

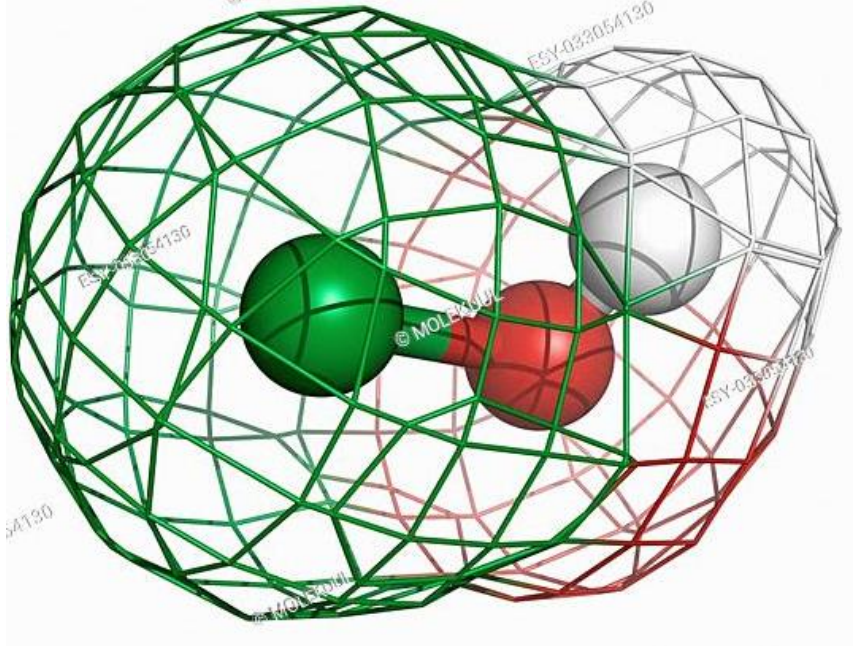
AGRICULTURAL FOCUS

atm plus



Eco Utility Systems

Hypochlorous Acid (HOCl)



also known as

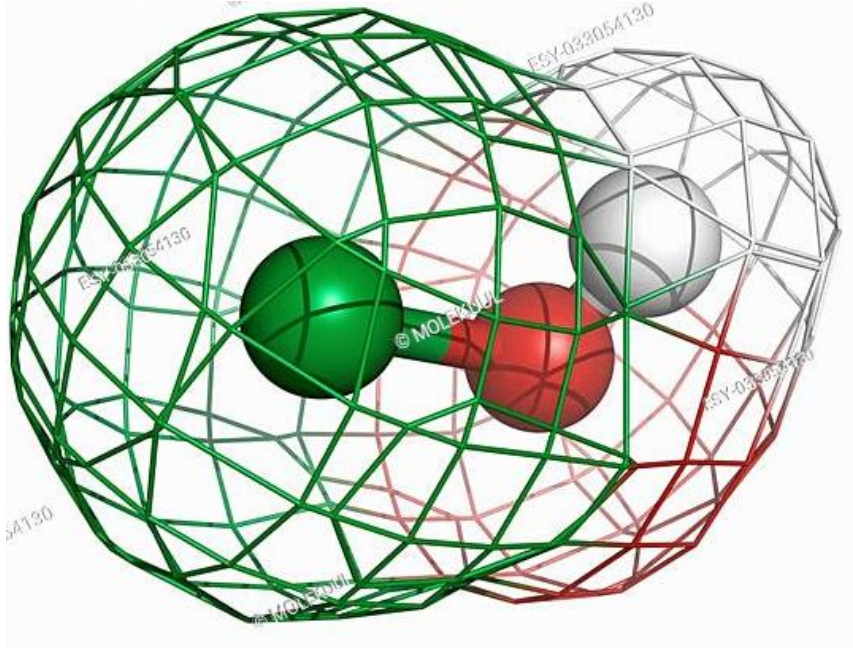
- electrolyzed water / electrolyzed reduced water
(ERW, EW)
- electrochemically activated water
(ECA)
- anolyte
(AEW, NEW, SAEW)

atm plus has a broad spectrum anti-microbial use



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Hypochlorous Acid (HOCl)



atm plus

most effective disinfectant in the chlorine family

- No polar charge
- Low molecular weight

PERFECT structure to penetrate CELL WALLS

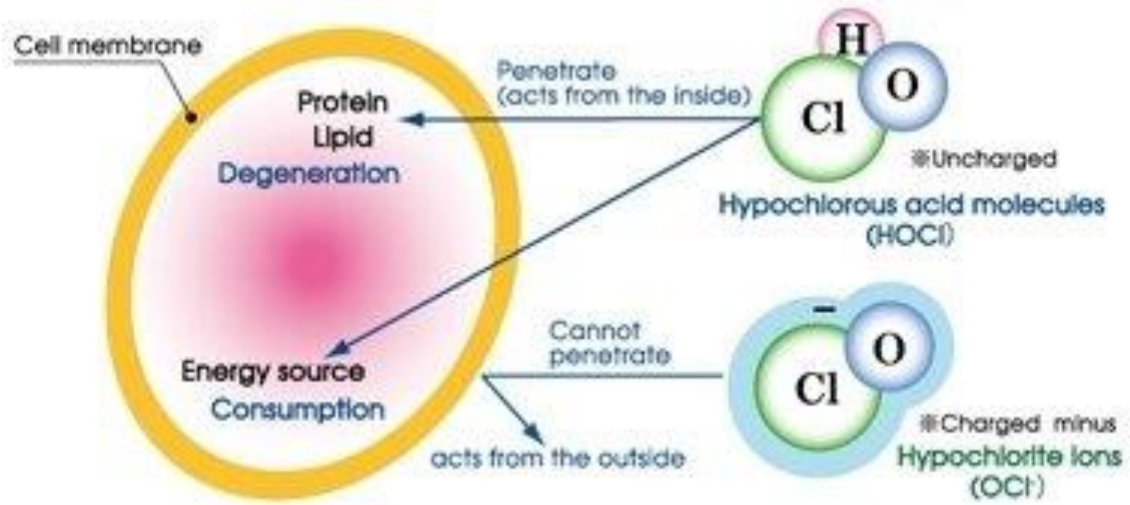
- HOCl is a WEAK ACID
- At a pH of 4 – 8.5 most available Chlorine is HOCl

NO RESIDUE after dissolving in water

- Solution stays active for
7 – 10 DAYS



Hypochlorous Acid (HOCl)



hypochlorousacid.com/about

- HOCl diffuse through cell membrane
- Without a polar charge it is not repelled
- OCl⁻ (BLEACH) is unable to penetrate cell membrane due to **negative charge**
- Bleach can only clean on the EXTERIOR
- HOCl acts from INSIDE

atm plus most effective disinfectant in the chlorine family

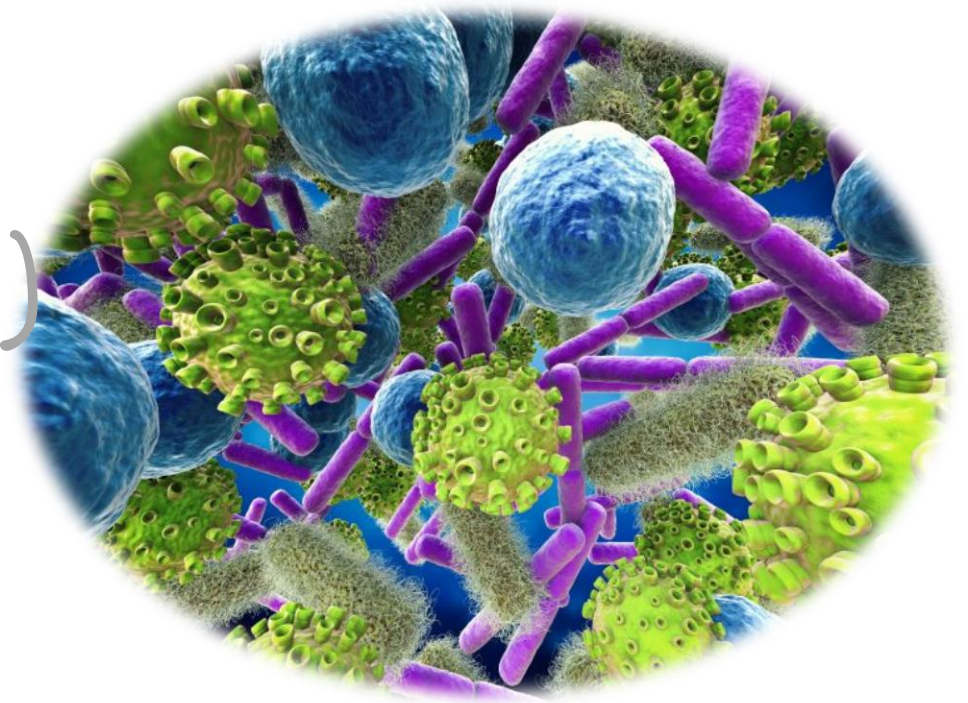


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NATURE of Hypochlorous Acid (HOCl)

- Natural component of our own immune systems
- Fights against infection
- Reduces inflammation
- Bio-degradable in the environment

atm plus organic, lethal, cost effective



**“Hypochlorous acid is
LETHAL to every pathogen
it has been tested against
but completely HARMLESS
to humans and other
mammals.”**



phagocytosis

[fag-uh-sahy-toh-sis]

noun

Physiology. the ingestion of a smaller cell or cell fragment, a microorganism, or foreign particles by means of the local infolding of a cell's membrane and the protrusion of its cytoplasm around the fold until the material has been surrounded and engulfed by closure of the membrane and formation of a vacuole: characteristic of amoebas and some types of white blood cells.



- Neutrophils (WHITE BLOOD CELLS) seek out pathogens (VIRUSES AND BACTERIA) and destroy them using HOCl
- HOCl causes necrosis (RUPTURING OF THE CELL) and destroys the cell contents
- While disinfecting, HOCl is {OXIDISED} and consumed
- The only by-product is slightly salty water



EFFECTIVENESS OF HOCl

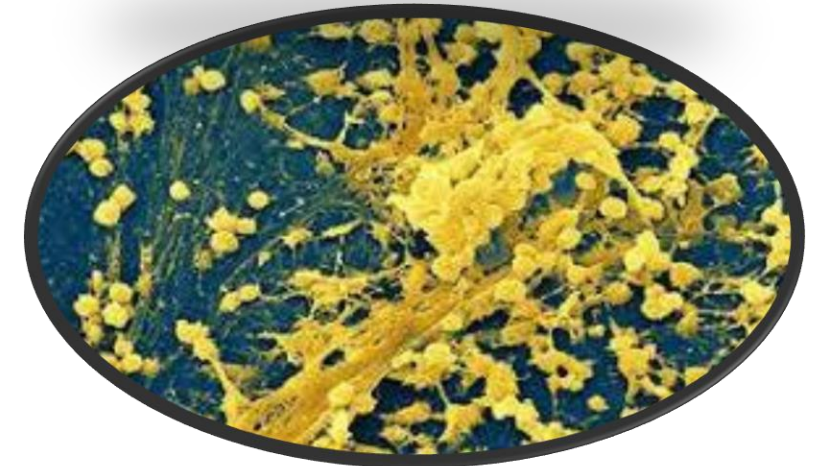
atm plus

disinfects and destroys:

- ✓ VIRUSES
- ✓ BACTERIA
- ✓ MOULDS
- ✓ FUNGI
- ✓ SPORES
- ✓ BIOFILMS

defends against:

- ✓ INFECTION
- ✓ RESISTANCE/TOLERANCE
- ✓ PATHOGENS BENEATH BIOFILMS
- ✓ FERMENTATION IN STORAGE



atm plus

80 – 100 times more effective than bleach



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PROVEN EFFECTIVE AGAINST SARS-CoV-2

The latest peer approved scientific papers conclusively show that **HOCL effectively kills the SARS-Covid 2 virus**. The papers also compare HOCL to other disinfectants showing its comparative performance with other disinfectants such as bleach.

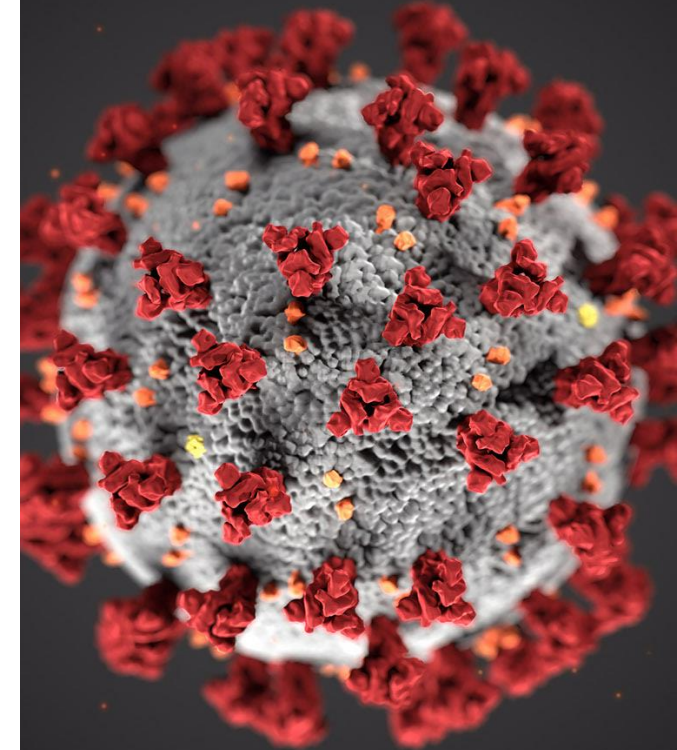
Chan K-H, Sridhar S, Zhang RR, Chu H, Fung AY-F,
Chan G, Chan JF-W,
To KK-W, Hung IF-N, Cheng VC-C, Yuen K-Y,
Factors affecting stability and infectivity of SARS-
CoV-2,
Journal of Hospital Infection,
<https://doi.org/10.1016/j.jhin.2020.07.009>.

‘The surgeon needs to have an **inexpensive, available, nontoxic, and practical** disinfectant that is effective in sanitizing against the COVID-19 (Coronavirus Disease 2019) virus.’

‘The results indicate that this material can be used with a **high predictability** for disinfecting against the COVID-19 (Coronavirus Disease 2019) virus.’

Michael S. Block, Brian G. Rowan,
Hypochlorous Acid: A Review,
J Oral Maxillofac Surg,
[10.1016/j.joms.2020.06.029](https://doi.org/10.1016/j.joms.2020.06.029)

atm plus 80 – 100 times more effective than bleach



Eco Utility Systems

atm plus

the effervescent tablet



HOCl concentrated into a 6 gram dissolvable tablet

1 tablet = 12.5l of disinfectant

consistent solution at 100PPM every time

active for 7 – 10 DAYS after dissolving
then returns to pure water

easy STORAGE

low TRANSPORT COSTS

1 year SHELF LIFE in tablet form

atm plus

effective at 25PPM to 200PPM depending on use



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USES of atm plus

to name a few...

- DISINFECTING any and all surfaces
 - fresh fruit / veg preparation
 - hydroponics / irrigation
- AGRICULTURAL
 - pesticidal treatment
- LIVESTOCK
 - control / reduction of disease
 - improves digestion / feed conversion ratios
 - increase livestock yields
- MEDICINAL / DENTISTRY
 - mouthwash / wound care
 - waterline disinfection
 - scrubbing in

atm plus 100% organic, bio-degradable, MRL FREE



USES of atm plus

to name a few...

- HORTICULTURE
 - increase shelf life
 - reduces rotting / infection
- WATER TREATMENT
- FACILITIES
 - shopping centres
 - accommodation
 - office buildings
- TRANSPORT
 - airlines / airports
 - public transport
 - shipping / cruiseliners

atm plus safer exposure to humans than regular disinfectant



atm plus:

GENERAL USE

atm plus CAN BE USED TO CLEAN AND SANITIZE:



- Floors and walls
- Preparation areas
- Workers' hands, clothes and shoes
- Food contact surfaces



'As a Disinfectant/Sterilant, HOCl has greater killing power than Chlorine, Chlorinated Water, Chlorine Dioxide, Sodium Hypochlorite, Hydrogen Peroxide and Ozone'

atm plus

gentle, effective, safe – NO PPE NECESSARY



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atm plus: AGRICULTURE



SOIL, SEED AND SEEDLING PREPARATION

SOIL

- Bedding plants and seeding place disinfection
- Soil remediation and pH control

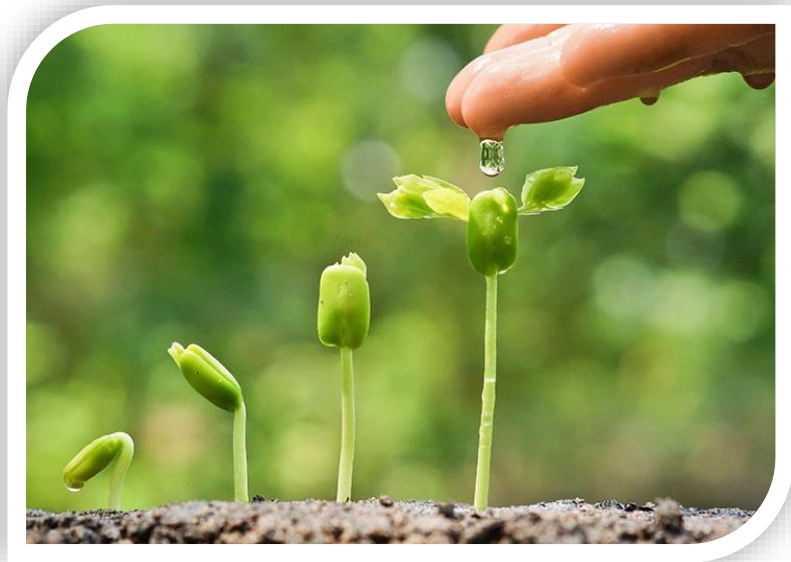
'HOCl is becoming established as the clean, green, safe, effective biocide of the future'

atm plus recommended use at 100 – 200PPM



Eco Utility Systems

atm plus: AGRICULTURE



SOIL, SEED AND SEEDLING PREPARATION

SEED AND SEEDLINGS

- Seed disinfection to eradicate fungal spores
- Seed disinfestation to destroy surface borne organisms
- Fogging to disinfect seedlings
- Root wash to eliminate fungi and disease

'HOCl is proven to improve and promote germination'

atm plus respectful of the environment, creating growing conditions in perfect hygiene



Eco Utility Systems

atm plus: AGRICULTURE

In JAPAN a study was conducted:

- Rice seed was treated with HOCl solution
- Seedlings was cultivated and transplanted
- Treated seedlings were planted more widely spaced

After 40 days:

TREATED seedlings

no other chemicals used

- no damage to disinfected seeds
- larger number of roots
- more vigorous growth
- well-ventilated, less spread of disease and insects
- considered appropriate for organic farming

UNTREATED seedlings

regular practice chemicals used

- damage to disinfected seeds could be observed
- less roots
- standard growth
- agrochemicals for weed and pest control
- NOT appropriate for organic farming

<https://www.youtube.com/watch?v=dRumxB1pO4M>

atm plus recommended use at 200PPM



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atm plus: AGRICULTURE



Watermelon seedlings



Grafted watermelon seedlings



Control

EW

TREATED seedlings

- no damage to disinfected seeds
- larger number of roots

'Plants naturally produce hydrogen peroxide on their own, which then converts into hypochlorous acid; we are effectively amplifying a natural process through biomimicry with a safer, cleaner product'

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Continuous studies in EGYPT has amazing results:

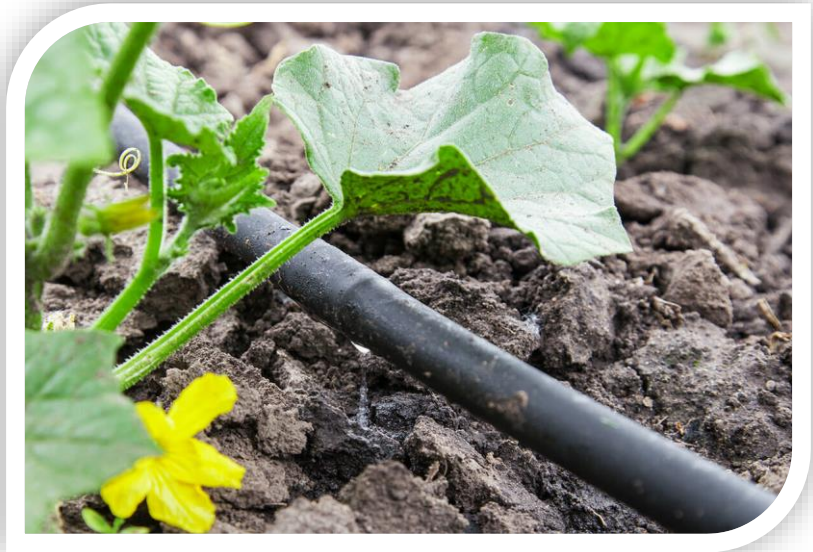


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IRRIGATION AND FERTIGATION SYSTEMS

DRIP / OVERHEAD / HYDROPONIC SYSTEMS

- Purification of irrigation systems – DESTRUCTION OF BIOFILM BUILDUP AND ALGAE IN PIPES
- Pathogens do not develop a resistance to HOCl – BIOFILM AND ALGAE DO NOT REOCCUR
- Prevention of clogged irrigation nozzles
- Removes LIME SCALE and MINERAL DEPOSITS

'Biofilm eats the internal surfaces of pipe work & system components causing Microbial Induced Corrosion (MIC), removing Biofilm prevents MIC, therefore premature pipe work failure is prevented.'

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DESTRUCTION OF BIOFILM AND SCALE IN IRRIGATION SYSTEMS



atm plus recommended use at 100 - 200PPM



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atm plus:

AGRICULTURE



PESTICIDE / FUNGICIDE USAGE

EFFECTIVE AGAINST:

Not limited to..

Moulds

Botrytis (grapy mould)
Powdery mildew

Bacteria

Campylobacter jejuni
Escherichia coli including (O157)
Enterococcus species
Helicobacter pylori
Listeria
Legionella pneumophila
Pseudomonas aeruginosa
Staphylococcus aureus (including MRSA)
Samonella cholerasuis
Mycobacteria tuberculosis
Mycobacterium avium intracellulare
Acineobacter baumannii

atm plus

sans 51276 (BACTERIA) sans 51650 (FUNGUS) sans 51650 (SPORES) en 1276 (VIRUS)



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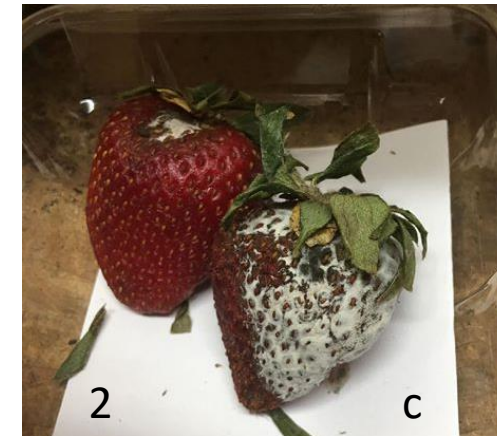
TREATMENT AGAINST MOULDS AND FUNGI

Spraying of Strawberries post harvest

Strawberries were treated by spraying HOCl {atm plus} on (1) and (2) and not spraying on Control (c)



Strawberries 4 days after application



Strawberries 14 days after application

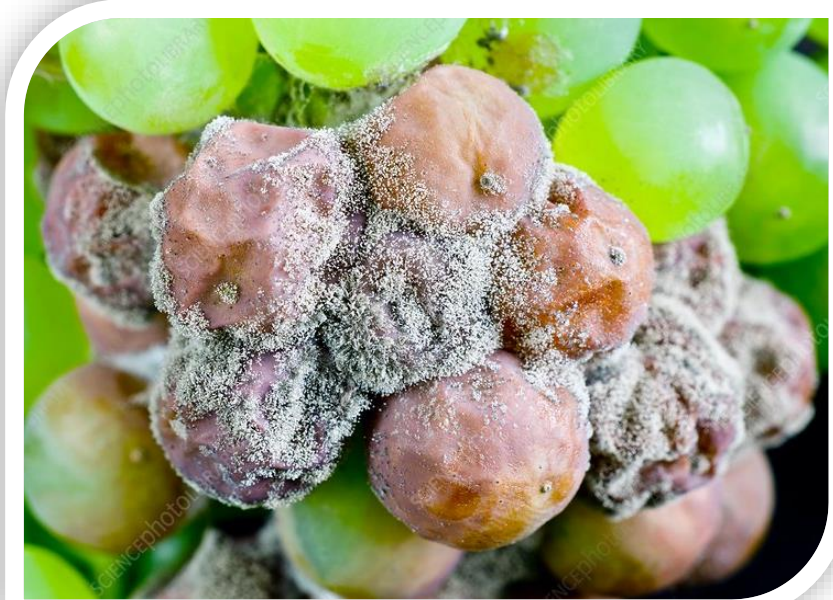
Conclusion: fresh produce treated with HOCl stay **FREE OF MOULDS** for longer

atm plus no DISCOLORATION after use on fresh produce



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atm plus: AGRICULTURE



PESTICIDE / FUNGICIDE USAGE

APPLICATION:

- Spraying
- Misting
- Dripping
- Drenching

'Biofilm eats the internal surfaces of pipe work & system components causing Microbial Induced Corrosion (MIC), removing Biofilm prevents MIC, therefore premature pipe work failure is prevented.'

atm plus safe to use around bees and other animals



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atm plus: AGRICULTURE

PESTICIDE / FUNGICIDE USAGE

RESULTS:

- Eradication of pathogenic **fungi**
- Eradication of **bacteria** and **viruses**
- Eradication of **parasite eggs**
- Eradication of **mites** and **red spider**
- Increasing the germination rate
- Increased **yields** per hectare
- Increase the number of **flowers**
- Increase the number of **fruits**
- Stimulation of plant **growth**
- Flow controlled irrigation (less water, more results)
- Increase in the number of seed per ornamentals
- Increased duration of the conservation of fodder
- Increased **shelf life** for vegetables, fruits and cut flowers
- Reducing the use of **pesticides**
- Reduced production **costs**
- Increased food self-sufficiency
- Best performance: higher incomes for farmers
- No adverse impact to the **environment**

'Biofilm eats the internal surfaces of pipe work & system components causing Microbial Induced Corrosion (MIC), removing Biofilm prevents MIC, therefore premature pipe work failure is prevented.'

atm plus respectful of the environment, creating growing conditions in perfect hygiene



Eco Utility Systems

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POST HARVEST

- wash and rinse fruit and vegetables
– NO RESIDUE ON PRODUCT
- disinfect and clean equipment
– PREP AREAS, SORTING MACHINES, WASH BAYS
– PPE, BOOTS, TOOLS
- disinfect BINS, CRATES and STORAGE AREAS



atm plus spray, wipe and dry: NO RINSE REQUIRED



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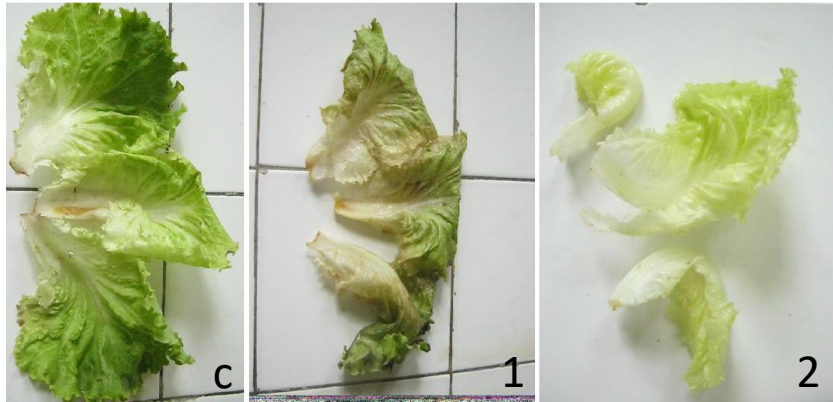
atm plus:

AGRICULTURE

POST HARVEST

Disinfection of leafy vegetables with activated waters

Lettuce was treated with tap water (c) anolyte without salts (1) and HOCl {atm plus} (2) for 15 minutes



Lettuce after 24 hours of application



Lettuce after 1 week of application

Journal of Advances in Agriculture Vol 9 (2018) ISSN: 2349-0837

Conclusion: vegetables treated with HOCl stay **FRESH** (free of bacterial decay) for longer

atm plus

use at max 60PPM on fresh produce



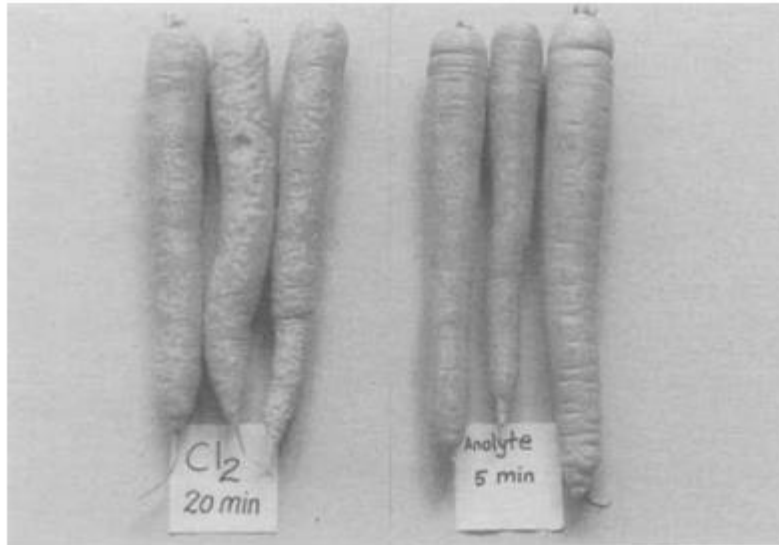
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POST HARVEST

Anolyte vs chlorinated water as disinfecting dipping treatment

Carrots were dipped in HOCl {atm plus} (1) and Chlorinated water (2) for 5 or 20 minutes respectively



Results after 16 days

Pears, apples, peaches and strawberries were dipped in HOCl {atm plus} and Chlorinated water



Results after 25 days

atm plus No chlorine-induced phytotoxicity are observed on treated fruit



atm plus: AGRICULTURE



COMMENTS:

USE OF atm plus COULD:

- Increase shelf life of fresh produce with 7-10 days
- Increase shelf life of cut flowers with 7 – 10 days
- Treating equipment and tools reduces spread of pathogens

atm plus one product to replace many



Eco Utility Systems