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Madras Agric. J., 82(3): 206-209 March, 1995

<https://doi.org/10.29321/MAJ.10.A00717>

## FEASIBILITY OF ESTABLISHING ALFALFA MEAL PROCESSING PLANTS IN TAMIL NADU

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### ABSTRACT

A study was conducted to analyse the economic feasibility of establishing an alfalfa meal processing unit in Coimbatore District. The benefit-cost ratio of an alfalfa meal unit producing and marketing 300 t per year was 1.06. The net present value and internal rate of return were Rs.2,63,502.96 and 44.80 per cent respectively. Alfalfa meal plant would break-even at 257.55 t per annum.

KEY WORDS : Alfalfa Meal Plant, Feasibility, Tamil Nadu

Alfalfa is the most productive, perennial legume fodder, renowned for its nutritive value. It possesses a deep tap root system, which imparts drought tolerance. It has a very high productivity in terms of drymatter. A well managed alfalfa crop has the highest sale value of all forage species. It produces more protein per ha than any other crop. Alfalfa, therefore can be known as the "Queen of the Forages". Alfalfa green meal is rich in protein and is normally used in cattle feed mix and poultry feed mix. All green fodder crops being highly perishables, create several problems in marketing and involves higher labour cost in marketing. Besides, the farmers face many problems in marketing of their produce viz., lack of market information, processing units, market infrastructure and price fluctuation.

Keeping in view of the aforesaid facts, a study was undertaken in Udumalpet area where the alfalfa green fodder was successfully grown. To avoid the exploitation of the farmers by the traders and to build a competitive environment for the

crop, an attempt was made to prepare a feasibility report for starting a alfalfa meal processing unit. The objectives of the study are :

- (i) to study the economics of alfalfa processing and identify the potentials for starting new processing unit, and,
- (ii) to suggest suitable policy measures to encourage commercial alfalfa meal processing and marketing.

### MATERIALS AND METHODS

In order to fulfill the objective, Tamil Nadu Agro-Industries Corporation Limited (TAI) started an alfalfa meal plant in 1977. Considering the production potentials, an attempt was made to prepare a feasibility report for starting new alfalfa meal processing units in the area studied, so as to help entrepreneurs to venture into this business, the existing only processing unit was constituted as a case for knowing the economic, technical, financial and managerial feasibilities of alfalfa meal processing unit.

In order to assess the economic viability, the Net Present Value, Benefit / Cost Ratio, and the Internal Rate of Return were estimated. The Internal Rate of Return (IRR) for any investment is the discount rate which makes net present value of the stream of cash flow over a finite period, equal to zero. Break-even means that the total revenue is just enough to pay both for the variable and the fixed costs incurred.

## RESULTS AND DISCUSSION

Alfalfa green has been grown in the study region for the past two decades. The area under alfalfa green was 72 ha in 1980 and it increased to the level of 199 ha in 1990. In Udumalpet area, the crop assumed much importance due to specially suitable soil, existing brackish well water and the prevailing conducive climatic conditions along with seasonal winds.

In the recent past, the crop assumed commercial significance due to high market potential. The alfalfa meal plant started by Tamil Nadu Agro-Industries Corporation increased the commercial value of the crop. The TAI unit produced 52 MT of alfalfa meal in 1977-78 and it increased to 231 MT in 1990-91. This clearly indicated the steady uptrend in demand for alfalfa meal and the need for establishing such units in the study region. There has been a good demand for alfalfa meal and the organisations, like Karnataka Agro-Corn Products Limited, Deejay Enterprises, Lipton India Private Limited, Kattupakkam Research Unit, King Institute, Madras, Local Poultry dealers, Srivalli Oil Trading Mills, Tamil Nadu Fisheries Corporation and Tamil Nadu Milk

Table 1. Capital investment required for the alfalfa meal plant with 300 tonnes per annum capacity.

| Capital items                      | Amount in Rupees | Percentage |
|------------------------------------|------------------|------------|
| Land                               | 1,00,000         | 20.70      |
| Buildings                          | 2,00,000         | 41.41      |
| Drying yard                        | 1,00,000         | 20.70      |
| Shed                               | 8,000            | 1.66       |
| Cutting machine                    | 8,000            | 1.66       |
| Weighing machine (300 kg capacity) | 15,000           | 3.10       |
| Miracle mill                       | 30,000           | 6.21       |
| Grinding machine                   | 8,000            | 1.66       |
| 2 Motors (10 H.P. & 3 H.P)         | 14,000           | 2.90       |
| Total                              | 4,83,000         | 100.00     |

Producers Federation are the regular purchasers of the TAI alfalfa meal. The total purchases made by these organisations worked out to more than 300 t per annum. Establishment of any new alfalfa meal plant can capture the potential markets since the demand for the meal had been increasing over years. In addition, there had been no competitors. Thus, to create a competitive market and to get the remunerative price for the producers, it is suggested that the new plants could run profitably.

### Technical feasibility

Alfalfa meal is produced in powder form by utilising the alfalfa green fodder. The production process involved cutting, drying and powdering. The meal has key equipments like, weighing machine, cutting machine and miracle mills. These machineries and equipments can be obtained from local engineering units with normal prices. The total cost of machineries and equipments will work out to Rs.75,000.

The purchase of alfalfa green can be made locally and there is a scope of locating the plants in around the study region to reduce the cost of marketing and ensure normal labour supply. In the study region, villagers in around the unit could get their employment opportunities as well. Moreover, there has been no labour problem and there has been no fluctuations in supply of the green alfalfa because of perennial nature and continuous yield. These factors provide the conducive environment for any such plants to be started with full capacity utilisation.

### Financial feasibility

The financial feasibility of the proposed alfalfa processing plant was analysed and various related issues and results are discussed below.

### Investment capital

The details on the investment requirements on capital structures required for the erection of alfalfa meal plant are presented in Table 1.

It could be noted from the Table 1, that the total fixed cost worked out to Rs.4,83,000, in which, the building and other necessary structures alone accounted for the maximum of 63.77 per cent. The next important capital item was land, accounting for 20.70 per cent and the drying yard

**Table 2. Variable cost structure for running alfalfa plant with 300 tonnes per year capacity.**

| Particulars                                    | Amount in Rupees | Percentage |
|--|------------------|------------|
| Human labour                                   | 30,000           | 5.91       |
| Cost of alfalfa green                          | 4,20,000         | 82.71      |
| Maintenance cost                               | 10,000           | 1.97       |
| Electricity charges                            | 12,000           | 2.36       |
| Cost of personnel                              | 25,800           | 5.08       |
| Cost of packaging and other miscellaneous cost | 10,000           | 1.97       |
| Total  | 5,07,800         | 100.00     |

accounted for another 20.70 per cent. the remaining items included machineries, accounting for the remaining 17.19 per cent.

### Working capital

The details on the working capital needs of the proposed unit are furnished in Table 2.

It could be noted (Table 2) that the total working capital requirements per year for running the plant is estimated at Rs.5,07,800 for a capacity of 300 t per year. Among the variable cost components, the cost of raw materials alone accounted for a maximum of Rs.4,20,000 (82.71 per cent), followed by the costs on human labour (5.91 per cent) and cost of Office Staff (5.08 per cent). Other operational costs would include cost of maintenance, electricity charges, packaging and miscellaneous costs amounting to Rs.32,000 (6.3 per cent). The cost of Office Staff included a Manager and other office staff. The miscellaneous cost items included office stationery and others.

The total cost (fixed cost and variable cost) of the plant per annum worked out to Rs.5,32,700 out of total fixed cost accounts for 4.67 per cent (Rs.24,900) and the variable cost amounts to Rs.5,07,800 (95.33 per cent). Gross income were estimated to Rs.6,90,000 per annum. The net profit including the fixed cost works out to Rs.1,57,300. In this project, infrastructures and machineries will have life period of 20 and 10 years respectively. The financial viability of the project was further assessed by working out the Net Present Value, Benefit/Cost ratio and Internal Rate of Return.

### Net present value (NPV)

It is the most straight forward discount cash flow method. NPV can be calculated using the

opportunity cost of capital (14 per cent) and the present worth of the incremental net benefit stream is found out. The positive NPV gives the worthiness of the project. The results showed that the NPV is positive and it worked out to Rs.2,63,506.92 indicating the financial worthiness of the project.

### Internal rate of return (IRR)

It is another method of determining the financial viability of a project. IRR is the rate at which NPV is equal to zero. It is the maximum interest the project could pay from the resources used if the project is to cover its investment and variable cost and still break-even. The IRR worked out to 44.8 per cent, indicating the financial soundness of this project.

### Benefit/cost ratio

The other method of capital budgeting is Benefit/cost ratio. It is the ratio between stream to the cost stream at the opportunity cost of capital (14%). It was estimated at 1.06, indicating the profitability of the project.

### Break-even analysis

The break-even point is one at which, the firm breaks even; that is at the point, the firm neither incurs loss nor gains profit. Just breaks even. Unless the firm breaks even very quickly, it may not be worthwhile to continue production. Therefore, an attempt was made to work out the break-even volume for the proposed alfalfa meal plant and the results indicated that the proposed firm will break even at 257.35 tonnes.

### Managerial feasibility

The proposed unit can be organised either as a single proprietorship business or as a partnership business. As this is a small agribusiness firm, a manager trained in management techniques can be employed. For some time, the manager can look after the management of finance, marketing and operations, with one clerical assistance. In the second phase, the expansion may be thought out.

The present study indicated the economic feasibility of establishing alfalfa meal processing units in the Coimbatore district. An attempt was made to prepare a feasibility report for starting a

new alfalfa meal processing unit in the area studied, so as to help the entrepreneurs to venture into this business. The economic, technical, financial and managerial feasibilities were analysed.

In the feasibility analysis for starting alfalfa meal unit to produce and market 300 tonnes per year, resulted in the benefit-cost ratio of 1.06. The net present value and internal rate of return were Rs.2,63,502.96 and 44.80 per cent respectively. The feasibility analysis further revealed that the project would yield reasonable profit. The break-even analysis for the proposed alfalfa meal plant indicated that the plant would break-even at 257.35 tonnes. Therefore, an entrepreneurial development

programme may be thought of to train the rural unemployed educated youths.

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Madras Agric. J., 82(3): 209-211 March, 1995

## HYBRID RICE : PRESENT STATUS IN TAMIL NADU, INDIA

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Rice is cultivated both under wet and dry conditions in Tamil Nadu, India. It is cultivated in about 20 lakh ha with an average yield of three t of rice per ha (4.5 t of grain per ha) in different seasons throughout the year in different parts of the State with number of varieties under different duration group (Table 1).

Even though the seasons are named differently in different parts of the State, they may be broadly classified as Summer, First season (*kharif*), Second season (*rabi*) and Winter. Semi dry *samba* and dry *samba* are usually grown in single crop lands. Out of the total rice cultivated area, about 16 lakh ha are covered during second, winter, semi dry *samba* and dry *samba* seasons. The remaining 4 lakh ha (25% of the total rice area) are being covered during summer and first season.

### Production and productivity

Wet paddy is cultivated either by lift irrigation or tank irrigation under upland condition and by canal irrigation under lowland condition. Semi dry paddy is cultivated with pre-monsoon dry sowing and subsequently under wet condition either by tank or canal water. Dry paddy cultivation is completely under rainfed condition. Productivity is usually more, about 4 t of rice per ha. in summer and first season crops while it is about 3 t in second

season crop and 1 to 3 t in dry and semidry season crops (Table 2).

### Varieties

Important varieties which are under cultivation are ASD 17(100), IR 50(105), TKM 9 (105), ADT 37 (105), ASD 18 (105), ADT 36 (110), ASD 16 (115) and Co 37 (115) in short duration group : ADT 39 (120), IR 36 (120), IR 64 (120), IR 20 (130), Ponni (130), White Ponni (130), Bhavani (130), MDU 4 (130), Co 43 (135) and Co 45 (140) in medium duration group and ADT 40 (150) Co 42 (150) and Savithri (160) in long duration group. Figures in parenthesis are duration in days from seed to seed.

### Hybrid rice

Possibility for hybrid rice cultivation is more in area where there is assured water supply and potentiality for increased production. First preference is for summer and first season wet crop wherein the yield potential is more due to high solar energy and low incidence of pest and diseases, even though the varieties cultivated fall under 100 to 115 days duration group. Second area of preference is the second season wet crop, wherein 120 to 140 days duration varieties are predominantly cultivated. Third area is winter season crop, wherein 100 to 115 days duration