

MINERAL MIXTURES FOR CATTLE AND POULTRY FEED

1. INTRODUCTION:

Cattle feed and poultry feed have a great demand in the local market because of the increasing production in milk through milch cattle and increased production and consumption of eggs through poults. With increased costs of transportation, local sales of feeds have an added advantage. Cattle rearers are increasingly becoming aware that scientifically produced and nutritionally balanced cattle feed will give better yields in terms of milk and milk products even though the cost may be marginally higher than the traditional feeds of grass and hay. Similarly poults that are fed a scientifically manufactured diet are less likely to contract diseases of different viruses and bacteria. The quality and quantity of eggs is also increased considerably.

2. PRODUCT AND ITS APPLICATION:

Cattle and poultry feed are mixtures of various ingredients like maize, rice bran, groundnut cake, molasses, soyabean cake, fish meal etc. The composition of cattle/poultry feed can be varied depending on the availability of various raw materials. Balanced feed is essential for proper growth of cattle and chicks and consequently to increase the output of milk, broiler/eggs. The per capita consumption of milk and poultry products is very low in the north eastern region and there is great need to increase the production. Development of dairy and poultry farms is receiving increasing attention considering the nutritional requirements of the population as well as large employment opportunities generated by these activities.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Promoter must have basic knowledge of CHEMICALS process and operation and quality of MINERALS. It is desirable to have Graduate in any Science.

4. INDUSTRY LOOK OUT AND TRENDS

The Indian poultry feed industry, dependent on the sound growth of poultry has a great untapped potential. However, the southern part of India holds the maximum share of poultry production and consumption. Market researchers anticipate the poultry feed market to grow at a CAGR of around 8% during 2012-13 to 2016-17.

In coming years, the potential for packaged feed is expected to grow at a higher pace as compared with the traditional feed. In addition, the per capita consumption of milk, eggs, and broiler meat is growing rapidly. The Indian feed industry is undergoing a very exciting phase of growth for the next decade. So we can conclude a small scale cattle and poultry feed manufacturing business is a techno-commercially profitable project.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

There are about 300.00 million bovines, 65.07 million sheep, 135.2 million goats and about 10.3 million pigs as per 19th Livestock Census in the country. Feed requirement in India

| Type | Requirement |
|--|-----------------------|
| Compound feed requirement | 80 million tons/year |
| Requirement for dairy animals | 30 million tons |
| Present market for compound dairy feed | 5.5 million tons/year |
| Private feed sector | 1.2 million tons |
| Dairy cooperatives | 2.5 million tons |
| Unorganized sector | 1.8 million tons |

The population of cattle in India is reported to be about 6400 Lakhs. Of this, about 10% are stallfed. Based on an average daily requirement of about 2.5 kg of cattle feed per cattle the annual demand for cattle feed for the stall-fed cattle population in India is estimated at 2000 lakh tone. Besides, keeping in view the feed requirement for poultry, the total demand for cattle/poultry feed is estimated at about 800 lakhtone per year.

6. RAW MATERIAL REQUIREMENTS:

Based on a typical composition of cattle feed and poultry feed, the annual requirement of rawmaterials will be as follows:

| Item | Cattle feed(tonne) | Poultry feed(tonne) | Total (tonne) |
|------------------------------|---------------------------|----------------------------|----------------------|
| Groundnut cake | 168 | 10 | 178 |
| Wheat bran | 56 | -- | 56 |
| Rice bran / Cotton seed bran | 140 | 7 | 147 |
| Rice polish | -- | 7 | 7 |
| Maize | 56 | 20 | 76 |
| Damaged wheat | 56 | 14 | 70 |
| Molasses | 49 | 3.5 | 52.5 |
| Fish meal / bone meal | -- | 3.5 | 3.5 |
| Others | 36 | 4 | 40 |

Most of the above raw materials are available in the all the region. However, theiravailability is limited in some area. Some of the constituents of the feed such as groundnut cake, wheat branetc. would need to be procured from the respected region.

Utility: Utilities per month

| Sr No | Description | Rs. Lakhs |
|--------------|-------------------------------------|-----------------------|
| 1 | Power 60000 KWH @ Rs. 5.50 per unit | Rs. 3.30 Lakhs |
| 2 | Water | Rs. 0.10 Lakhs |
| 3 | Boiler fuel | Rs. 0.26 Lakhs |
| 4 | Total utilities | Rs. 3.66 Lakhs |

7. MANUFACTURING PROCESS:

The process steps involved in production of cattle feed and poultry feed are –

- Grinding of raw materials
- Compounding the powders and mixing with molasses

iii. Packing.

The raw material comprising wheat bran, rice bran, gram husk, de-oiled cakes and mineral mix are fed in the feed elevator in the desired proportions and passed through the pulverizer wherein they are ground to the desired mesh size. The ground material is pneumatically conveyed to the storage bin through cyclone and air lock. The material from the bin passes into the mixer where it is mixed uniformly. Molasses is dosed in the desired quantities. The material after mixing is discharged into the hopper below the mixer. From the hopper a bucket elevator conveys the material to the tempering screw where open steam is provided to soften the mass before pelletization. The material from the tempering screw passes into the pelletizer where it is formed by means of a screw and then passes out of the die of desired diameter. The pellets emerging out of the pelletizer are hot and are cooled in the pellet cooler where they harden slightly and do not crumble on storage or transit. The cooled pellets are screened by passing over a vibratory screen when the un-pelletized material is removed. The screened pellets are then bagged in gunny bags and stored prior to dispatch.

8. MANPOWER REQUIREMENT:

8.1. Salaries and wages

| Sr. No. | Description | No. of Persons | Total Salary/month (Rs. Lakhs) |
|-----------|------------------------|----------------|--------------------------------|
| 1 | Production Manager | 1 | 0.150 |
| 2 | Maintenance mechanic | 1 | 0.100 |
| 3 | Production supervisors | 3 | 0.300 |
| 4 | Laboratory chemist | 1 | 0.100 |
| 5 | Skilled workers | 9 | 0.540 |
| 6 | Unskilled workers | 18 | 0.540 |
| 7 | Packing workers | 9 | 0.270 |
| 8 | Van drivers | 2 | 0.120 |
| 9 | Administrative staff | 3 | 0.300 |
| 10 | Sales staff | 3 | 0.300 |
| 11 | Security staff | 3 | 0.120 |
| 12 | Total | 53 | 2.840 |

9. IMPLEMENTATION SCHEDULE:

The project can be implemented in 4 months' time as detailed below:

| Sr. No. | Activity | Time Required (in months) |
|---------|---|------------------------------|
| 1 | Acquisition of premises | 1.00 |
| 2 | Construction (if applicable) | 2.00 |
| 3 | Procurement & installation of Plant & Machinery | 1.00 |
| 4 | Arrangement of Finance | 2.00 |
| 5 | Recruitment of required manpower | 1.00 |
| | Total time required (<i>some activities shall run concurrently</i>) | 3.00 |

10. COST OF PROJECT:

| Sr. No. | Particulars | ₹ in Lacs |
|---------|---|--------------|
| 1 | Land | - |
| 2 | Building | - |
| 3 | Plant & Machinery | 42.00 |
| 4 | Furniture, Electrical Installations | 17.00 |
| 5 | Other Assets including Preliminary / Pre-operative expenses | 15.00 |
| 6 | Working Capital | 19.00 |
| | Total | 93.00 |

11. MEANS OF FINANCE:

Bank term loans are assumed @ 75% of fixed assets and current assets. The proposed funding pattern is as under:

| Sr. No. | Particulars | ₹ in Lacs |
|---------|-------------------------|--------------|
| 1 | Promoter's contribution | 23.25 |
| 2 | Bank Finance | 69.75 |
| | Total | 93.00 |

12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 19.00 lacs as detailed below:

| Sr. No. | Description | Rs. Lakhs |
|---------|-------------------------------------|---------------|
| 1 | Salaries and wages | 2.840 |
| 2 | Raw material and packaging material | 39.220 |
| 3 | Utilities | 3.660 |
| 4 | Contingent expenses | 8.751 |
| 5 | Total | 54.471 |

| Sr. No. | Particulars | Gross Amt | Margin % | Margin Amt | Bank Finance |
|---------|--------------|-----------|----------|------------|--------------|
| 1 | Inventories | 8.00 | 25.00 | 2.00 | 6.00 |
| 2 | Receivables | 8.00 | 25.00 | 2.00 | 6.00 |
| 3 | Overheads | 3.00 | 100% | 3.00 | - |
| 4 | Creditors | - | 40% | - | - |
| | Total | 19.00 | | 7.00 | 12.00 |

13. LIST OF MACHINERY REQUIRED:

- Feed elevator in mild steel construction with bucket link chain discharge chute complete with drive mechanism, comprising of 2 HP motor, gear box, chain wheel and chain. The elevator is also provided with a rotating magnetic drum at the boot of the elevator for separation of iron particles from the incoming raw material - one unit.
- Pulveriser mill complete with "V" Pulleys, "V" belts, cyclone collector and ducting, driven by a 7.5HP motor - one unit
- Suction fan having a capacity of sucking air at 1000 cubic meters per hour at normal atmospheric pressure and to convey pneumatically the ground material from the pulveriser mill to the cyclone collector. The system is provided with a "V" pulley, "V" belt, chain guard, and tensioning device and driven by a 3HP motor - one unit.

- A rotary valve between cyclone and collection bin.
- A storage bin made of mild steel construction of 500 liters capacity filled with a rotary valve (air lock) for discharge into a horizontal mixer - one unit.
- Horizontal mixer for mixing thoroughly all ingredients with facility of dosing molasses by a metering pumping mechanism. The mixer made of mild steel is driven by a 7.5HP motor with a set of sprocket and wheels - one unit.
- Platform and ladder for mixer and support for suction fan - one unit.
- Dust collector with bags - one unit
- Portable platform loose weighing scale of 300 kilograms capacity - one unit.
- Receiving hopper below the horizontal mixer with 2 way chutes - one unit.
- Elevator similar in item no.1 made of mild steel construction with bucket link chain driven by a 2HP motor, gear box, chain wheel and chain. The elevator lifts the material from the receiving hopper and feeds the same to the tempering screw conveyor - one unit.
- Tempering screw conveyor for tempering the feed with open steam in order to soften the material for pelletisation and to convey the feed to the pelletizer. The screw conveyor is driven by a 25 HP motor and a reduction gear box - one unit.
- Pelletizer for converting the feed material received from the above screw conveyor into cylindrical pellets. The machine consists of special heat treated die plate and pressing rolls mounted on centrally located heavy vertical shaft driven by special worm gear and a 40 HP motor and complete with "V"
- Pulleys and "V" belts - 1 unit.
- Pellet cooler to cool the pellets coming out of the pelletizer complete with 2
- HP motor for conveyor, blower, cyclone, and a 7.5HP motor for the blower – 1 unit.
- Screener comprising of a vibratory screen mesh for removal of un-pelletised material before bagging. The system complete with a 5HP motor and necessary driving mechanism - 1 unit.
- Two way chute for bagging - 1 unit
- Weighing scale - 100 kilograms - 2 nos.
- Service tank for molasses for holding 300 kilograms of molasses with open steaming arrangement. - 1 no.
- Storage tank for molasses of 500 cubic feet capacity.
- Molasses pump with 2 HP motor - 1 unit.

- Electrical control panel consisting of starters, push buttons, intermediary wiring and earthing material for connecting the equipment supplied.
- Mild steel structure for supporting the equipment.

All the machines and equipment are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

- Kamdhenu Agro Machinery
Plot No. 6, Near Power House,
Wathoda Road, Wathoda
Nagpur - 440035
Maharashtra, India
- Future Industries Private Limited
Shed No. 15, Ambica Estate,
Corporation Municipal Plot,
Opposite Sadvichar Hospital,
Naroda, Ahmedabad - 382330,
Gujarat, India
- The Global Pharma Equipments
Star Industrial Estate,
D-32, Naik Pada,
Near Hanuman Mandir,
Opposite Dwarka Industrial Estate,
Vasai East, Vasai - 401208,
Maharashtra, India

14. PROFITABILITY CALCULATIONS:

Financial analysis

| Sr. No. | Description | Rs. Lakhs |
|----------------|--|------------------|
| 1 | Total recurring cost per year | 653.652 |
| 2 | Depreciation on land and building | -- |
| 3 | Depreciation on machinery | 4.893 |
| 4 | Depreciation on furnaces | 0.000 |
| 5 | Depreciation on moulds and fixtures | 0.100 |
| 6 | Depreciation on office equipment | 0.100 |
| 7 | Interest on long term loan @ 12% | 18.074 |
| 8 | Interest on short term borrowings@ 12% | 5.216 |
| 9 | Total cost of production | 682.035 |

Turnover per year

| Sr. No. | Item | Qty | Rate/unit(Rs) | Total (Rs. Lakhs) |
|----------------|-------------|--------------|----------------------|--------------------------|
| 1 | Cattle feed | 5,00,000 Kgs | Rs.15.00/kg | Rs.750.00 lakhs |

Viability analysis

| Sr | Description | Value (Rs. lakhs) |
|-----------|------------------------------|--------------------------|
| 1 | Net profit before income tax | 53.865 |
| 2 | Net profit ratio | 7.2% |
| 3 | Internal rate of return | 20.1% |
| 4 | Break even percentage | 29.4% |
| 5 | Debt service coverage ratio | 1.988 |

15. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 48.42 % of projected capacity as detailed below:

| Sr. No. | Particulars | UOM | Value |
|---------|-------------------------------|------------|--------|
| 1 | Sales at full capacity | ₹. In Lacs | 750.00 |
| 2 | Variable costs | ₹. In Lacs | 653.65 |
| 3 | Fixed costs incl. interest | ₹. In Lacs | 28.38 |
| 4 | $BEP = FC/(SR-VC) \times 100$ | % | 29.4% |

16. STATUTORY / GOVERNMENT APPROVALS

As per the allocation of business rules under the Constitution, labour is in the concurrent list of subjects. It is dealt with by the MOLE at the Central and Departments of Labour under State Governments in respective States / UTs. The MOLE has enacted workplace safety and health statutes concerning workers in the manufacturing sector, mines, ports and docks and in construction sectors.

Further, other Ministries of the Government of India have also enacted certain statutes relating to safety aspects of substances, equipment, operations etc. Some of the statutes applicable in the manufacturing sector are discussed below:

The Static and Mobile Pressure Vessels (Unfired) Rules, 1981

These (SMPV) Rules are notified under the Explosives Act, 1884. These rules regulate storage, handling and transport of compressed gases. These rules stipulate requirements regarding construction and fitments, periodic testing, location, fire protection, loading and unloading facilities, transfer operations etc. in respect of pressure vessels whose water capacity exceeds one thousand litres. These rules are enforced by the Chief Controller of Explosives under the Ministry of Industry and Commerce, Govt. of India (PESO).

The Manufacture, Storage and Import of Hazardous Chemicals Rules (MSIHC), 1989

These MSIHC Rules are notified under the Environment (Protection) Act, 1986. These rules are aimed at regulating and handling of certain specified hazardous chemicals. The rules stipulate

requirements regarding notification of site, identification of major hazards, taking necessary steps to control major accident, notification of major accident, preparation of safety report and on-site emergency plan; prevention and control of major accident, dissemination of information etc. These rules are notified by the Ministry of Environment and Forests (MOEF) but enforced by the Inspectorates of Factories of respective States / UTs in the manufacturing sector.

The Factories Act, 1948 and State Factories Rules

The Factories Act, 1948 is very comprehensive legislation dealing with the matters of safety, health and welfare of workers in factories. The Act places duties on the occupier to ensure safety, health and welfare of workers at work. Some of the salient provisions of the Act include:

- Guarding of machinery
- Hoists and Lifts; Lifting Machines and Appliances
- Revolving Machinery
- Pressure Plant
- Excessive Weight
- Protection of Eyes
- Precautions against dangerous fumes, gases etc.
- Explosive or inflammable dust, gas etc.
- Precautions in case of fire
- Safety of buildings and machinery
- Permissible limits of exposure of chemical and toxic substances
- Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD AND FORWARD INTEGRATIONS

Chemical companies often become integrated and undergo other activities outside the chemical industry. Increased competition prompts many companies to reduce supply chain costs by looking outside the chemical sector at suppliers and customers. While most companies within the chemicals sector primarily produce chemicals, some companies also conduct other

manufacturing activities. The exact proportion of chemicals sector companies that are integrated with other sector activities is unknown, but many companies actively seek vertical integration. Many manufacturers pursue vertical integration to secure suppliers and customers for their products.

Mergers and acquisitions are a common way for companies to undertake new chemical ventures. By purchasing their chemical suppliers, some manufacturers secure future chemical feedstock for their products or other chemicals that they use in manufacturing. The company making the purchase obtains valuable expertise and equipment. Some mining and petrochemical production is more cost-effective when integrated within a chemical company. Energy and feedstock costs are often a significant expense for chemical companies. Integrating chemical production with activities that secure supplies of chemical feedstock and energy is relatively common as chemical companies grow. Chemical companies are located near mines, oil fields, ammonia factories and water supplies. This reduces transportation costs and increases the reliability of supplies by reducing the distance between feedstock and the factory.

Some companies, such as Sino-Coking Coal and Coke Chemical Industries Incorporated, own their mines. BHP Billiton operates a broad range of mines and is primarily a mining company. It does, however, also produce petrochemical feedstock for the chemical industry and therefore operates within the chemical industry as well. These companies technically operate within both the chemical and mining industries in their normal business operations.

Integrating a chemical company with other activities provides several direct benefits for the company and is becoming increasingly common. High energy costs necessitate greater control of energy resources and minimal reliance on expensive transportation. Chemical companies experience volatile profitability due to fluctuations in feedstock and energy expenses. Some companies control this volatility through careful supply chain management and by charging supply surcharges. Actively researching and developing alternative feedstock and energy supplies helps the company reduce costs.

Vertical integration supports these activities by eliminating redundant activities at multiple companies and increasing efficiency. By consolidating activity among multiple, similar

operations, chemical companies achieve cost savings that contribute to higher profitability. End products are often very profitable, and some chemical companies purchase their former customers to take advantage of the marked-up prices of products further along in the supply chain.

Integration may become more common for many chemical companies as competition strengthens and traditional feedstock becomes more expensive. Market demand for chemical feedstock increases as emerging market economies grow and result in increased consumer spending around the world.

18. TRAINING CENTERS AND COURSES

There is no such training required to start this business but, basic chemical bachelor's degree is plus point for enterpriser. Promoter may train their employees in such specialized institutions to grow up the business. There are few specialised Institutes provide degree certification in chemical Technology, few most famous and authenticate Institutions are as follows:

1. Department of chemical LD college of engineering
No.120, Circular Road, University Area, Navrangpura,
Opposite Gujarat University, Ahmedabad, Gujarat 380015
2. MIT College of chemicalEngineering, Pune
Gate.No.140, Raj Baugh Educational Complex,
Pune Solapur Highway,
Loni Kalbhor, Pune – 412201
Maharashtra, India

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.