

Test-then grow the Best !



**SOIL-PH &
HUMIDITY
TESTER**

**DM-1
DM-3
DM-5**

SOIL TESTER

■ Principals of Soil pH Tester

This tester measures soil acidity with use of 2 electrodes: one is made of special alloy (Δ) that can develop the same electromotive force as hydrogen potential, while the other is made of zinc (Zn). This tester has the function of, in combination of these 2 electrodes, developing the electromotive force by hydrogen ion in the soil, and then, moving the pointer. The following is explanation of change in case of actual usage example.

First, if this tester runs with the special alloy electrode as positive pole having the same electromotive force as hydrogen potential, the pointer will indicate less than pH7. However, in case of more than pH7; alkalifying, the zinc electrode, elaborating "zinc amalgam", will automatically change to positive pole. Also, the special alloy electrode will run as negative pole and the pointer will indicate commensurate value to hydrogen ion concentration.

■ Usage and Handling Method

1. First, check to see if the pointer indicates pH7 or not. (Fig. 1) If it does not point to pH7, uncap the lid or glass and adjust the position of the pointer by softly turning the downside screw clockwise or counterclockwise. Then, wipe out well the surface of the electrode with dry cloth to brush away dirt and dust. (Fig. 2)
2. Polish well the metal electrode part with abrasive cloth, abrasive agent, etc.
3. If the soil is dry, you cannot measure. Before measuring, pour fully water on the soil.
4. Insert this tester in a straight line till the electrode part is completely buried into the soil. In order that the soil is attached firmly to the surface of electrodes, harden the surrounding soil by pushing to the tester. If the tester is inserted by twisting and rotating clockwise or counterclockwise, coherence will be better.
5. Keep this tester in a horizontal position so that the display surface turns up. When the pointer will stabilize about one minute after inserting, read the numerical value. (Fig. 3)
6. Model DM-5 can also measure humidity. For measuring methods of both acid and humidity when this tester is inserted into the soil, you can measure acid (pH) degree, or humidity (%) is you keep pressing the white button. (Fig. 4) When you let off the button, this tester will get back to the acid meter.
7. Electromotive force is used for measuring. For this, pointing value will be different to a certain degree by more or less hand pressure or humid condition in the soil. Therefore, average the value after measuring 5 or 6 times. In case of DM-5, soil showing more than 70% of moisture is best for measuring the pH value. If soil contains a significant portion of fertilizer, sometimes, humidity value will exceed to 100% although it is thought that the actual value is not so much. In this case, pour about a bucket of water on the soil, and then, measure after fertilizer is washed out.
8. When oxide layer occurs on electrode plane, sensitivity gets slow. Fix up electrodes consistently so as not to get rusted.
9. As the ends are pointed, attend to handling. Be sure to keep this tester in soft case.



Fig.1



Fig.2



Fig.3

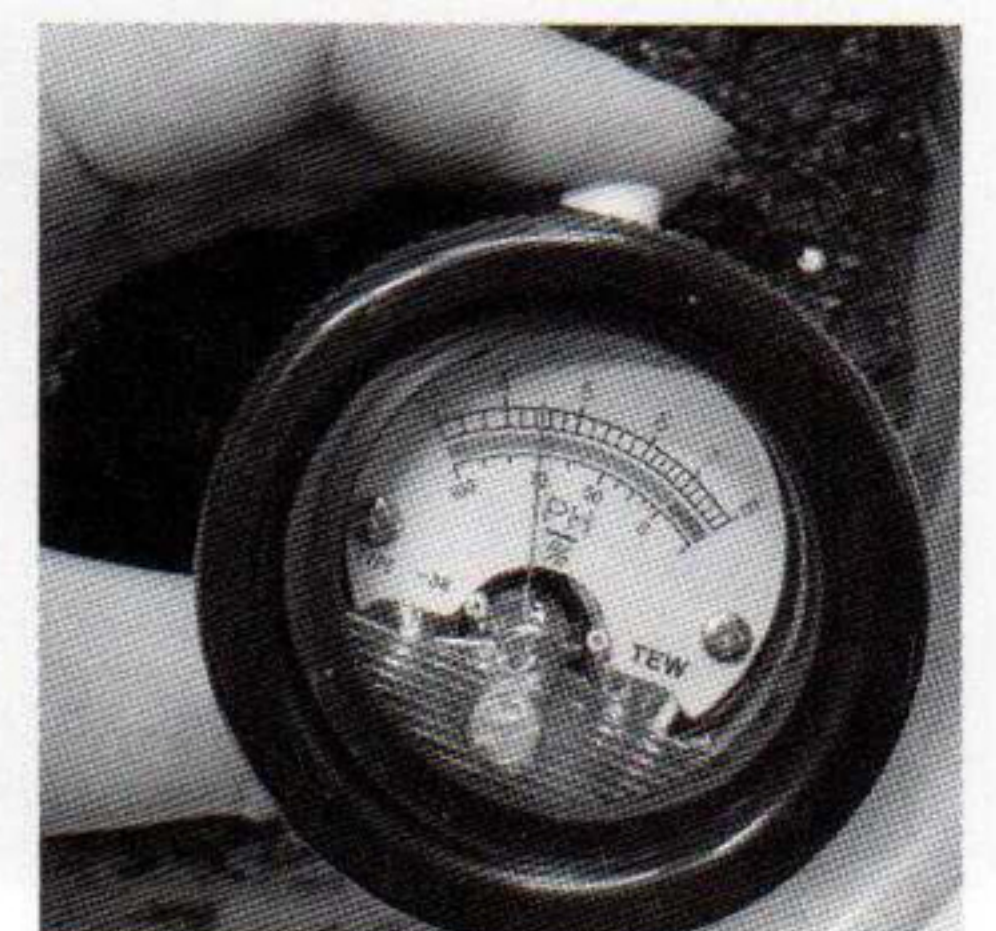


Fig.4

- Point to remember in use ! No waterproof function is equipped with this tester! So, never rinse this tester in water!

As this tester is inserted directly into the soil for measuring, value will be different by more or less hand pressure or concentration of fertilizer.

- No value is stable.

- Does the soil have sufficient water ?
- Is the soil firmly attached to the electrode part ?
- This tester cannot measure if the soil particle is rough or there is gap between the electrode and the soil.
- Sometimes, this tester cannot measure if the soil is laxative. Soften the soil by turning over well to measure.

- Acidity gets strong.

- Measure before pouring fertilizer on the soil.
- When acidity remains much in the soil, this tester will show the lower value. If lime volume is over proper level, the pointer may swing over incorrectly to the acidity side. If the numerical value does not go up after pouring lime on the soil, stop doing so. As there may be trouble with overmuch fertilizer, measure the EC value.

- Soon after pouring lime on the soil, lime does not soak in particles of the soil. In this condition, it will be impossible to measure correctly. Measure the soil in 10 to 20 days after mixing well with lime.

- This tester is not equipped with waterproof function. So, it will break down when it gets wet with water.

- This tester is the tool of measuring the pH value in the soil. The measuring range is between pH 3.5 to 7.0. So, this tester cannot measure the pH value in any other substance such as compost, perlite, vermiculite, peat moss, rough particle soil and water than soil.

- After measuring,

- Wipe out soil attached to the electrodes immediately and hold this tester in a place with low humidity.
- Never leave this tester in inserting into the soil for more than 5 minutes because it becomes the cause of breakdown.
- This tester is not equipped with waterproof function. Never rinse this tester in water.

- pH Applied to Grow Crops

pH means hydrogen concentration index number and shows numerical value with the range between pH 1 to 14. pH 7 means neutrality. So, acidity is less than pH 7, while alkaline is more than pH 7. Acid degree applied to general plants is pH 5.5 to 6.5. (mild acidity) However, some plants grow well in the condition of rather acidity or alkaline.

Plant Name	Optimum pH	Plant Name	Optimum pH	Plant Name	Optimum pH	Plant Name	Optimum pH
Water Rice Raising Seedling	4.8 – 5.3	Carrot	6.0 – 7.0	Orange	5.0 – 6.0	Cacti	6.5 – 7.2
Flooded Rice	5.5 – 6.5	Potato	5.0 – 6.0	Apple	5.5 – 6.5	Colza	5.0 – 6.2
Dry Rice	4.8 – 5.5	Taro Potato	5.0 – 7.0	Pear	6.0 – 7.0	Azalea	5.0 – 5.8
Barley	6.5 – 7.5	Batata	5.5 – 6.8	Grape	6.5 – 7.5	Dwarf Azalea	5.2 – 5.8
Wheat	6.0 – 7.3	Potato	About 6.2	Peach	5.2 – 6.3	Camellia	5.2 – 5.8
Buckwheat	5.8 – 6.7	Ginger	6.0 – 6.5	Japanese Persimmon	5.5 – 6.5	Japanese Lawn Grass	About 5.6
Millet	5.0 – 6.7	Konjac	5.5 – 6.0	Chestnut	5.0 – 6.0	Western Lawn Grass	About 6.2
Japanese Millet	5.5 – 6.7	Peanut	5.3 – 6.6	Japanese Medlar	5.5 – 6.0	Sudan Grass	5.5 – 7.0
Cucumber	6.0 – 7.0	Lotus Root	5.5 – 6.5	Japanese Apricot	About 6.5	Astragalus	About 6.8
Water Melon	5.5 – 6.8	Parsley	6.0 – 6.5	Apricot	6.2 – 7.0	Italian Grass	6.0 – 6.5
Melon	6.5 – 7.0	Chinese Cabbage	6.5 – 7.0	Cherry Fruit	5.5 – 6.5	Orchard Grass	5.5 – 6.5
Pumpkin	5.5 – 6.8	Cabbage	6.5 – 7.0	Ficus	6.2 – 7.3	Timothy	5.0 – 6.5
Crenshaw	6.0 – 6.5	Cauliflower	5.5 – 7.0	Walnut	About 5.6	Lucerne	7.3 – 8.1
Tomato	6.0 – 7.0	Broccoli	6.0 – 6.5	Chrysanthemum	6.0 – 7.0	Red Clover	5.2 – 7.0
Egg Apple	6.0 – 7.3	Sprout	6.0 – 7.0	Rose	5.0 – 7.0	White Clover	4.5 – 6.0
Pepper	5.5 – 6.7	Onion	6.0 – 7.0	Carnation	6.0 – 7.0	Tea	4.5 – 6.5
Strawberry	5.5 – 6.8	Green Onion	5.7 – 7.4	Tree Peony	6.0 – 6.8	Mulberry	5.0 – 6.5
Common Bean	5.5 – 6.8	Garlic	6.0 – 6.5	Tulip	6.0 – 7.0	Tabacco	5.5 – 6.5
Broad Bean	6.5 – 7.0	Asparagus	6.0 – 7.0	Pavilion	5.5 – 6.5	Hop	6.0 – 6.8
Pea	6.0 – 7.0	Lettuce	6.0 – 7.0	Daffodils	5.5 – 6.5	Beet	6.0 – 6.8
Green Soybean	5.5 – 7.0	Celery	6.0 – 6.8	Lily	6.0 – 7.0	Japanese Cedar	5.5 – 6.5
Corn	5.7 – 7.5	Spinach	6.0 – 7.5	Cyclamen	6.0 – 7.0	Elm	5.0 – 6.0
Soybean	6.0 – 7.0	Japanese Mustard Spinach	5.2 – 6.0	Sunflower	5.5 – 6.5	Red Pine	4.5 – 5.5
Adzuki Bean	6.0 – 6.5	Japanese Butterbur	5.5 – 6.5	Soap root	About 7.0	Black Pine	4.7 – 5.2
Capsicum	6.0 – 7.0	Garland Chrysanthemum	6.0 – 6.9	Marguerite	About 7.0	Oak	5.0 – 7.0
Radish	5.8 – 6.8	Bean Sprout	6.0 – 6.5	Alpine Rose	5.0 – 6.0	Zelkova	5.0 – 7.0
Turnip	5.5 – 7.0	Udo	5.0 – 6.0	Garden	5.0 – 7.0	Bamboo	5.5 – 6.3
Burdock Root	5.5 – 6.5	Japanese Pepper	5.2 – 6.5	Orchid	5.2 – 6.0	Camphor Tree	About 5.4

Manufacturer: **TAKEMURA ELECTRIC WORKS, LTD.**

TOKYO, JAPAN.