

1. Production Description

Humic acid is formed by microbial degradation of the dead biological substances. Its specific properties and structure depending on a given sample source from water or soil to extract the specific conditions. However, while the humic acid is from different sources, the performance is very similar. Humus in soils and sediments can be divided into three main parts: humic acid (Humic acid, HA), fulvic acid (fulvic acid, FA) and humin (humin, HM). HA is soluble in alkali solution, but not soluble in water and acid; FA is soluble in alkali, soluble in water and acid; the HM is neither soluble in alkali, nor soluble in water and acids.



2. Main Specification

Appearance	Black Powder	Black Granule	Black Powder	Black Granule
Product code	JFHA-HA-1-P	JFHA-HA-1-G	JFHA-HA-2-P	JFHA-HA-2-G
Organic Matter(dry basis)	85.0% min	85% min	80.0% min	80% min
Solubility	NO	NO	NO	NO
C.E.C	≥200meq/100g	≥200meq/100g	≥200meq/100g	≥200meq/100g
Humic Acid(dry basis)	60.0% min	60% min	50.0% min	50% min
Moisture	25.0% max	25.0% max	25.0% max	25.0% max
Particle size /mesh	60mesh	2-4mm	60mesh	2-4mm
Granule Radial Load	0	12N	0	12N
pH	4-6	4-6	4-6	4-6

3. Main Function

(1). Effect to soil

- Largely promote the **buffering power** and fertility of soil by **improving the structure** and increasing its **organic matter**. In sandy soil, **humic acid** will

help to increase fertility of soil through its cation exchange capacity to retain water and beneficial micro nutrient .In heavy and compact soil, Humic acid will work with fungi to construct a crumb structure root to absorb water oxygen and nutrient also improve root penetration.

- *Neutralize both acidic and alkaline to make it into a optimized soil environment with pH 5.5-7.0.*In alkaline soil, beneficial ion and other trace elements can not be absorbed by plants,humic acid can buffer the pH and convert the nutrients and trace elements into absorbable form and promote their uptake by the roots.In acidic soil, humic acid will largely reduce the toxins such as the ally aluminum and heavy metals, which will be bonded firmly and immobilized ,thus their toxicity is reduced and phosphate is bonded by aluminum is released.In saline soil, Salts are split up by the high cation exchange capability, cation (eg.Ca, Mg) are bonded and chelated.
- Foster proper environment for soil microbial mass. Soil research shows that a place with higher content of humic acid will appear more beneficial microbial mass.Thus these microbial will help to increase the good effect of the soil.

(2). Effect to seeds and roots system

Working as natural seed germination and room stimulant.Promote germination of seeds and growth of root system.**Humic acid** stimulates the membrane of seeds to form a strong roots, which is decisive to increase the capacity of root to take up both micro and macro nutrients.

(3). Effect to plants

- *Largely optimized the absorption of beneficial ion by plants thus increase plants growth accordingly increase the yield and fruits quality.* Based on improved structure by **humic acid** N is largely stored and slow released, P is release from AL +in soil,also other microelement is in the form of easy-available by plants, meanwhile the beneficial fungi is active to produce different kind enzymes. with the above joint effort, the yield will be increased at lease 30%. Enhanced cell assimilation as well as photosynthesis increase the plant's sugar and vitamin content, thus the quality of their seeds will be largely increased.
- *Enhance plants'ability to counter stressed conditions.* **Humic acid** can mobilize K absorption to regulate the stomata open and close on the leaves also promote metabolism, thus increase the plants' ability under stressed conditions.

(4). Effect to yield

Help to the growth of chlorophyll to promote photosynthesis, thus helping to improve the accumulation of sugar, fat and amino acids in plants, to promote roots and tubers, increase production, improve taste. **Humic acid** can enhance cell growth and help promote photosynthesis, thereby increasing the vitamin content of sugar and fruit crops, meanwhile **humic acid** can chelate heavy metals in soil to avoid being absorbed by crops, yield and quality will be greatly increased.

4. Uses

- Base fertilizer: For field crop, 50-100kgs/ha per crop season.
- For fruit trees, 10-20kgs per plant.
- For vegetables, 1-2kg/m².
- Mix additive:
150-200kgs per ton of composite. (suggested mix use with Urea and MAP DAP)

5. Package

- 25kg woven bags with inner liner.
- Color printing PP bags with inner liner or PE bags.
- 1MT, 1.1MT jumbo bags with discharge hole.
- According to customer's requirement.

6. Advantage

- Low moisture, low dust, high free humic acid, high hardness to be material of blended fertilizer.
- Slow Release, long-term effect, high utilization of amide nitrogen and ammoniacal nitrogen.
- Increase utilization of N from 15% to 20%.