humic acids act as an energy source for soil micro – organisms.

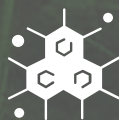


A NEW CHEMISTRY FOR

climate remediation?



The carbon content of humic matter significantly exceeds all carbon contained in the biosphere and the atmosphere. Considering climate solutions with only biomass (e.g., reforestation) leaves out the biggest factor of all: **the soil.**



A very small increase of the humic matter concentration in the soil, kickstarted by using artificial humates, has the potential to cure the complete climate problem while establishing improved agricultural fertility and food safety at the same time.



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