
HNC
(HUMIC NATURAL COMPLEX)
For Agriculture, Livestock and Aquaculture
PIC-BIO

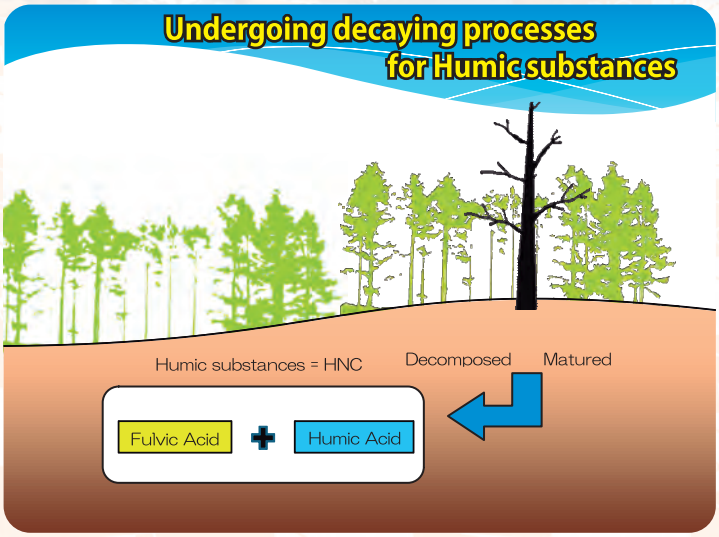
Multifunctional ionic substance

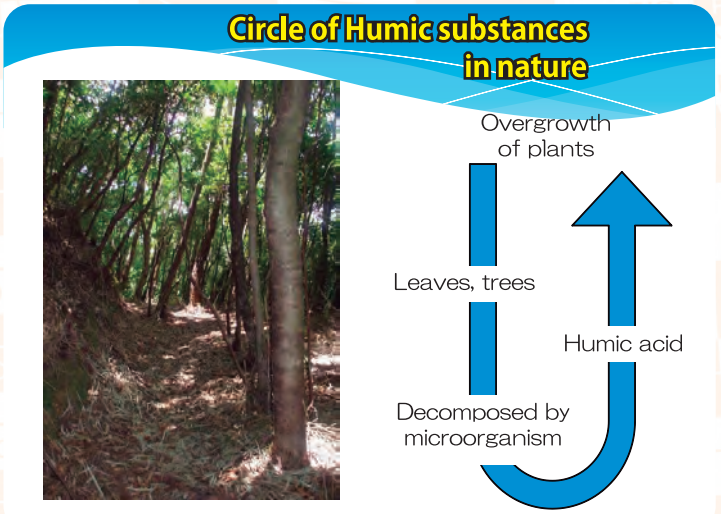
Humic Natural Complexes (HNC)

What is Canadian Natural Humic Substance HNC?

Humic Natural Complex (HNC) is a natural humic substance and sourced in Canada. HNC contains humic and fulvic acids at high concentrations (approx. 80%) which are naturally derived from plants which were decomposed by microorganisms.

The high quality and performance of humic & fulvic acids are proven all over the world now. HNC is a 100% natural product and can enhance the natural vigor of soils, plants, water, and animals.





HNC contains with the following elements

Element	Water content	Organic matter
%	19.08	79.34
N	P	K
1.26	0.17	0.05

(By Japan Fertilizer and Feed Inspection Association)

1. Humic and Fulvic Acid : approx. 80%
2. C E C : approx. 400meq/100g
   (Cation Exchange Capacity)

Al	B	Ba	Ca	Fe	Mg	Mn	SiO2	Sr
%	ppm	ppm	%	%	%	ppm	%	ppm
1.27	134	7	0.67	0.32	0.10	21	12.7	464

(By ICP ANALYSIS)

PHYSICAL PROPERTIES

Color	: Natural Black to Dark Brown
Specific	: 0.92(57.6 lb/cubic feet)
Angle of Repose	: 37.5°
Particle Size	: Crushed to 2.4mm (3/32")max. size Estimated Mean Particle Size - 500 μm
Tramp Materials	: 0.1% or less

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HNC

(HUMIC NATURAL COMPLEX)

Humic substance for poultry and livestock

1. Benefits of HNC

HNC can be applied to;

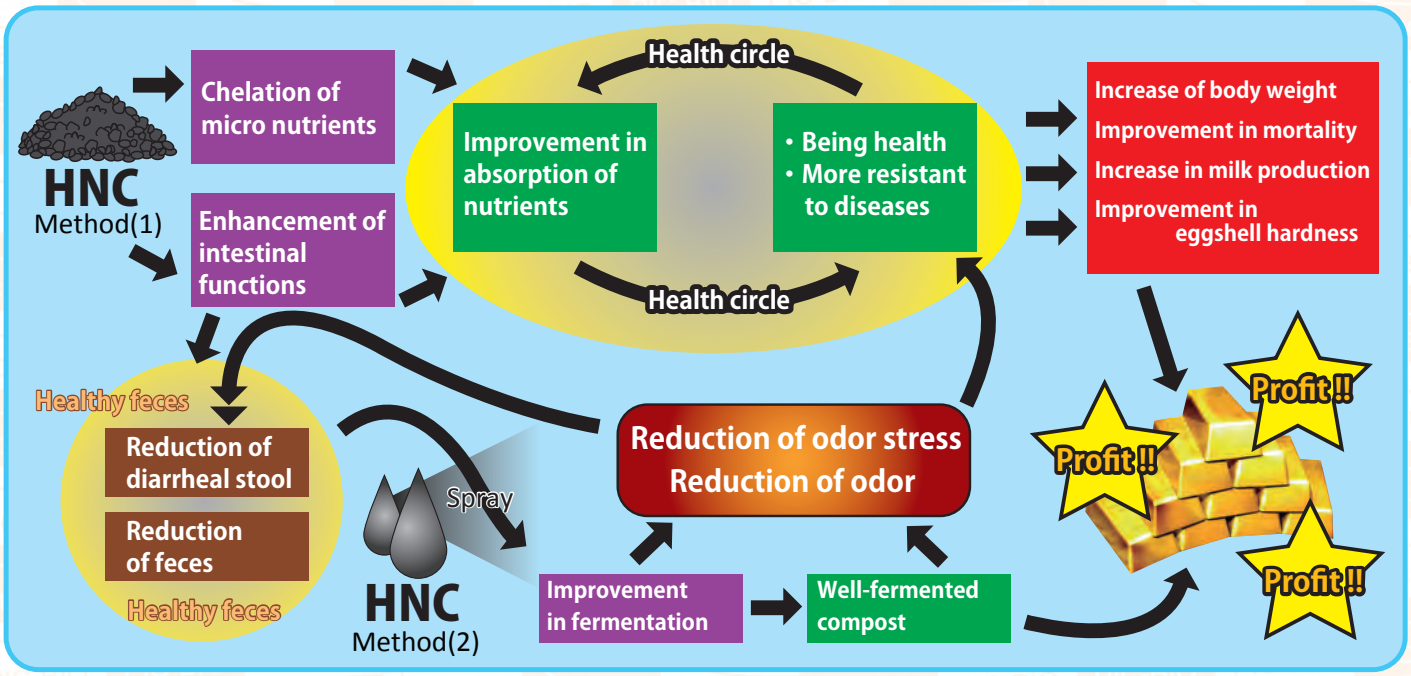
1. Cattle
2. Swine
3. Poultry
4. In-House Environment (livestock and poultry)
5. Fermentation tank (for animal manure)

Application method

Method(1) As feed additives : Mixing with feed

Method(2) As compost improver and deodorant : Mixing with animal manure

Process Chart



Dilution rate

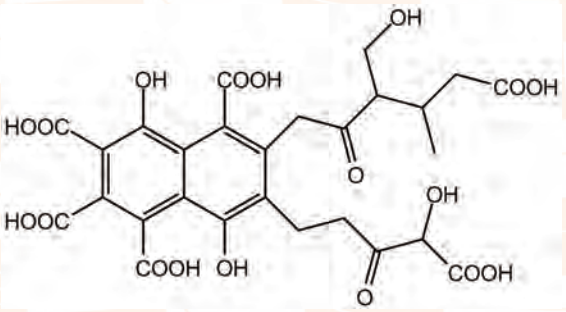
Purpose	Dilution rate
For the improvement in FCR	1kg-5kgs of HNC in 1,000kgs of feed or 1,000liters of liquid feed
For the improvement in the fermentation, and odor eliminating effect	Mix 5kgs of HNC in 100liters of water, and spread to10tons of fresh manure

2. Functions of HNC

I. As Natural Electrolyte and Chelator

Because of more functional group like carboxyl group and phenolic hydroxyl group with Humic and Fulvic Acid (with reference to the model structure of Humic Acid, F. J. Stevenson), HNC can absorb cation minerals once the hydrogen ion separates from Humic and Fulvic Acid.

Also since Fulvic Acid can chelate metallic ions which cannot be absorbed by animals easily, HNC can avoid the loss of nutrients.



II. As Compost Improver

As HNC contains more % of Humic and Fulvic Acid, HNC can increase the CEC (Cation Exchange Capacity) in compost, when HNC is mixed with animal manure. Also Humic and Fulvic Acid can stimulate the growth of aerobic bacteria, so HNC can improve the fermentation of the compost.

	 【Compost】	 【HNC】
Humic Acid	5-15%	40-75%
Fulvic Acid	Very less	10-30%

III. As Natural Deodorant

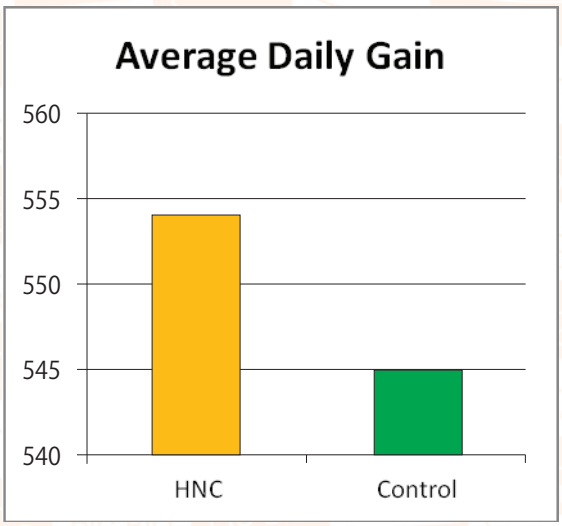
One of the main reasons for odor is ammonium ion (NH_4^+), Fulvic Acid can chelate the ammonium ion, and eliminate the odor.

I. As Natural Electrolyte and Chelator

【Purpose for test】 Improvement in Feed Conversion Ratio and Daily Gain

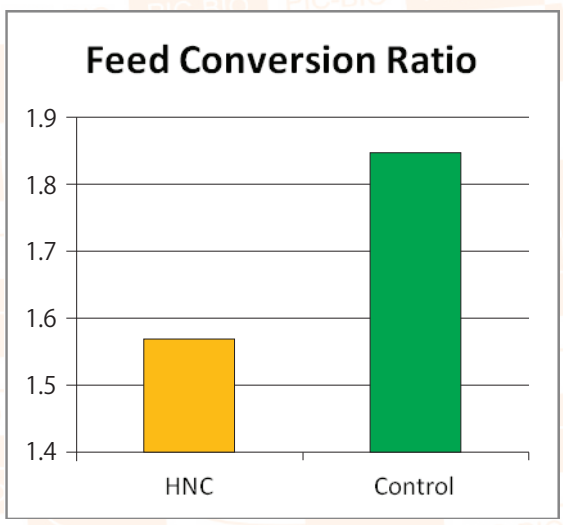
【Method】 After weaning, 0.5% of HNC was mixed with the feed for 6 weeks.

【Result】 The test results are as follows;



Average Daily Gain (ADG)

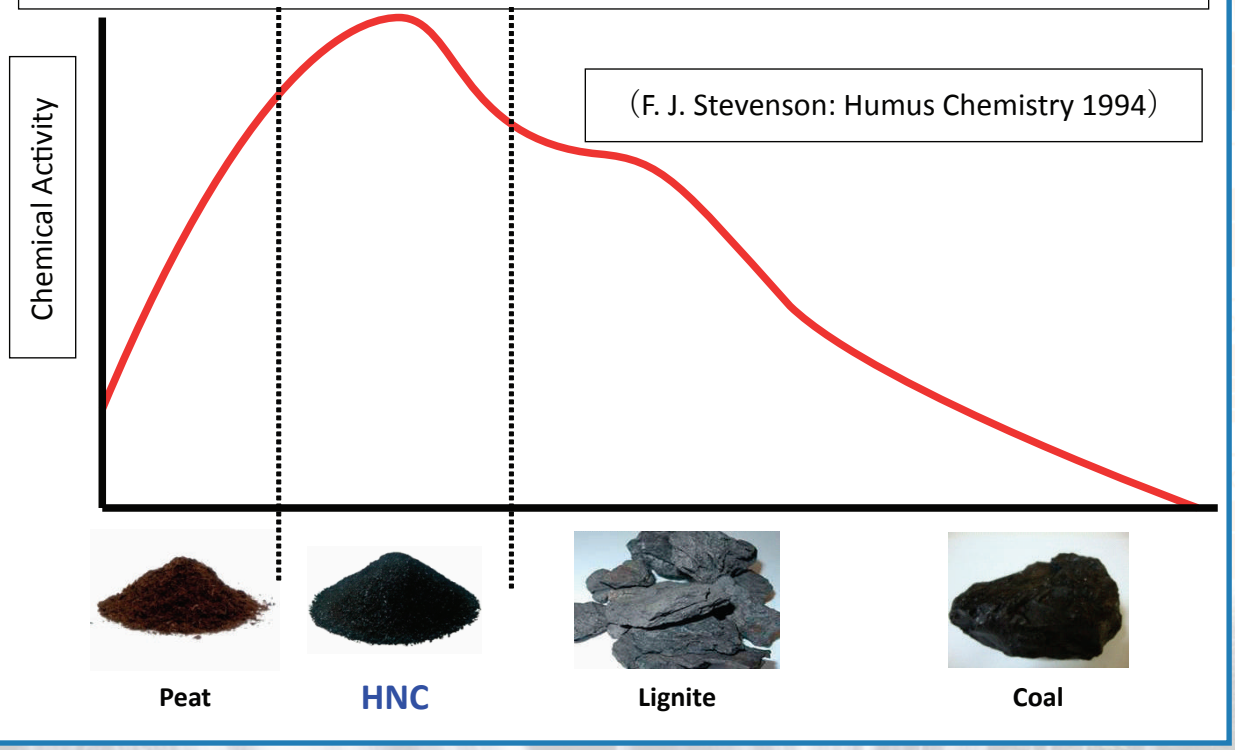
6 weeks after weaning, ADG for HNC and control are 554±69, and 545±67 respectively



Feed Conversion Ratio (FCR)

For 6 weeks after weaning, FCR for HNC and control are 1.57, and 1.85 respectively

Explanation: As per the above test, HNC had improved the absorption of nutrients from feed by the electrolyte and chelation of HNC. The below chart (referred with F. J. Stevenson), shows that HNC has higher chemical activity as compared with peat, lignite and coal, therefore, it is thought that this is the reason for the better absorption of nutrients.



II. As Compost Improver

【Purpose】

HNC not only improve the CEC (Cation Exchange Capacity), but also can activate the aerobic bacteria in the manure with Humic and Fulvic Acid, so the fermentation can be improved. Also HNC can solve the odor problem by the function of Fulvic Acid.

【Production process of Organic Humic Fertilizer】

Mix 5kgs of HNC with 100liters of water, and keep for 7days after the dilution. In this way, more amount of Fulvic Acid will be melting from HNC.
And mix the HNC solution every day.

7days after dilution of HNC

Spread the 100liters of HNC solution to 10 tons of fresh manure.
HNC solution can;

1. Accelerating the fermentation
2. Eliminating the odor

by activating the aerobic bacteria and inhibiting the anaerobic bacteria.

The temperature of fresh manure will be increased upto 70℃ after the application of HNC, so it is necessary to mix the fresh manure every 3-4days depending on the temperature of the fresh manure.
After the completion of fermentation, the high quality of manure can be utilized for agricultural purpose.

III. As Natural Deodorant (as bedding material)

【Purpose】

Litter management for poultry and livestock is needed to avoid the following problems;

1. potential for spread of poultry diseases through harmful bacteria and virus
2. odor and aesthetic problems

【Method】

1. Preparation of good bedding materials
   1) Bedding materials: HNC and Vermiculite
   2) Application method
      (1) Mix the both of the bedding materials at the rate of 1 (HNC):6 (Vermiculite)
      (2) Apply 40L of the mixture for 20m^3 of bed
2. Application of the poultry and livestock litter to agriculture field as organic fertilizer
   When removing the litter with the mixture of HNC and Vermiculite from the poultry or livestock house, keep fermented well before application to agriculture field

【Benefits】

HNC	Vermiculite
HNC is proven the organic natural electrolyte acid. 1. Improve the vitality of living creatures 2. Eliminate the strong odor 3. High moisture absorption and take up oxygen in air 4. Activate the aerobic bacteria and inhibit the anaerobic bacteria	Vermiculite is silicate mineral that is classified as a phyllosilicate and that expands greatly when heated. 1. Aseptic mineral including lots of air 2. Utilization as a soil conditioner for agriculture and as a thermal insulator for architecture

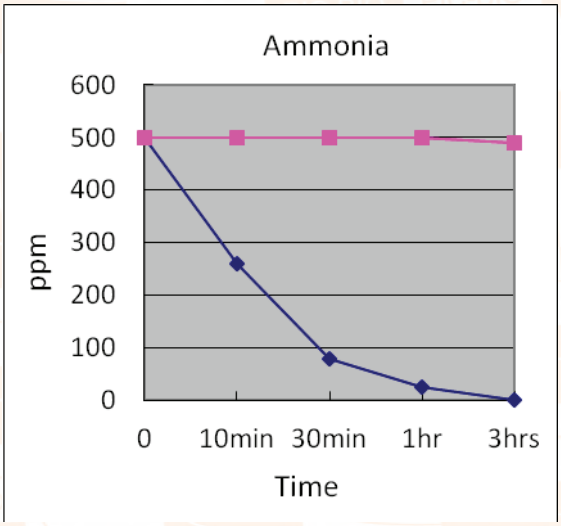
III. As Natural Deodorant (efficacy test for odor control)

【Test method】

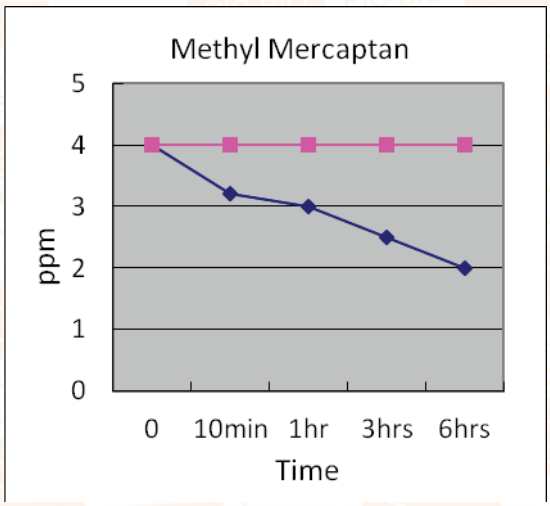
1. 5kgs of HNC was mixed with 100liters water, and kept for 7days.
2. 100liters of HNC solution was spread to 10tons of fresh manure.

【Test result】

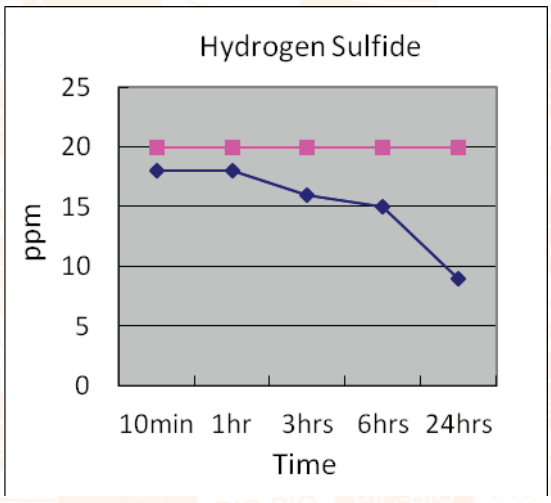
Odorous substances	Odor removal efficiency (%)
Ammonia	98% off
Methyl Mercaptan	87.5% off
Hydrogen Sulfide	50% off
Isovaleric Acid	94% off
Propionic Acid	95% off



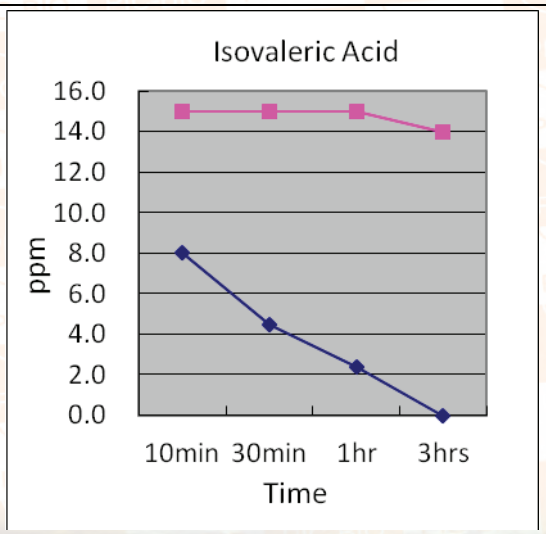
More than 98% off



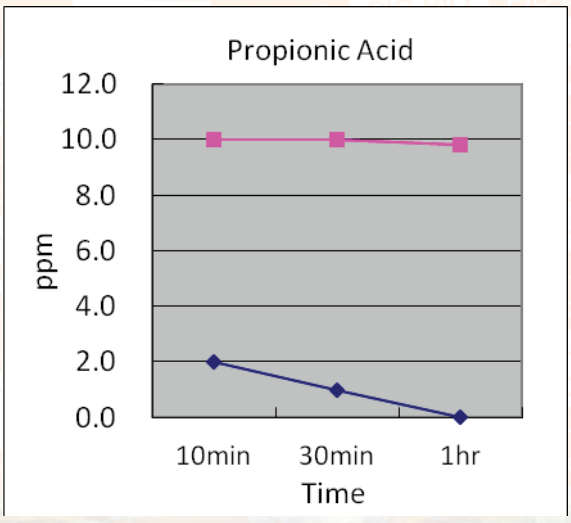
87.5% off



More than 50% off



More than 94% off



More than 95% off

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Company Profile

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Founded	May 25th, 1972
President	OKUMURA Koichiro
Main banker	Sumitomo Mitsui Banking Corporation Mizuho Bank, Ltd.
Company products	1. Probiotics Feed Additive 2. Natural Herb Feed Additive 3. Humic Natural Complex 4. Pure Natural Fulvic 5. Semen Extender for Swine 6. Natural Health Foods

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