Form1.
Summary of the plan of Vermicomposting fertilizer production

1. Introduction to products or services

1.1. The goal of plan

The main goal of this plan is to establish the vermicomposting fertilizer production unit in Lorestan province. This plan will be exploited from 2017 with 6 personnel and 70% of the practical capacity in 3 working shifts of 8 hours and 300 day annually and will reach its 100% of the practical capacity by 2020.

1.2. Characteristics and advantages

Vermicompost is the result of biological activity of a type of worm called EiseniaFoetida. This organism, changes the natural organic materials to the organic fertilizer by eating them such that at present, this fertilizer is a rich type of biologic organic fertilizers worldwide. The Vermicompost application in physical, chemical and biological properties of the soil is highly effective. This fertilizer modifies the chemical, physical and biological properties of the soil and in addition to low specific weight, lacks odor, pathogen microorganisms, anaerobic bacteria, molds and weeds. Vermicompost provides the plants and seed growth and nutrition keeping in addition to high water absorption.

Advantages of Vermicompost: it is light and odorless, it is free of weeds, contains useful aerobic microorganisms such as nitrogen and bacteria, high level of the main elements in comparison with other organic fertilizers, containing micro-elements such as zinc, copper and manganese, containing plant growth drivers such as vitamins particularly B_{12}, high capacity of keeping water and nutrition, free of anaerobic bacteria, molds and pathogen microorganisms, modifying the chemical, physical and biological features of the soil, consistent with environmental regulations, consumable in raising all agricultural products, soil airing by providing porosity in dense soil and making use of this fertilizer enhance the quality and quantity of the agricultural products relative to the chemical ones and doesn't have the challenges of the remaining chemical fertilizers in foods.

1.3. Custom fees

Table1. Vermicompost fertilizer custom fees and tariffs

Description	Tariff code	Fees
Vermicompost	31059090	5

1.4. ISIC code

The plant considered is for producing Vermicompost fertilizer. The ISIC code related to this product is 2412 in the department of industry, mine and commerce systems in subgroup of chemical products production and its measurement scale is ton.

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Table2. Product ISIC code

ISIC code	Description	Scale
2412512385	Vermicompost	Ton

1.5. Introduction to products application

Compost fertilizer is used in agriculture, farms and greenhouses for producing organic products. The word resulted from Vermicompost process is dried and used as livestock food. Vermicompost fertilizer is used in summer agriculture, green spaces and forestation, vineyard, grass planting, tress with pity fruits, non-yielding trees, saffron farms, cereals, gardens, mushroom and other agricultural products and garden products and enhances the products quality and quantity.

2. Suggested sites

Based on surveys, the cities such as Borujerd, Selseleh and Delphan are suitable sited for establishing this unit.

3. Raw, auxiliary materials and consumables

The raw materials include organic wastes (livestock fertilizers and wastes), worm and packing materials.

4. Sales plan and target market (local and foreign)

The target market at first is to supply locally in sections and then for additional production, the export would be done to the Iraq and western neighbors.

Table3. Products production and sales plan

Description	2017	2018	2019	2020
Production capacity	70%	80%	90%	100%
Production level (kg)				
Vermicompost fertilizer	700000	800000	900000	100000
Worm	28000	32000	36000	40000
Total (kg)	728000	832000	936000	104000
Sales level (m.Rial)				
Vermicompost fertilizer	3010	3440	3870	4300
Worm	5600	6400	7200	8000
Total (m.Rial)	8610	9840	11070	12300

5. Annual nominal and practical capacity

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Nominal capacity

The Nominal capacity is the production in ideal situation. This capacity is registered by the machineries manufacturers and is based on the engineering and designing principles.

5.2. Practical capacity

The practical capacity is the maximum available capacity in typical situation which is considered as a percentage of the nominal one. The practical capacity for this unit is 1000 ton annually of Vermicompost and 40 ton worm.

6. Production procedure and technology

For producing the Vermicompost fertilizer, it is necessary to provide the worms with animal fertilizer (biodegradable organic material) and then, provide the desirable conditions for proliferation and maintaining the worms and protect them against natural enemies. In preparation level of worms nest, it is necessary to fragment the organic particles and the primary preparation is done. The organic mass provides the worm with the biodegrading material in vicinity of humidity, oxygen and suitable temperature and microorganisms and following that, due to digestion of materials in worm body, organic materials are changed to black or brown materials called Vermicompost. There are different Vermicompost organic fertilizer procedures. Here, the stack procedure is described. A ground without stone and glass fragments has to be selected and them it is wetted and pressed to be rigid. This is due to prevention from hybridizing the worm used with earth worms and their race loss. It is possible to use cement and asphalt on the ground. Worms are sensitive to rain and sunlight; as a result, on the prepared ground, at first there have to be canopy. There would be a stack of the animal fertilizer on the ground in dome form with 70 cm of width and 50 cm of height and arbitrary length. After stacking, it is irrigated highly until the fertilizer juice is flowing. Following, there would be a track with 15cm depth and worms are places in the tracks and then it is filled with fertilizer. During the worms activity period (until the fertilizer changes to the Vermicompost) it has to be irrigated to maintain its humidity. Afterward, the stack is changed to Vermicompost and it is possible to separate the worms. For this purpose, sieve is used or it is possible to make the worms move to other place by stacking an amount of the livestock fertilizer lacking nutrition and then separate them from the new stack.

7. Investment costs

7.1. Fixed investment

Table4. Investment costs

No.	Description	Costs		
		Dollar	Rial	Total
1	Land	0	1000	1000
2	Landscaping	0	627	627

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3	Building construction	0	2780	2780
4	Machineries and equipment	0	120	120
5	Branches and installation	0	831	831
6	Vehicles	0	560	560
7	Service and official equipment	0	95	95
8	Other and unpredicted costs (5% of above costs)	0	301	301
9	Pre-exploiting costs	0	308	308
10	Total fixed investment costs	0	6622	6622
11	Working capital in 100% of capacity	0	3476	3476
12	Total investment costs	0	10098	10098

7.2. Working capital

Table5. Working capital

No.	Description	Day	1st year	Base year
1	Raw and auxiliary materials	120	1373	1962
2	Current and produced products inventory	30	493	667
3	Debts	30	500	677
4	Cash	30	145	170
Total			2511	3476

8. Production costs

Table6. Production costs

Description	Total costs (m.Rial)
Raw and packing material	5885
Energy	74
Repair, maintenance and spare parts	219
Personnel's salary	129
Unpredicted (6%)	453
Depreciation	517
Insurance	9
Sales and official costs	123
Total operational and non-operational production costs	8644

9. Economic indices

Description	Amount-measurement scale
NPV	341533 m Rial
IRR	33.41%
PBP	4.36 years equal to 2020

Islamic Republic of Iran
Ministry of Economic Affairs and Finance
Organization for Investment
Economic and technical Assistance of Iran

PROJECT PROFILE – SUMMARY SHEET

Project Introduction

1. Project title: Vermicompost fertilizer production

2. Sector: chemicals production
Sub sector: producing nitrogen fertilizers and materials

3. Products/Services: Vermicompost fertilizer production

4. Location: … Free zone ☐ Economic special zone ☐ Industrial Estate ■ Main Land ☐

5. Project description:
Vermicompost is the result of biological activity of a type of worm called EiseniaFoetida. This organism, changes the natural organic materials to the organic fertilizer by eating them such that at present, this fertilizer is a rich type of biologic organic fertilizers worldwide. The Vermicompost application in physical, chemical and biological properties of the soil is highly effective. This fertilizer modifies the chemical, physical and biological properties of the soil and in addition to low specific weight, lacks odor, pathogen microorganisms, anaerobic bacteria, molds and weeds. Vermicompost provides the plants and seed growth and nutrition keeping in addition to high water absorption

6. Annual capacity: 1000 t

Project Status

7. Local / internal raw material access 100 %

8. Sale: 80% locally
- Anticipated export market 20 %

9. Construction Period ……. month
Beginning of activity: 03/2016
In-site beginning of activity: 03/2016
End of project: 01/2017
Commercial activity beginning: 02/2017

Project Status

10. Project Status:

- Feasibility study available?	Yes ■	No ☐
- Required land provided?	Yes ☐	No ■
- Legal permissions (establishment license, foreign currency quota, environment, etc) taken?	Yes ☐	No ■
- Partnership agreement concluded with local/foreign investor?	Yes ☐	No ■
- Financing agreement concluded?	Yes ☐	No ■
- Agreement with local / foreign contractor(s) concluded?	Yes ☐	No ■
- Infrastructural utilities (electricity, water supply, telecommunication, fuel, road, etc) procured?	Yes ☐	No ■
- List of know-how, machinery, equipment, as well as seller / builder companies defined?	Yes ☐	No ■
- Purchase agreement for machinery, equipments and know- how concluded?	Yes ☐	No ■

Financial Structure

11. Financial Table

Description	Local Currency Required			Foreign Currency Required Million Dollar	Total Million Dollar
	Million Rials	Rate	Equivalent in Million Dollar		
Fix Capital	6622	34530	0.19	0	0.19
Working Capital	3476	34530	0.10	0	0.10
Total Investment	10098	34530	0.29	0	0.29

- Value of foreign equipment/machinery 0 million dollar
- Value of local equipment/machinery 3488 million dollar
- Value of foreign technical know- how 0 million dollar
- Value of local technical knows- how 0 million dollar

- Net Present Value (NPV): 3415 million Rial for …. Year
- Internal Rate of Return (IRR) 33.41%
- Payback Period (PP) 4.36 Year (2020)

General Information

12. Project Type : Establishment ■ Expansion and completion ☐

13. Company Profile:

-Name (legal /natural persons): Sepinud Shargh institute of strategic studies

-Company Name: engineering consultation

-Address: unit 5, No. 3, Boostan 3 St., Pasdaran, Tehran

-Tel: 02122584901 Fax: 02122580343

-E-mail: info@sepinud.com Web site: www.sepinud.com

-Local entrepreneur : private sector ■ public sector ☐ other☐

Please attach follow documents if available

- Pre-feasibility study ■
- Feasibility study ☐
- Legal permissions (establishment license, foreign currency quota, environment, etc) ☐

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