GOVERNMENT OF PAKISTAN
Ministry of Science & Technology
Pakistan Council of Scientific & Industrial Research
Laboratories Complex, Lahore
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Sr. No. PCSIR-LLC- 112578

TEST REPORT

Report No. CEPS/RAK/860/18-R **Date:** 05-10-2018

Name and Address of the Customer:	Natural Action Technology, 23034n 17th drive, Phoenix Az 85027.		
Request Ref # and Date:	Nil dated: 15-05-2018	**Sheet No.**	One of Eight
Description of Sample:	Structure Water Device	**No. of sample:**	One
ILO Log # and Date:	635 dated 23-05-2018	**Ref/Code #**	CEPS/860/18
Method used Specs:	Standard Methods for the Examination of Water and Wastewater, 21st Edition, 2005	**Temp. & Humidity:**	28-37 ^{0}C 32-65 %
		Testing date:	01-06-18 to 28-09-18
Statement of non compliance:	Nil		

RESULTS

Sr. No	Tests and Parameters*	Structure Water Device Efficiency		
		Low Flow Non-vortex Tests	Quick Flow vortex Tests (01 Time)	Quick Flow vortex Tests (03 Time)
1.	Increased Seedlings Sprout Growth (Wheat)	++	++	+++
2.	Pathogens inhibition (Milk)	+	+++	+++
3.	Increase Root Growth (Onion)	+	++	++
4.	Dissolved Oxygen increase (Water)	7%	13.9 %	30.2 %

*=The detail of each test/parameter is described in attached technical report
+= Low inhibition /growth ≤ 20%
++=Medium inhibition/growth ≤ 45%
+++= High inhibition/growth. ≤ 65%

◆---------- ◆ END ◆----------◆

- This test/calibration certificate is based solely on the particular sample(s) supplied by the client and should not be reported in part.
- Sampling has not been performed by the PCSIR Labs and PCSIR does not accept the responsibility that the item(s) supplied is/are truly representative item(s) of any batch or stock or entire production.
- While the PCSIR agrees to take every reasonable precaution to ensure validity of its test results, it assumes no liability there of beyond the amount of the fee charged for the analysis/test.
- The party shall assume full resonsibility for the ethical use of the results in the test/calibration certificate and the laboratory shall be held free from any and all claims, which may result from the use of such data by the client or others.
- After completion of the test/calibration the sample,if required,will be retained for one month until negotiated otherwise.
- The contents of this certificate cannot be, in any manner, used for the publicity of the product or any advertisement.
- Uncertainty of measurements can be provided on request.

Prepared by:
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Section Incharge

05.10.2018
PSO / Head / PI
CEPS, PCSIR Labs. Complex

Head of the Centre

Counter signature

5-10-18

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****Computer Code****

QUICK FLOW VORTEX TESTS
EFFICIENCY OF STRUCTURE WATER DEVICE

Our worthy client has claimed that normal tap water after passing through his provided Structure water device will be improved in following manner:

- Improved biological function
- Reduce water use
- Less system maintenance
- Longer system life
- Improve taste and feel water, wine, juices and milk
- Increase preservation without preservatives
- Increase oxygen reduce anaerobic bacteria

For evaluate and cope some of the above mentioned claims we have done following parameters through a number of experimentations:

- Increased seedlings sprout growth
- Reduced pathogens, growth
- Increase root length
- Dissolved oxygen increase

The provided Structure water device efficiency was calculated through a number of experimentations. The Control Tap Water was passed through the Structure water device as described by client one time and three times. This was marked as Quick Flow Vortex Sample.

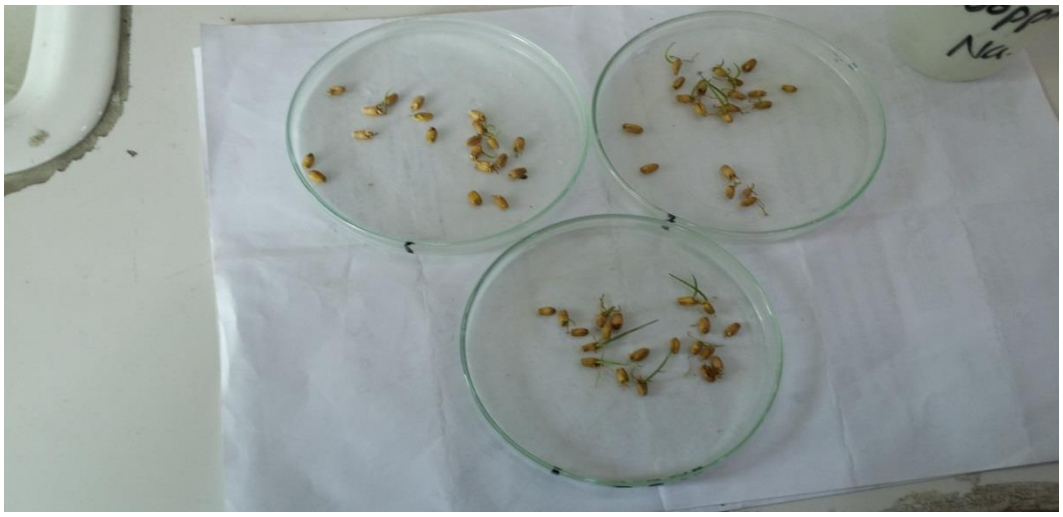
Structure water preparation from given device one time passed and three times passed and marked as QUICK FLOW VORTEX

STUDY -1, INCREASE IN SEEDLING AND SPROUT GROWTH

These tests were designed to find out the effects of watering on seeds with regular Control Tap water and after activation once and thrice as Treated Structure Water. Wheat seeds were sowed indoors under the room temperature and watered with equal amount of control and treated water (once and thrice). This Experimentation were conducted in triplicate and maintained equal watering and environment conditions for 8 days.

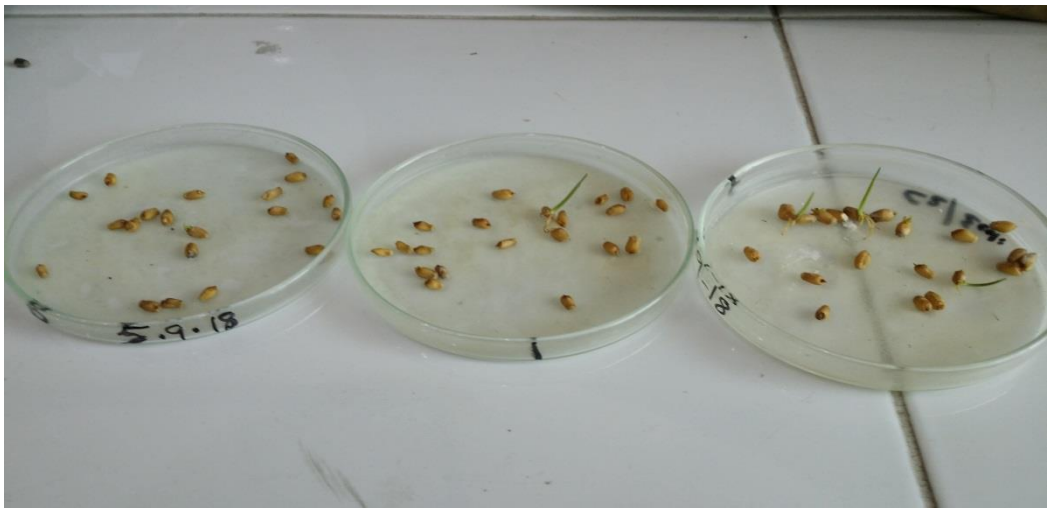
Experiment:

Wheat seeds were grown in petri plates .Treated Structure water one time and three time passed.



Wheat seeds grown on Control water and one time passed & three times passed water from device.

Control Tap water were poured into petri plates. After that equal amount of water samples were given to petri plates after regular intervals of time.



Sprouting number and length are increased in three times passed water as compared to one time passed and Control.

After 8 days seeds have started germination in treated water (once and thrice) and also in control. In Treated structure water seed germination and sprouting started earlier as compared to control Tap water and the number of seed germinated and seedlings length were also greater in treated water as compared to control.

It was observed number of seeds sprouted and length of shoot & root were greater in one time pass treated water as compared to control Tap water and three time pass have slightly better results of sprouting from one time pass Structure water .

STUDY 2, REDUCTION IN PATHOGEN GROWTH

To study microbial activity, we select equal volume of raw milk without boiling .One portion was

Preparation of treated milk after passing through device one time and three times

taken as such and marked as control and the other part was passed through device one time and three times.

Experiment (Aerobic):

After 8 days Treated milk (passed one and three times) were given equal results and were good against

Microbial growth is found on control milk and clear milk can be seen on one time passed and three times passed milk.

microbial attack were found clear. On the other hand microbial growth was appeared on control milk.

One time passed and three time passed milk have given same results.

STUDY 3, INCREASE IN ROOT GROWTH

It was claimed that after passing through device, the root growth and length will be improved.

Experiment:

The Onion bulbs were used subjected for root growth Experiments. The onion bulbs were exposed and dipped into treated structure water (once and thrice) and Control Tap Water towards their roots.

Improvement in number and length of roots in one time treated as compared with control (three times has similar results as one time)

This experiment was lasts for five weeks. It was found that the growth in number and length of roots of onion bulbs in Treated Structure Water one time and three time have same results and have marked improvement in root growth in number and length of roots found in onion bulb as compared to Control Tap Water.

STUDY -4, INCREASE IN DISSOLVED OXYGEN (DO)

Dissolved oxygen is an important parameter of clear drinking water.

The dissolved oxygen (DO) is oxygen that is dissolved in water. The oxygen dissolves by diffusion from the surrounding air; aeration of water that has tumbled over falls and rapids; and as a waste product of photosynthesis.

Experiment:

The dissolved Oxygen in Control Tap Water and Structure Treated Water one time passed and three times passed through Structure Water Device were done with the Reference method in American Public Health Association 2012 Method no. 4500-O,C

Dissolved Oxygen of Control Tap water = 4.3 mg/L

Dissolved Oxygen of Treated Structure water one time pass = 4.9 mg/L

Dissolved oxygen of treated structure water three time pass = 5.6 mg/L

Conclusion:

13.9 % improvement in Dissolved Oxygen after treatment through Structure water device (One time pass).

30.2 % improvement in Dissolved Oxygen after treatment through Structure water device (Three time pass).