



MASTER PLAN FOR THE WHOLE FERTILIZER PROCESSING SYSTEM

**Water content 20-40% Broiler manure Treat to
POWDER ORGANIC FERTILIZER**

(Ground windrow composting model)



**HEBI RENYUAN BIO TECH
DEVELOPMENT CO.,Ltd.
OVERSEAS DIVISION**

Introduction

Background

Vietnam is the main agriculture products exporting country in the world, the consumption of organic fertilizer has been increasing in recent years, and the main importing country is Japan, European country, and China, and the Bio fertilizer has been the highest price among all the imported product. After out breaking of covid-19 pandemic , with unstable US dollar rate and increasing sea shipping cost, the imported organic fertilizer price keeps raising, which calls for Vietnam local animal farm or professional fertilizer producer to local compost the animal dung and waste into organic fertilize.

Current problems for composting fertilizer in Vietnam

There were Vietnam big agriculture corporations installed sealed tank fertilizer fermentation projects few years ago, the facility imported from Japan, since the facility designed for giant animal dung with integrated animal farms, while the facility designed for the developed country environmental law of emission control standards. After operation, the buyers found the operation cost is high, hard to cover the cost, the projects has been abandoned now.

While in Vietnam there are small organic fertilizer producer to local produce with small investment facility, but can not meet the major organic fertilizer trader requirement.

Expecting organic fertilizer quality or standards by the main Vietnam fertilizer buyers

In Vietnam market the most trader of commercial organic fertilizer requires the standard products as:

Product form	OM content	N	P	k	Moisture	Humic acid content	Other additives	Purchase price by trader
powder	50%	3	2	2	20%			
Small ball	15%		2		30%		Trichoderm a1x10 ⁶	
Extruding column	60%	3	2	2	15%			

Target customer in Vietnam organic fertilizer composer

Whole plans are designed by HEBI RENYUAN BIO TECH CO.LTD. for the producing to High Nitrogen Organic Fertilizer (we call PREMIUM ORGANIC FERTILIZER). It can made from 40% -50% water content of Broiler or Layer manure which come out from fine condition of cage system. And all devices are chosen by trust able quality and successful result.

Following subjects are explain each facility and how they work until forwarding. We all hope that this technology can contribute to Vietnamese livestock farmer and cultivator and supplying safe eating habits to the citizen.

Facing current Vietnam animal dung composting problems, we special design the production scheme with lowest cost, and simple formulation, to cut down the organic fertilizer production cost, make it feasible for private fertilizer producer.

Business model

1. Organic fertilizer trader/ buyer provide all legalization and documents for fertilizer production; And would be the fertilizer buyers of the finish products under contract;
2. Private organic fertilizer producer or livestock, animal farmers prepare the land, and buy the equipment, produce the organic fertilizer;

Basic condition for private farm and private organic fertilizer producer

Land: 3000 m²

Facility: 1 set of RY facility / per 10 ton of raw chicken dung needs 1 kg of RY EM composter

Chicken manure: source price / Pig manure: source price

Dry matter (dry grass, hay) : if needed

Productivity: 3500 MT raw chicken manure per year, need labors 2 persons

Finish product: 2340 MT powder form of organic fertilizer (no package, sell as bulk)

Details of facility

1. **FRESH MANURE STOCKYARD**

This is the place where is keeping fresh manure before input to GROUND COMPOSTING YARD PROCESSING. Normally, operation is input directly from the cage everyday but this stockyard control when the amount of manure is fluctuating and also case of emergency.

- ❖ Calculated floor space:500 M²
- ❖ 3,500 MT Raw chicken dung (Yearly treated chicken manure),One batch can treat 234 ton per 15days in circulating The next batch 234 ton lest should be in stock , 15.6 MT of raw chicken manure ship in stock per day lest. If do not want to invest in roof building, cover with plastic film can work.



2. **GROUND COMPOSTING YARD PROCESSING**

The ground for the raw chicken composting,the working location of **CRAWLER FLIPPER MACHINE**.

This is FERTILIZER WINDROW FLIPPER/TURNER machine made by **Renyuan Bio Tech Devp. Co.,Ltd.**

It driven by the gasoline,to flip the composting windrow of raw chicken mature to fully contacts for the Aerobic Fermentation,the Output product is valuable PREMIUM ORGANIC FERTILIZER.

- ❖ Processing detail refer to “PROCESSING PLAN”.
- ❖ Calculated land occupation: 1000 m³

Single windrow :Width 3M X Length 50M x1.5 M Height

Total 5 windrow = 375m³ Raw chicken dung =234 ton for15 days per batch processing

(The windrow size depends on the flipper machine specification below)

if choose smaller model, then more windrows can be arranged to occupy this yard



3. **POWDER PRODUCT STOCKYARD (finish composting)**

This is the place where is keeping Powder product after Composted. Before process and after process of Rotary screen, also if need granulation,the powder form before process of granulation system also can stock in this yard.

- ❖ Calculation Floor space:1000 m²
- ❖ This Area must building roof to keep the low moisture, and also can serves for natural drying, the comment moisture Of organic fertilizer powder after composting is 30% around, For commercial specification of moisture is 20% , One month stock can reduce the moisture to 20%。 (more space sooner) One day can input 13 ton of fresh composted powder.

234 ton /15day in put the composted powder fertilizer in the

stockyard per batch.one day can inpur 15.6 ton

(Powder product) x 30days for setting of natural evaporating

Of its water contents from 30% to 20 %



$$226\text{m}^3 (\text{Volume}) / 2.0\text{m} (\text{Height}) = 1000 \text{m}^2$$

4. PACKING AREA AND PRODUCT WAREHOUSE

If decide invest in sales of packaged fertilizer, then this Packaging area need arranged.

Below quotation not include this package section

This is packed product warehouse for keeping products before forwarding.

- ❖ Calculation Floor space: 500 m²
- ❖ Power supply: 3 phases electricity, Maximum 100KW

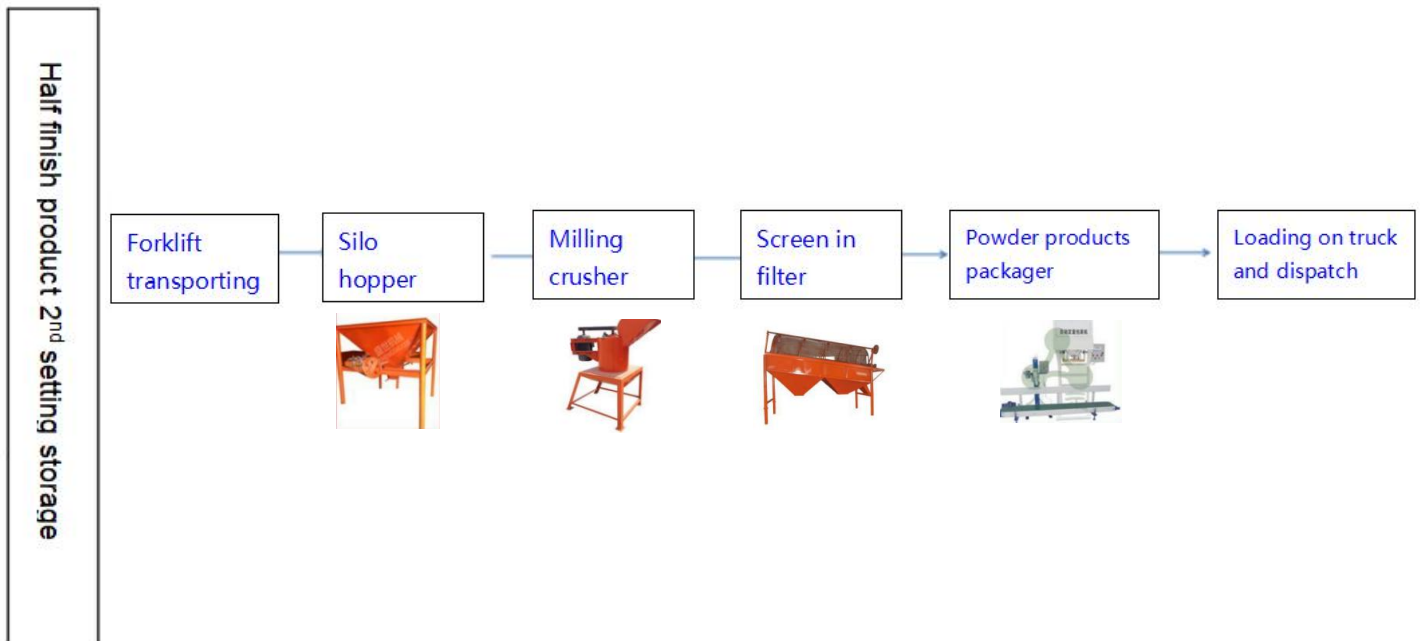
Packing area size 200m² Storage size is 1,400m² Storage height: 3.0 m

Storage volume: $1,400 \times 3.0 = 4,200\text{m}^3$

Storage capacity: $4,200 / 137.1 = 30$ days capacity



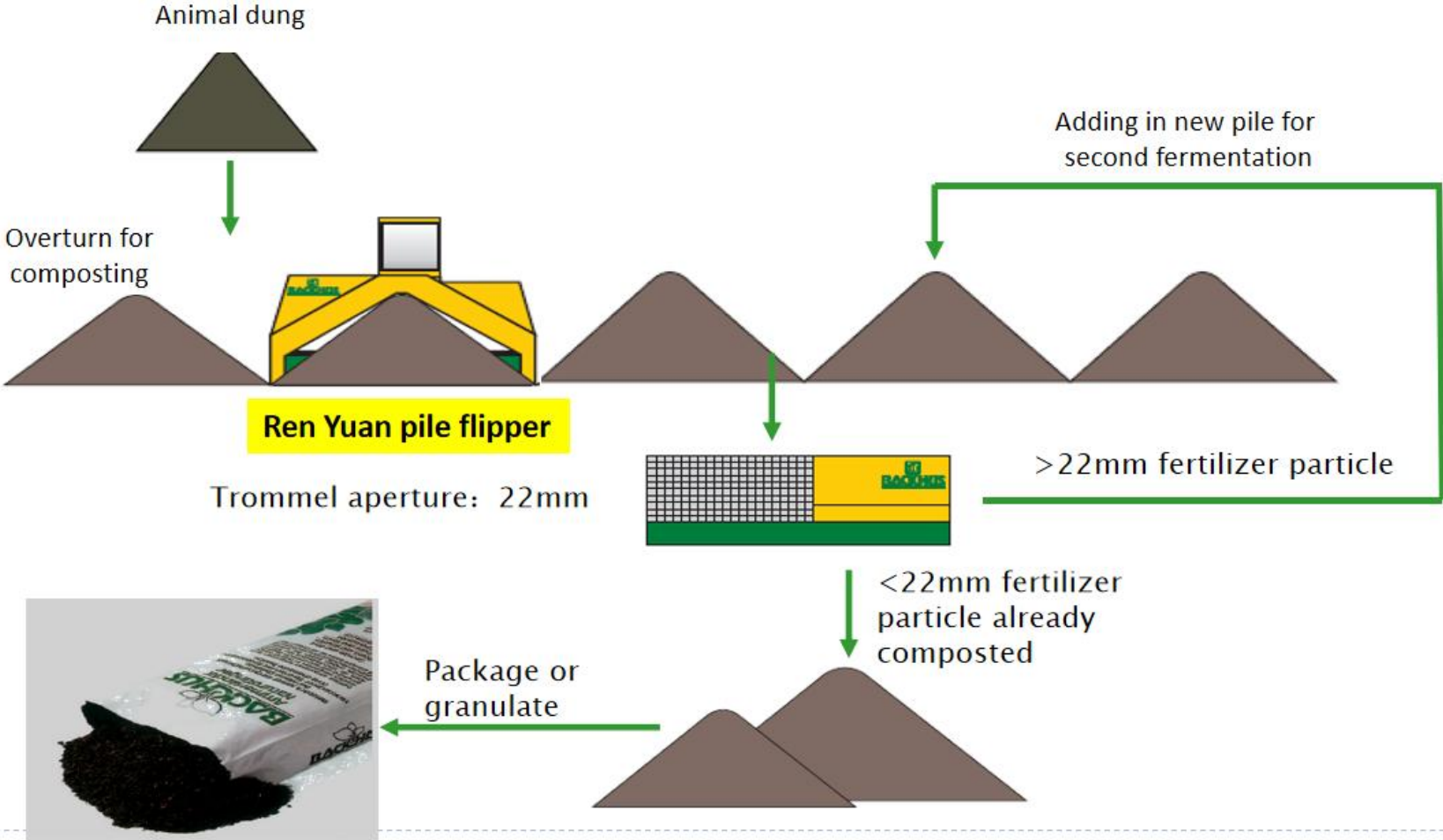
Powder Form Packaging Flow



Necessary equipment

- 1) SHOVEL LOADER (1 unit)
Manage for FRESH MANURE STOCKYARD to Composting ground and Composting ground to POWDER PRODUCT STOCK YARD. Also it can manage for the packing work.
- 2) TIPPING CAR (multiple units)
The work for transporting from Composting ground to POWDER PRODUCT STOCKYARD.

Composting Operation flow



The organic fertilizer technology profile

Ground windrow composting model

Step1. fresh dung in windrow



Step 2. Adjust the moisture adding water to 50-60%



Step3. Evenly mixing in RW EM composte



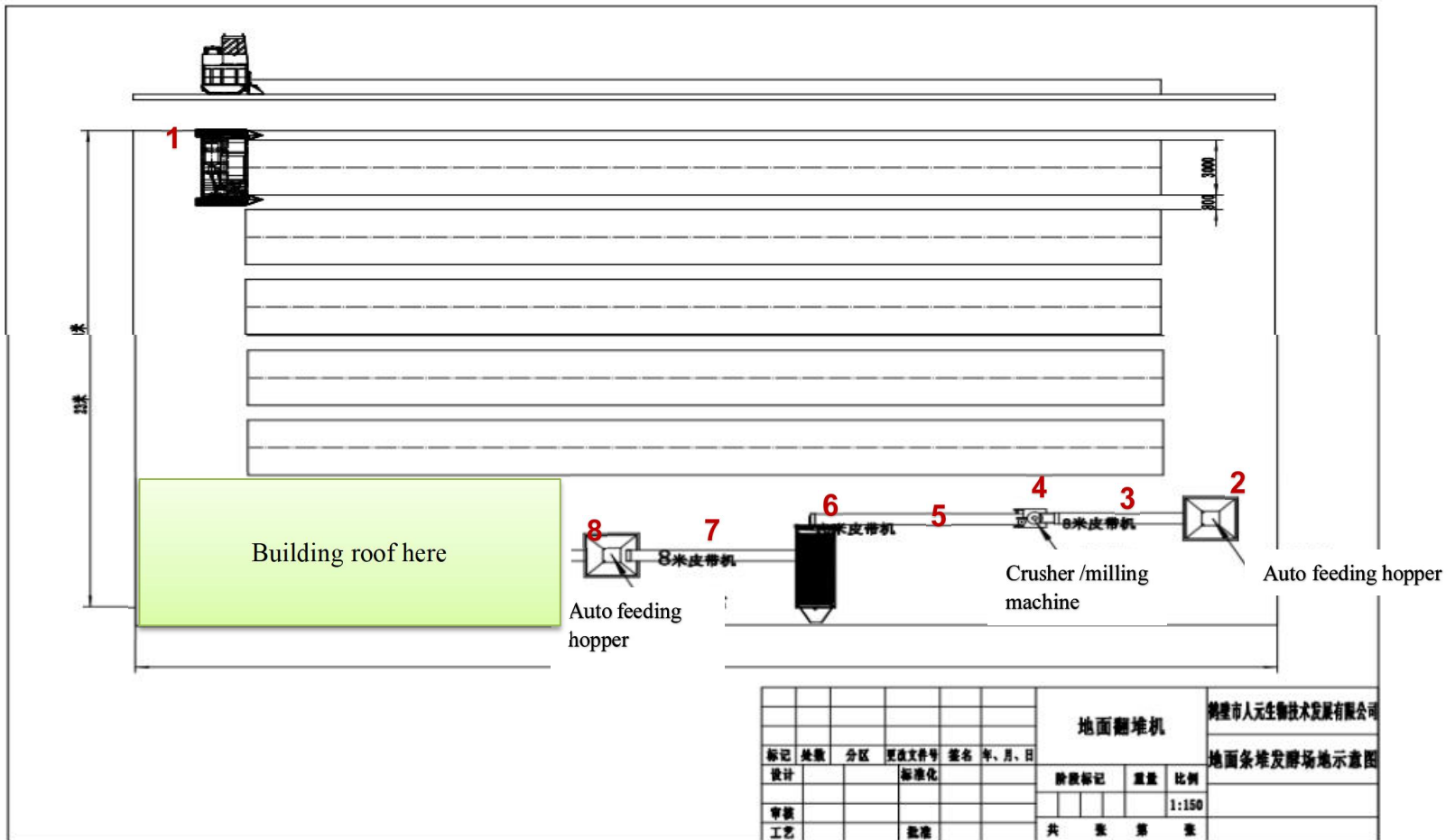
Step 4. Blending with Flipper machine



Step5. Measure the temperature

Production ground power supply: 100 KW , 3 phase power









- The needling machine line as below code 1-8
- 3.5.7 the belt conveyor size,height choose according to the the attached machine height,and the space of the production site.Normally the length of conveyor belt extending gradually.8m-10m-12m.
- If no need final product being packaged, then 8 can be skipped. If need product being packaged and granulation then other machine line will be follows 8 behind.












Equipment parameters and quotation

The Estimated Total Budget For Ground Composting(fermentation) Machine

Code	Machine	Spec	Power	Unit	Unit price RMB	Pic
1	RY-FD 2000-35 Ground flipper/turner	1.Capacity: 380m ³ /h 2.Working dimensions of windrow: width 2m, height 0.6-0.8m 3.Power: 35hp/24kw(water cooling) 4.Dimension of machine: 2350*3250*2200mm 5.Function:Turn/ flip the raw material for fermentation	**	1 set	XXXXXX	
2	RY-LCS3023 Feeding hopper machine	1. Cabin size:2.3*3m 2. Dimension:3.0*2.3*2.3m 3. Hopper volume: about 3.5m ³ 4. Belt conveyor motor:Invert motor 5. Function: collecting material, and feeding material continuously	1.5kw	1 set	XXXXXX	
3	RY-B600 Belt Conveyor 8M	1.Length: 8m, height 2.4m 2.Width: 600mm 3.Material: structural steel 4.Function: convey compost to crusher	4kw	8M	XXXXXX	
4	RY-FS 60 Vertical Crusher	1.Diameter: φ600mm 2.Spindle speed: 1450 r/min 3.Dimension: 1400*1100*2200mm 4.Application range: organic fertilizer moisture 30% - 40% 5.Function: crush organic fertilizer raw materials	22kw	1	XXXXXX	
5	RY-B600 Belt Conveyor 10M	1.Length: 10 m, height 3m 2.Width: 600mm 3.Material: structural steel 4.Function: convey compost to crusher	4kw	10 M	XXXXXX	
6	RY-GS3011 Rotary Screen machine	1. Speed: 25r/min 2. Dip angle:4° 3. Sifter size: Ø1.5m*4m 4. Dimension: 4.5*1.8*3.2m 5. Function: Screen qualified and unqualified materials	4kw	1	XXXXXX	
7	RY-B600 Belt Conveyor 12M	1.Length: 12m, height 2.4m 2.Width: 600mm 3.Material: structural steel 4.Function: convey compost to crusher	4kw	12M	XXXXXX	
8	RY-LCS3023 Feeding hopper machine	1. Cabin size:2.3*3m 2. Dimension:3.0*2.3*2.3m 3. Hopper volume: about 3.5m ³ 4. Belt conveyor motor:Invert motor 5. Function: collecting material, and feeding material continuously	1.5kw	1 set	XXXXXX	

9	Electric control cabinet CHNT brand	1. Type: Low-voltage power control cabinet 2. Brand: CHNT 3. Function: Control the switch on/off of whole urn on whole line	**	1	XXXXXX	
TOTAL		EX work price RMB XXXX Noted: For above production line, certain individual machine may need extra parts for special reason, which will cause extra cost based above quotation. For 1. 2.4.6. 8 machine there is other model available, here choose the smallest model. 1. multi machine models working on different size of windrow decide how much land needed for composting space. Ex work USD XXXXXX Domestic logistic to Port cost: USD XXXXXX The rate dated 2021 Dec. USD: RMB 6.38				

Package of the products equipment

Code	Machine	Spec	Power	Unit	Unit price RMB	Pic
9	RY-B600 Belt Conveyor 8M	1.Length: 8m, height 2.4m 2.Width: 600mm 3.Material: structural steel 4.Function: convey compost to crusher	4kw	8M	XXXXXX	
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15	RY-B600 Belt Conveyor 12M	1.Length: 12m, height 2.4m 2.Width: 600mm 3.Material: structural steel 4.Function: convey compost to crusher	4kw	12M	XXXXXX	
16	RY-B50F Automatic packing	1. Packing weight range:25-50kgs/bag 2. Including parts: Packing machine & bag sewing machine & bag conveyor	2.2 kw Air pump	1	XXXXXX	

	machine (powder)	& control box& air compressor 3.Speed:(packs/hr): 300-400 packs				
TOTAL		RMB: XXXXXX USD: XXXXXX The rate dated 2021 Dec. USD: RMB 6.38			XXXXXX	
<p>Noted: Depends on the production site situation, to produce packaged fertilizer, the 20% water contents of powder form fertilizer(after water evaporating from 30%), can be repeating online processing of 2-7.And replace 8 with 16 -the packaging machine.</p> <p>Or if the production line is heavy load, always being occupied, then need to repeating install 9-15 machine.</p>						

Common chicken dung parameter in Vietnam

I. LAYING HENS (PRE COMPOSTER): 250rmb/ton

No.	Criteria	Method	Unit	Result
1.	Hàm lượng $N_{ts}^{(1)(2)}$	TCVN 8557:2010	%	1,00
2.	Hàm lượng $P_2O_{5hh}^{(1)(2)}$	TCVN 8559:2010	%	2,26
3.	Hàm lượng $K_2O_{hh}^{(1)(2)}$	TCVN 8560:2018	%	1,52
4.	Hàm lượng chất hữu cơ $OM^{(1)(2)}$	TCVN 9294:2012	%	42,9
5.	Độ ẩm $^{(1)(2)}$ (70°C) Humidity	TCVN 9297:2012	%	43,3
6.	$pH_{H_2O}^{(1)}$	TCVN 13263-9:2020	-	9,08

II. BROILER: 250rmb/ton

No.	Criteria	Method	Unit	Result
1.	Hàm lượng $N_{ts}^{(1)(2)}$	TCVN 8557:2010	%	2,68
2.	Hàm lượng $P_2O_{5hh}^{(1)(2)}$	TCVN 8559:2010	%	2,66
3.	Hàm lượng $K_2O_{hh}^{(1)(2)}$	TCVN 8560:2018	%	2,59
4.	Hàm lượng chất hữu cơ $OM^{(1)(2)}$	TCVN 9294:2012	%	71
5.	Độ ẩm $^{(1)(2)}$ (70°C) Humidity	TCVN 9297:2012	%	18,8
6.	$pH_{H_2O}^{(1)}$	TCVN 13263-9:2020	-	8,17

III. LAYING HENS: 250 rmb/ton

No.	Criteria	Method	Unit	Result
1.	Hàm lượng $N_{ts}^{(1)(2)}$	TCVN 8557:2010	%	1,44
2.	Hàm lượng $P_2O_{5hh}^{(1)(2)}$	TCVN 8559:2010	%	1,68
3.	Hàm lượng $K_2O_{hh}^{(1)(2)}$	TCVN 8560:2018	%	2,13
4.	Hàm lượng chất hữu cơ $OM^{(1)(2)}$	TCVN 9294:2012	%	26,9
5.	Độ ẩm $^{(1)(2)}$ (70°C) Humidity	TCVN 9297:2012	%	52,8
6.	$pH_{H_2O}^{(1)}$	TCVN 13263-9:2020	-	8,16

Based on the chicken dung raw material , the basic cost by RY tech produced organic fertilizer would be around RMB 350 -400 per ton, and very close imported products standards. The suggested sales price is around RMB 500-600 per ton

Standards of importing organic fertilizer by Omega agriculture from Vietnam customs records Vietnam Importing time :2021 Sep

详细产品英文名称:	Organic fertilizer MTM Premium, originating from animals, has treated chemistry. Content: Organic substance = 65%, C / N = 12, pH = 5, humidity = 25%, protein total = 3%, P2O5 = 2%, k2o = 2%. 15kg / bag. NSX: 24/07 / 2021 new 100%		
详细产品越南语名称:	Phân bón hữu cơ MTM PREMIUM, có nguồn gốc từ động vật, đã qua xử lý hóa học. Hàm lượng: chất hữu cơ=65%, C/N=12, pH=5, độ ẩm=25%, Đạm tổng=3%, P2O5=2%, K2O=2%. 15kg/bag. NSX: 24/07/2021.Hàng mới 100%		
子行业:	Other Chemicals		
行业:	Chemicals		
商品货运情况			
越南目的港:	CANG CAT LAI (HCM)	运输方式:	Sea
国外装货港:	NIIGATA APT - NIIGAT	成交方式:	C&F
国外装货港代码:	JPNII	越南目的港代码:	VNCLI
贸易国所在州:	Asia	贸易国:	Japan (JP)
原产国:	JAPAN	报关日期:	2021/9/30 0:00:00
月度:	202109	海关:	CSGONKVI
海关机关代码:	02CI		
提单号:	060821NSSLKNIHC21Q0149		
关单号:	104213863130	付款方式:	TTR
贸易类型:	Enter the consumer business	仓储:	TONG CTY TAN CANG SG
商品量价情况			
货物越南盾总金额:	7772440	货物美元总金额:	38041
货物越南盾单价:	23.73 <i>-VN price</i>	货物美元单价:	0.12 <i>USD/kg</i>
货物合同总金额:	4258800	货物合同单价:	13
货物合同币种:	JPY	货物数量单位:	KGM
货物数量:	327600		
货物人民币总金额:	245649		
货物人民币单价:	0.75		

Importing time :2021 Nov.

Based on above CFR price the marketing price would not be less than RMB 750-850 per ton

详细产品英文名称:	Organic Fertilizer Omega 60 Organic Fertilizer, (Organic: 60%, Total Press (NTS): 3%, PHH2O: 5, Moisture: 20%, Effective Lan (P2O5HH): 2%, Kali effectively (K2OHH): 2%, C / N rate: 10), 500 kg, 100% new		
详细产品越南语名称:	Phân bón hữu cơ ORGANIC FERTILIZER OMEGA 60,(hữu cơ:60%,đạm tổng số (Nts):3%,pHH2O:5, độ ẩm:20%,Lân hữu hiệu(P2O5hh):2%,Kali hữu hiệu(K2Ohh):2%,tỷ lệ C/N:10), bao 500 kg, mới 100%		
子行业:	Other Chemicals		
行业:	Chemicals		
商品货运情况			
越南目的港:	GREEN PORT (HP)	运输方式:	Sea
国外装货港:	NIIGATA APT - NIIGAT	成交方式:	C&F
国外装货港代码:	JPNII	越南目的港代码:	VNGEE
贸易国所在州:	Asia	贸易国:	Japan (JP)
原产国:	JAPAN	报关日期:	2021/11/23 0:00:00
月度:	202111	海关:	CHPKVIII
海关机关代码:	03TG		
提单号:	151021SNK0046210800040		
关单号:	104331030312	付款方式:	KC
贸易类型:	Enter the consumer business	仓储:	CTY CP CONTAINER VN
商品量价情况			
货物越南盾总金额:	9351354	货物美元总金额:	47740
货物越南盾单价:	18.93	货物美元单价:	0.1
货物合同总金额:	5434000	货物合同单价:	11
货物合同币种:	JPY	货物数量单位:	KGM
货物数量:	494000		
货物人民币总金额:	305021		
货物人民币单价:	0.62		