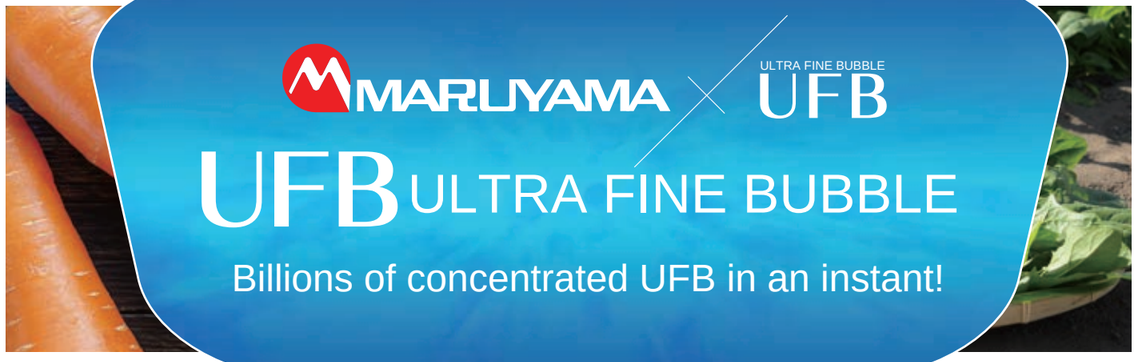


MARUYAMA × ULTRA FINE BUBBLE UFB

UFB ULTRA FINE BUBBLE

Billions of concentrated UFB in an instant!

Grow Delicious and Bigger Crops with UFB

Ultra Fine Bubble (UFB) is an invisible small bubble.
Japan is the leading the world with this revolutionary technology.
Together with this technology,
MARUYAMA has developed its own ‘UFB’ specialized pump.

SUSTAINABLE DEVELOPMENT GOALS

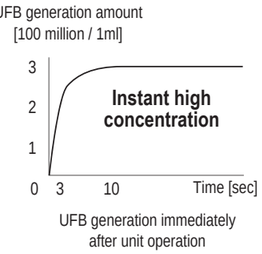
Sustainable Development Goals is global common agreement by 2030.

MARUYAMA MFG. CO., INC.
http://www.maruyama.co.jp/english/index.html

UFB ULTRA PUMP

Instantly increases the concentration of UFB

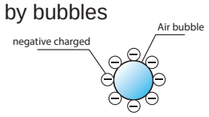
The UFB Ultra Pump instantly generates high-concentration UFB, and can be used without the need for long-time circulation operation as with conventional UFB generators.



The UFB Ultra Pump can generate hundreds of millions of ultra-high concentrations of UFB in just 1 cc of water.

UFB Features

- High Cleaning effect performance
- Physically destroys bacteria and viruses
- Penetrates even the smallest and deepest cracks
- Bio activation of living things
- Various gases contained by bubbles



「Billions of units」 of high concentration UFB

Ultra fine bubble will revolutionize agriculture !

Increase crop yield with only the power of water and air.

※The yield increases depending on the cultivar and cultivation environment.

▶ Increase crop yield with only the power of water and air.

Test method	The number of harvested containers was measured in a test zones in which liquid fertilizer using ultra-fine bubble water was irrigated and a conventional zones in which conventional liquid fertilizer was irrigated. Each time, 1,000 liters of liquid fertilizer per 10a is irrigated, and the component is N5-P3-K6, 500-fold dilution basis, and is performed once every two weeks.
Test location	Farm in Kumamoto (30a)
Test period	From December 9, 2018 to mid-June 2019
Other	The container is 12-13 kg with one harvest, and in this test, Calculate with 12.5 kg container.

	Test zone (10a)		Practice area (average of 20a)		Harvest date
Harvest date	Harvest date	Weight(Kg)	Number of containers	Weight(Kg)	Test area / conventional area (%)
DEC 9th	19.3	241	8	100	241%
DEC 21st	6.6	83	6.8	85	97%
JAN 2nd	32.6	408	16.6	208	196%
JAN 13th	24	300	16.6	208	145%
FEB 27th	8.6	108	6.6	83	130%
MAR 11th	6	75	4.6	58	130%
MAR 23th	4.6	58	2.6	33	177%
MAR 31th	3	38	3.3	41	91%
TOTAL	369.9	4,624	327	4,088	113%

The reason >>> UFB makes the most of growth characteristic of the plant

Even at the right temperature for plant growth, dissolution of oxygen is still insufficient.

When the roots become hypoxic, absorption of nutrients and water decreases.

When the soil become hypoxic, nitrogen concentration in the soil decreases.

In supplying UFB water to the plant

Absorption of nutrients and water increases as oxygen reaches the roots

Activates the roots and increases growth hormone synthesis

Activates aerobic bacteria in the soil nitrogen is kept longer

Mechanism of growth and nurturing

1 Air and water are simultaneously delivered to the roots.
Growth of plant stops when the roots become hypoxic. ULTRA PUMP accelerates growth of the plant delivering air and water to the roots directly.

2 Increase growth and hormone secretion.
UFB is as high as 30 atm. When this high-pressure foam pops, it stimulates the roots and promotes growth hormone secretion. The growth potential of the plant is maximized.

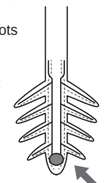
3 Refined nutrients are supplied directly to the roots.
UFB refines nutrients such as fertilizers and delivers them to the roots. The effect is maximized because the micronized components work directly on the roots.

4 Maximizing your growth potential will make it taste even better.
When a plant's growth potential is maximized, it will try to siphon more water and nutrients. Increasing the osmotic pressure increases the actual sugar content.

5 Healthy Soil.
In the soil, UFB delivers oxygen to the soil, which activates the action of aerobic bacteria such as nitrogen bacteria. The fertilizing effect lasts and improves the health of the soil.

Ultra Fine Bubble Growth and promotion mechanism

Ultra-fine bubble irrigation, about 7 to 15% increase in dissolved oxygen retention even without oxygen supply
↓
Ultra fine bubbles are negatively charged, Easy to attach to crop roots
↓
Ultra fine bubbles attached to the root burst
↓
Increased oxygen supply to roots
Activates root respiration
↓
Improved ability to absorb root nutrients
Root meristem activated
↓
Improved cytokinin synthesis ability



Accelerates Growth UFB

High concentration of fine bubble
100 million units instantly

MARUYAMA × ULTRA FINE BUBBLE UFB

UFB ULTRA FINE BUBBLE

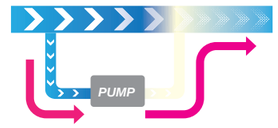
Integrated instantaneous high concentration pump

Can be used even if diluted.
Wide range of applications from agriculture to washing

Example of spraying with ridge nozzle

Example of irrigation work in nursery

Example of installation of bypass piping to irrigation line



When installing in irrigation lines such as hydroponic cultivation and houses, "bypass piping" as shown above is recommended.