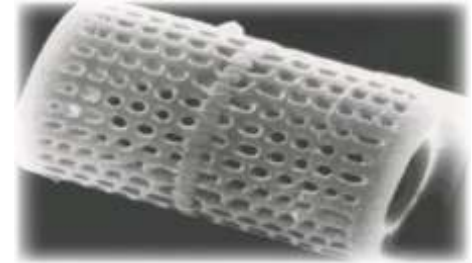


The Efficacy of Diatomite (DE) Against Insect Infestations in Stored Grains

1. Introduction

- a. Chemical/physical properties
- b. Mode of action

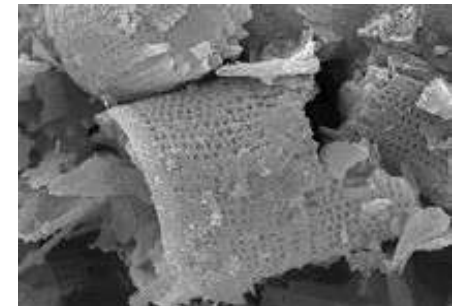


2. Marginal Benefits

- a. Environmental
- b. Social
- c. Economic

3. Company Profile (DDM, Ltd.)

- a. Production capacity
- b. Products
- c. Prices



4. Current Markets

5. Conclusions

Introduction

Origin

- Natural occurring siliceous sedimentary mineral compound
- From skeletal remains of diatoms
- Two types of DE: crystalline and amorphous

Physical Properties

Absorption capacity H ₂ O	> 170%
Colour	Grey
Density (loose)	0.15 – 0.2 g/cc
Median particle size	12 µm
Diatom species at DDM	<i>Melosira granulata</i>

Chemical Composition

SiO ₂	85% - 93%
AlO ₃	< 5%
Fe ₂ O ₃	< 1%
LOI	< 5%
H ₂ O	< 5%
Other oxides (Ca, K, Mg, Ti, etc.)	< 1%

Mode of Action

- Absorbs epicelial lipid layers
- Causes excessive loss of water
- Kills insect by dehydration
- Physical and not chemical action
- Therefore, no resistance built

Marginal Benefits of DE

Environmental

- Non-toxic natural insecticide
- Does not contaminate stored grain
- Insects cannot build up resistance because of its physical and not chemical action
- A dessicant, will keep stored grain dry
- Also acts as insect repellent (preventive action)

Social

- Safer to handle by farm workers even if digested
- Effective for home, workplace, and grain storage areas
- Odourless
- No formal training necessary

Economic

- Inexpensive
- Causes death quickly through dehydration
- Only small amounts applied per unit area
- Does not affect quality grade of the grain
- Long-term effect, permanently active, no expiry date

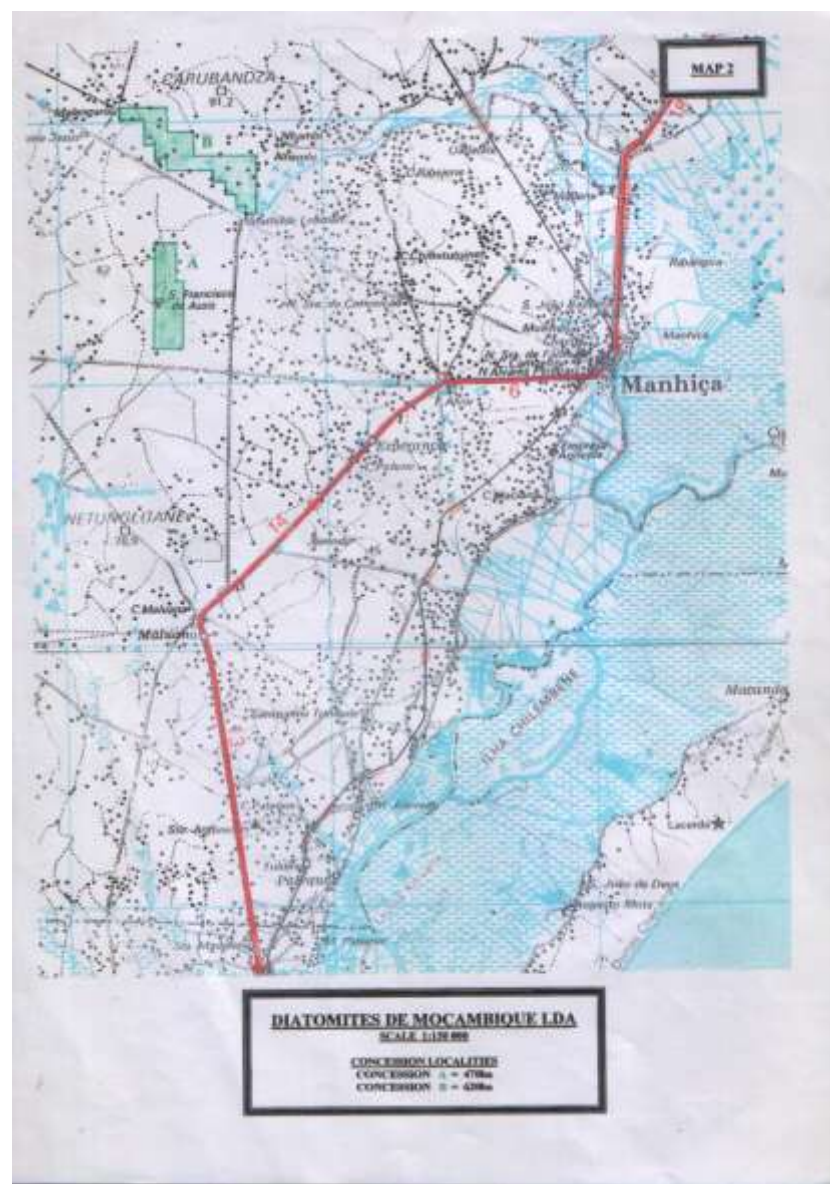
Company Profile – DDM, Ltd.

Production Capacity

- 400 tonnes/month (one shift)
- 1,200 tonnes/month (3 shifts)
- High quality amorphous DE

Products

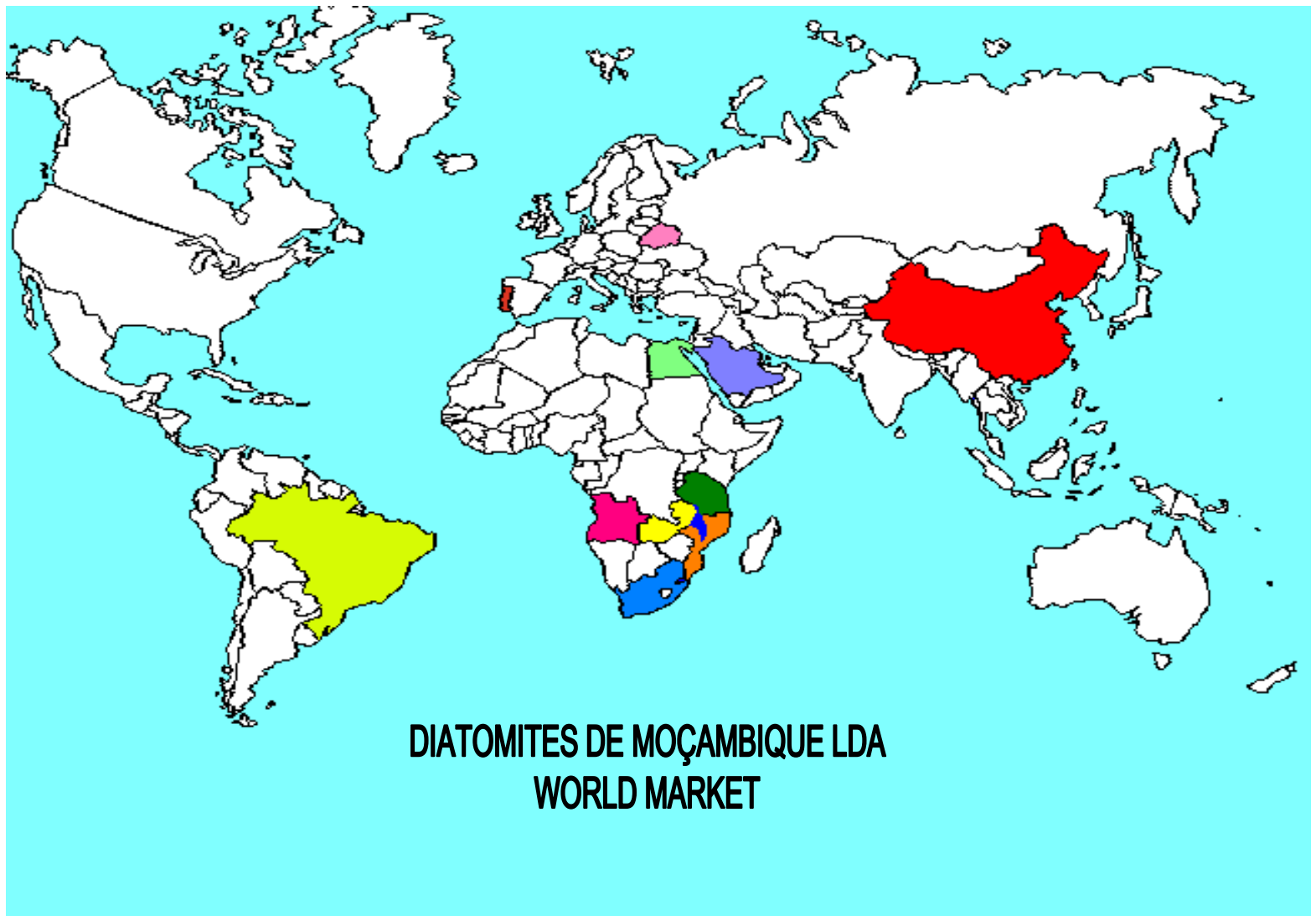
Product	Best suited for:
DDM Natural Concentrate	<ul style="list-style-type: none">- General insecticide- Grain storage
DDM Activated Concentrate	<ul style="list-style-type: none">- Animal feed additive- Source of Si for plants- General insecticide- General soil amendment
DDM Granules	<ul style="list-style-type: none">- High Silica growing media for lawns, turf, seedlings- Improving soil porosity- Hydroponics




Prices


PESTICIDES COMPARATIVE MAP

NAME	ACTIVE SUBSTANCE	QUALIFICATION	DOSAGES	PRICE/KG	SECURITY PERIOD
Super Guard Dust	Perimfos Methyl	Poisonous	10 g/m ² spaces 2 kg/ton stored grain		60 days after
Phosgard	Alminium Phosphide	Very Poisonous	5 pellets/m ³ spaces 20 pellets/ m ³ bagged grain 30 pellets/ton bulk grain	\$ 1.40	60 days after
Diatomoz	Diatomaceous Earth	Harmless	2.5 g/m ² spaces 1 kg/ton bulk grain 20 kg/ha field area	CIF Lusaka \$ 0.75	N/A




 **PORTUGAL**
EXPOFACIC 2005

 **EGYPT**
CAIRO 2006

 **MALAWI**
2005

 **MOZAMBIQUE**
FACIM 2005/2006

 **BRASIL**
2006


 **SAUDI ARABIA**
JEDDAH 2006

 **ANGOLA**
FILDA 2005

 **TANZANIA**
DAR ES SALAAM 2006

 **BELARUS**
BELAGRO 2006

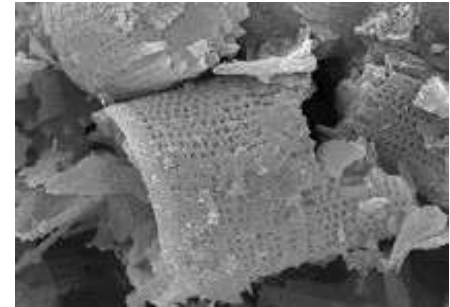
 **CHINA**
MACAU/GUANGZOU
2005

 **ZAMBIA**
2006

 **R.S.A.**
SAITEX 2005/2006

CONCLUSIONS

- Environmentally safe
- Socially safe
- Inexpensive
- Does not affect grain quality
- Readily available in the region
- Certified by many countries including USA, Canada, Australia, Saudi Arabia, South Africa, European Commission, Angola, Russia, Mozambique, etc.
- How to achieve long-term impact? From farmer to storage>>>>>>





REPÚBLICA DE MOÇAMBIQUE

MINISTÉRIO DA AGRICULTURA
DIRECÇÃO NACIONAL DE AGRICULTURA
DEPARTAMENTO DE SANIDADE VEGETAL
REPARTIÇÃO DE REGISTO E CONTROLO DE PESTICIDAS

CERTIFICADO

REGISTO DE PESTICIDA

Marca do Produto:	DIATOMITE 100% WP Insecticida
Categoria de uso:	
Número de Registo:	DSV - 789
Substancia Activa:	Dióxido de Silica
Classificação Toxicológica:	Classe III
Titular de Registo:	Diatomites de Moçambique,Lda
Embalagens aprovadas:	Sacos de polietileno de 250 grs, 5 Kgs e 20 Kgs. Frasco de polietileno de 250 grs
Validade do Registo:	30.05.2008
Cultura ou uso aprovado: - Ratos e Ratazanas	Intervalo de Segurança N/A
Observações:	Registo provisório

Maputo, 28 de Maio de 2006





FOR PRODUCTS IN CONFORMITY WITH
REGULATION (EC) 2092/91, ANNEX II

ECOCERT SA

after inspection hereby confirms that the products listed below and produced and commercialized under responsibility of the operator:

**Mr. G. Kruger,
Diatomites de Mozambique (Pty) Ltd,
Box 98, Graymont,
Krugersdorp, 2035
South Africa**

are produced, processed and/or exported in such way, that they are suitable for application in agricultural production in conformity with the rules as determined by the regulation (EC) 2092/91 on organic production as amended. The operator agreed to comply with those rules and submitted the concerned units to the inspection programme following the directions referred to in article 8 and 9 and annex III of the regulation (EC) 2092/91.


Any reference to the regulation (EC) 2092/91 and to ECOCERT is possible only if referred to in the following way: "Product in conformity with regulation (EC) 2092/91, annex II, inspected by ECOCERT, F-32800". Any other rule of labeling as determined by national regulations have to be followed.

South Africa, Krugersdorp, Diatomites, 2006/2007, 1959ZA

Products in conformity with EC regulation 2092/91 annex II

1. Diatomaceous earth natural,
2. Diatomaceous earth activated,
3. Diatomaceous earth granular

This attestation is not valid as a transaction guarantee. If required, commodities must be accompanied by a transaction certificate referring to the said transaction. The operator has the right to use this attestation and any transaction certificate according to the rules determined in the operator's contract and in instructions provided.

Attestation # 1959ZA00n1e
 **ECOCERT SA**

BP 47 - F 32800 L'ISLE JOURDAIN
 Issue date: Northheim, 02 June 2008

Expiry date: 13 March 2007
 (or at the day of cancellation of the certification contract)


 For ECOCERT SA c/o ECOCERT International
 The responsible manager for certification

This document belongs to ECOCERT and has to be returned on request. Only the original is valid.
 (certn/vcert/2e)

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 Certification body accredited by COFRAC with registration number 7.0002

