

KEY POINTS FROM TECHNICAL SESSIONS OF THE  
NZ FOREST SITE MANAGEMENT COOPERATIVE  
HELD AT NZFRI, ROTORUA ON 14 JUNE 1993

Compiled by

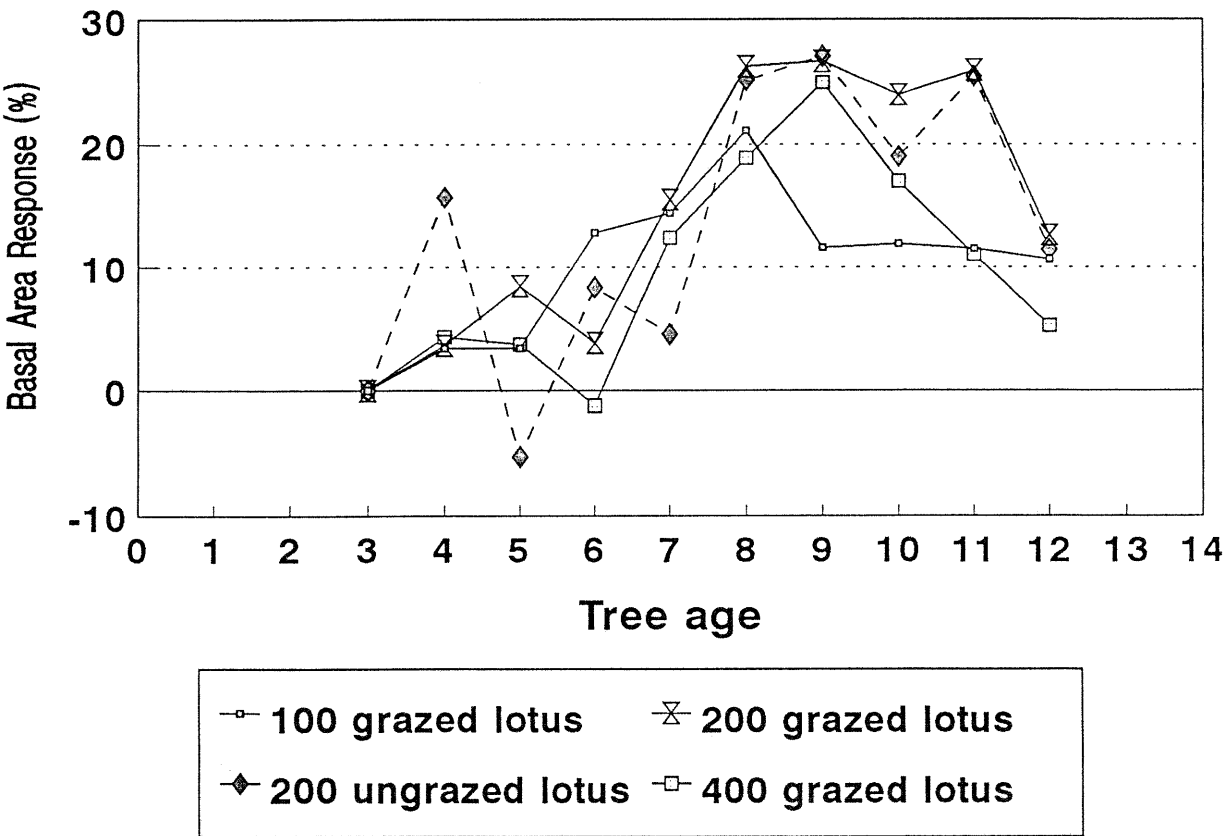
J. A.C. Hunter-Smith

Report No. 64      June 1993

**LEGUME OVERSOWING AND  
WEED GRAZING TRIALS  
GRAHAM WEST**

# Legume oversowing and Weed grazing Trials

Effect of lotus oversowing  
at Kaingaroa RO1891



# Effect of Oversowing & Pampas Control treatments on Basal Area at Waiuku

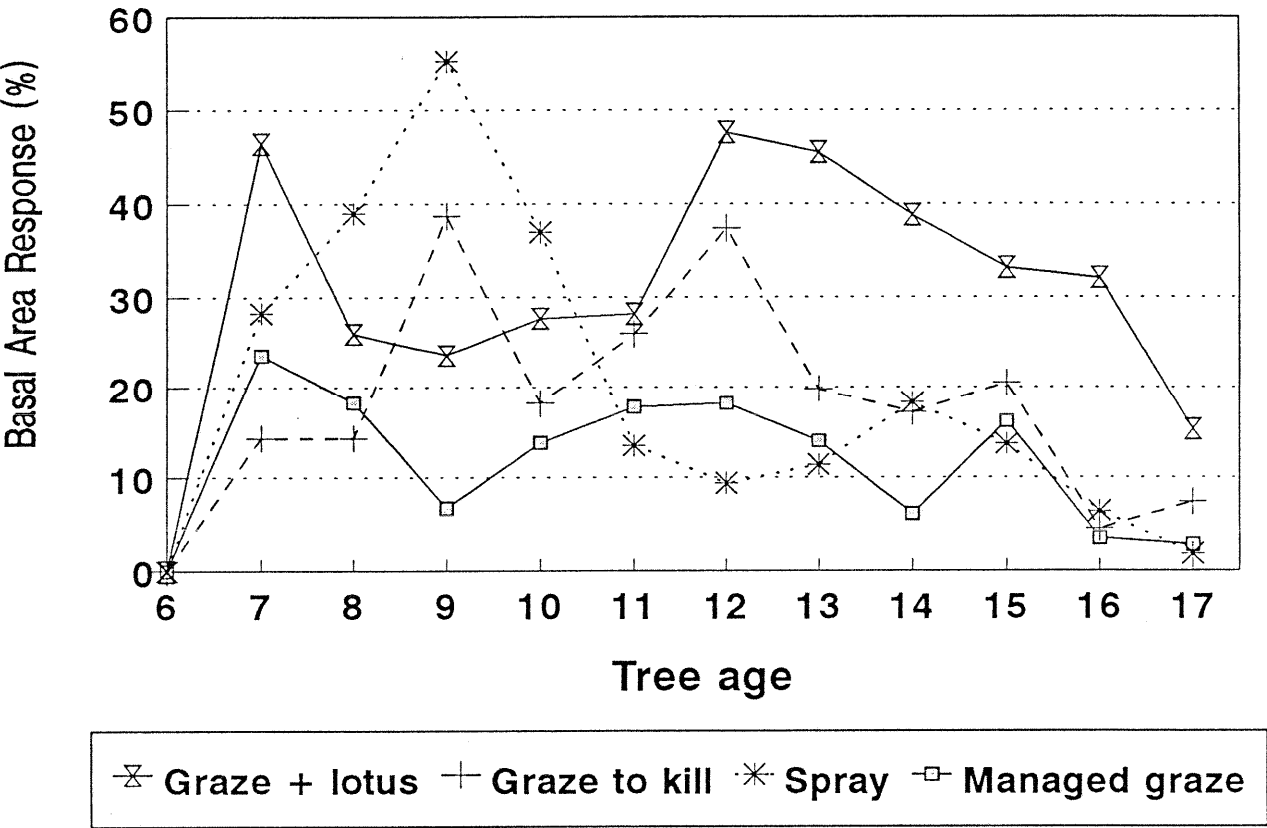
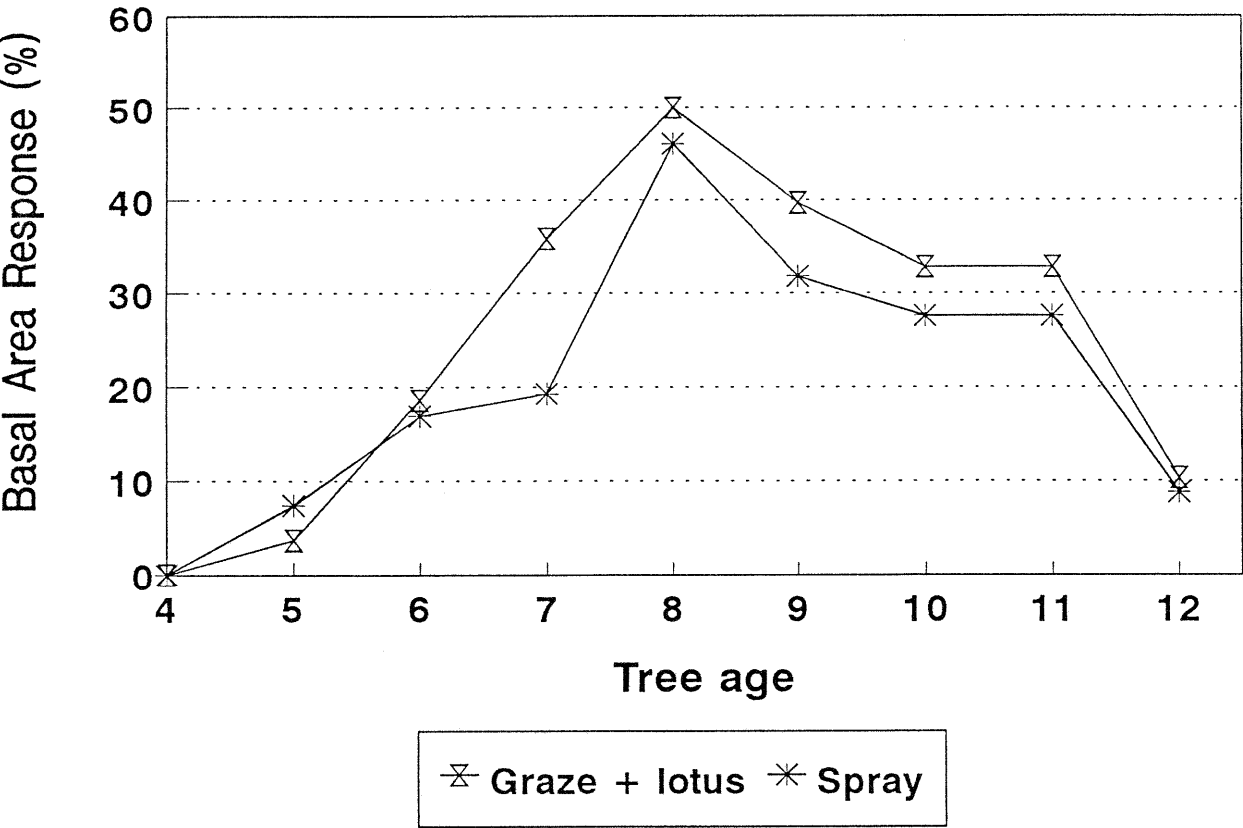


Figure 3 Effect of Pampas treatments at Maramarua AK1005



***Project:***

Field Screening Grass  
species

***Objective:***

Develop cover crop to  
compete against weeds

## Trial 1 - Whakarewarewa Forest

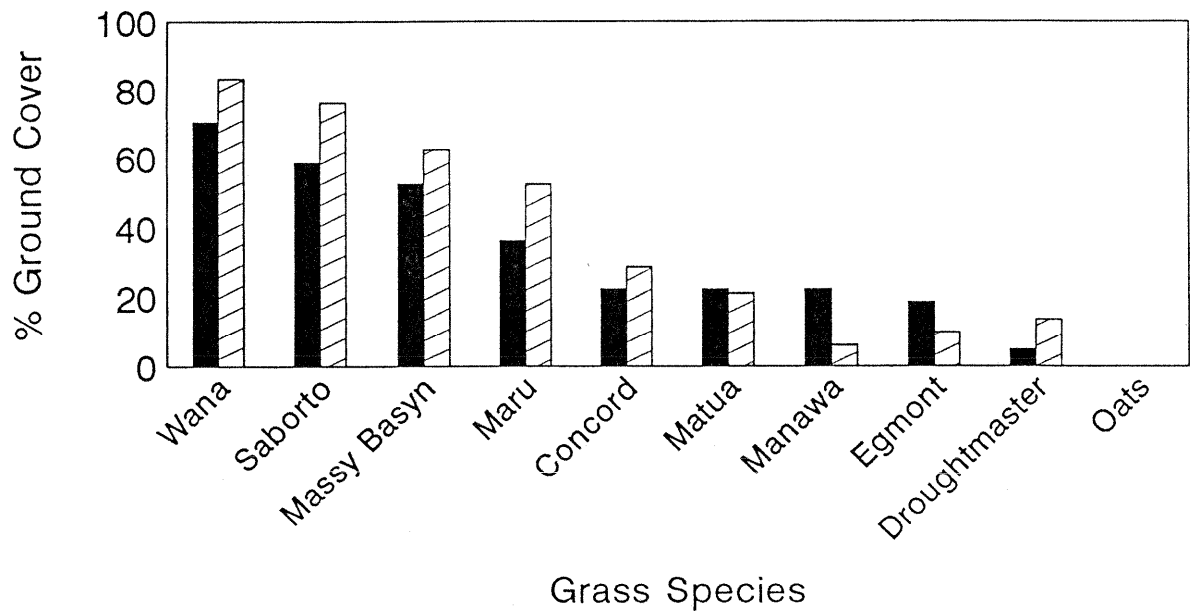
- Larch cutover
- Pre-sowing spray  
Roundup + Pulse
- 10 species sown  
Oct 1990
- 5 x 5m plots
- Split plot 150kg/ha  
Nitrophoska NPK 12:10:10

## Grass species sown in Whaka Trial

Common name	Breed	Sowing rate kg/ha
Cocksfoot	Wana	10
Cocksfoot	Saborto	10
Ryegrass	Concord	20
Ryegrass	Manawa	20
Ryegrass	Droughtmaster	20
Yorkshire fog	Massey Basyn	10
Brown top	Egmont	10
Phalaris	Maru	10
Oats		20
Prairie grass	Matua	20

# Whaka Grass Screening Trial

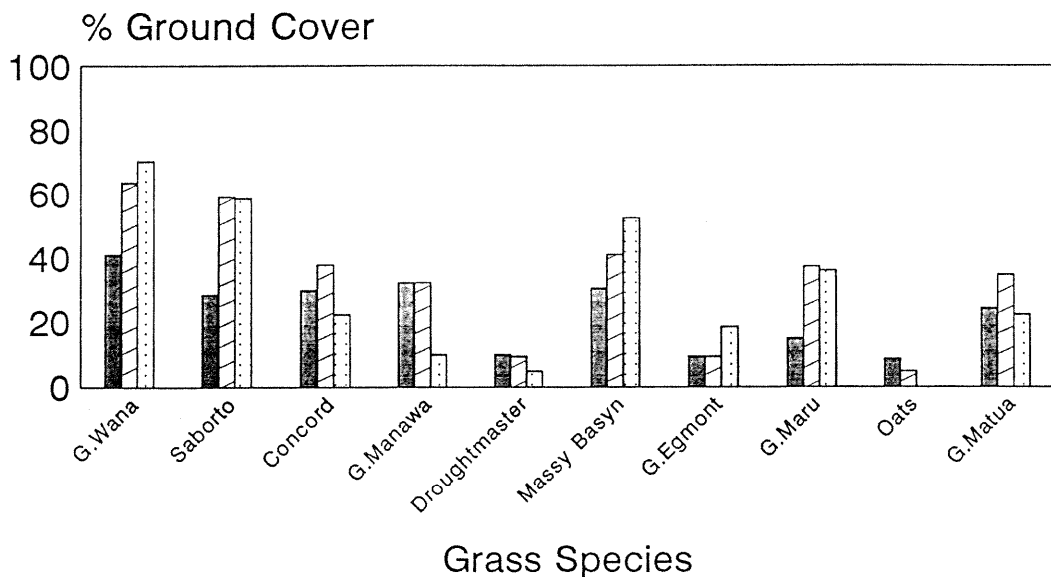
Grass species - assessed Nov 1992 - 25 months after sowing



■ No Fert    ▨ Fert

# Whaka Grass Screening Trial

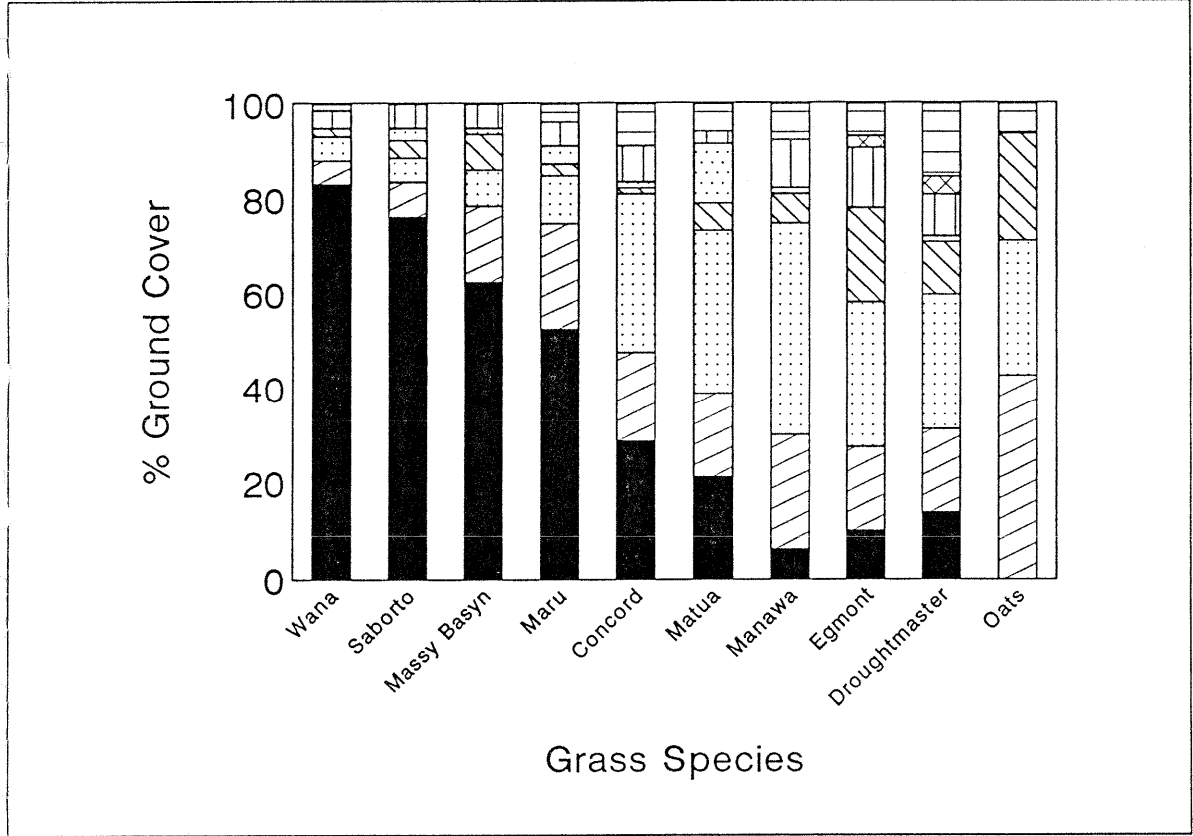
Unfertilised plots



■ Jan 91- 3mths    ▨ Jun 91- 8mths    ▤ Nov 92- 25 mths

***Whaka Grass Screening Trial***  
Fertilised plots - assessed Nov 1992 - 25 months after sowing

***Whaka Grass Screening Trial***  
Fertilised plots - assessed Nov 1992 - 25 months after sowing





## Trial 2 - Longmile FRI

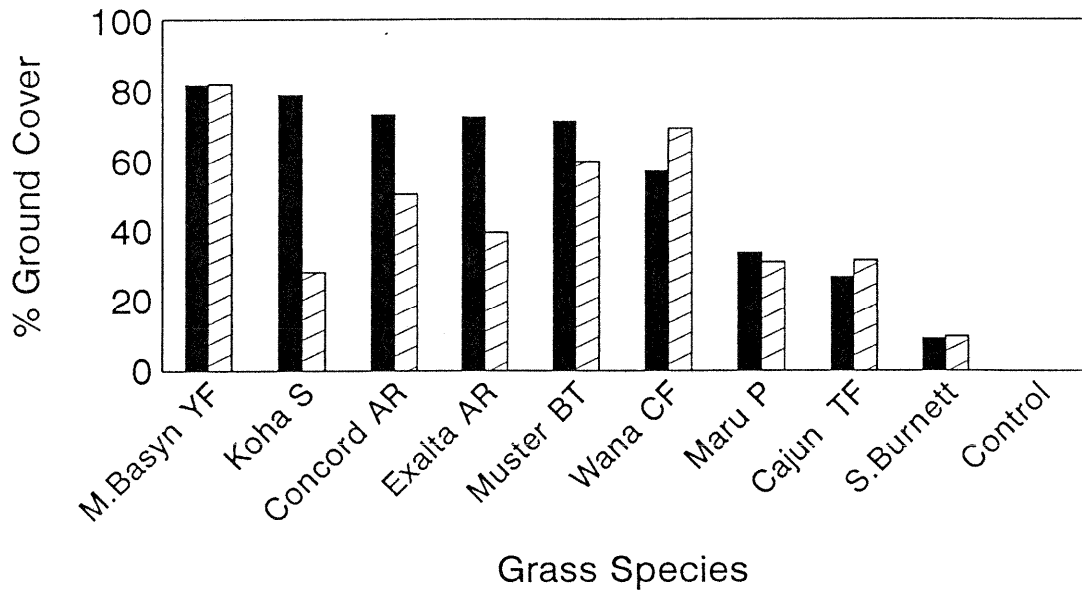
- P. Nigra cutover
- Slash burnt
- 9 species sown  
26 April 1991
- 5 x 5m plots
- No fertiliser

### Species sown in Longmile trial

Common name	Breed	Coating system	Sowing rate kg/ha
Cocksfoot	Wana	Superstrike	7
Ryegrass	Concord	Superstrike	14
Ryegrass	Exalta	Nutriprill	14
Yorkshire fog	Massey Basyn	Nutriprill	7
Brown top	Muster	None	7
Tall fescue	Cajun	Nutriprill	7
Phalaris	Maru	None	7
Sheeps Burnett		None	7
Pink Serradella	Koha	None	7

# Longmile Grass Oversowing Trial

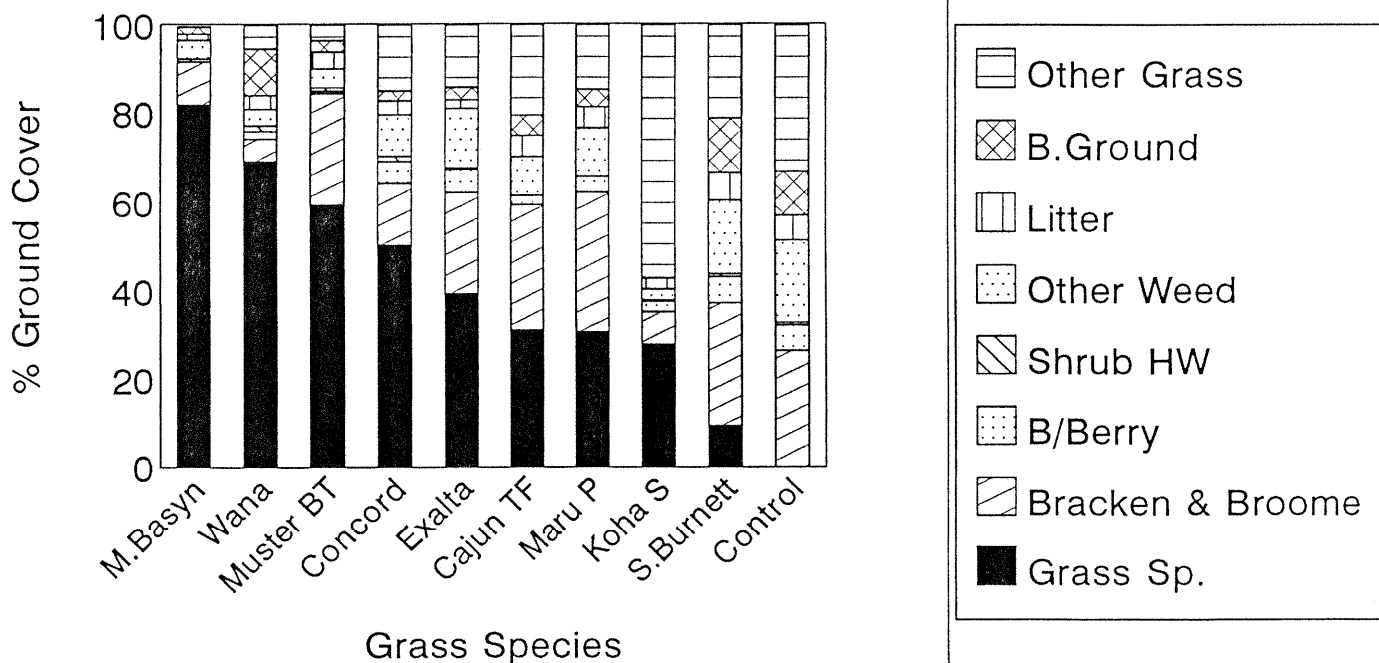
Sown April 1991



■ Dec 91-8mths    ▨ Dec 92 - 20mths

## Longmile Grass Screening Trial

Grass species assessed Dec 1992- 20 months after sowing



NB : Autumn sown onto burnt cutover

**LOTUS PHOSPHATE RESPONSE**

**GLASSHOUSE STUDY RESULTS**

**MARK DEAN**

# Lotus Phosphate Response Trial

Objective: To quantify the response of Maku Lotus to phosphate fertiliser for a range of soil types

# 9 Soils Tested

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- Kaingaroa Pumice
- Kinleith Pumice
- Woodhill Sand
- Maramarua Clay
- Northland Podzol
- Nelson Alluvial Gravel
- Otago Coast Yellow Brown Earth
- Westland Pakihi terrace soil
- Mohaka East Coast Pumice

# Treatments

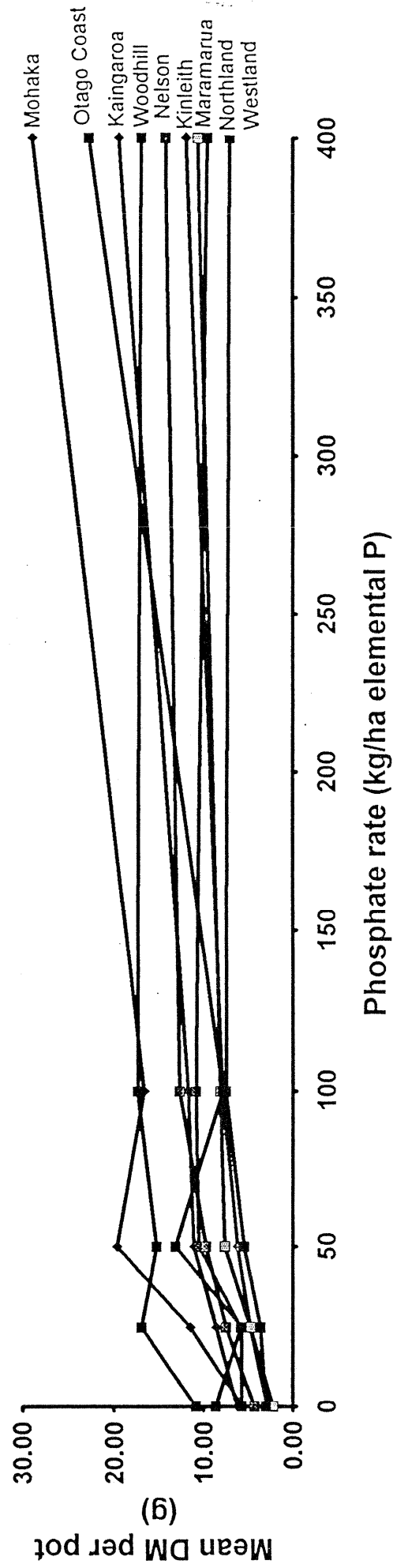
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Elemental P kg/ha

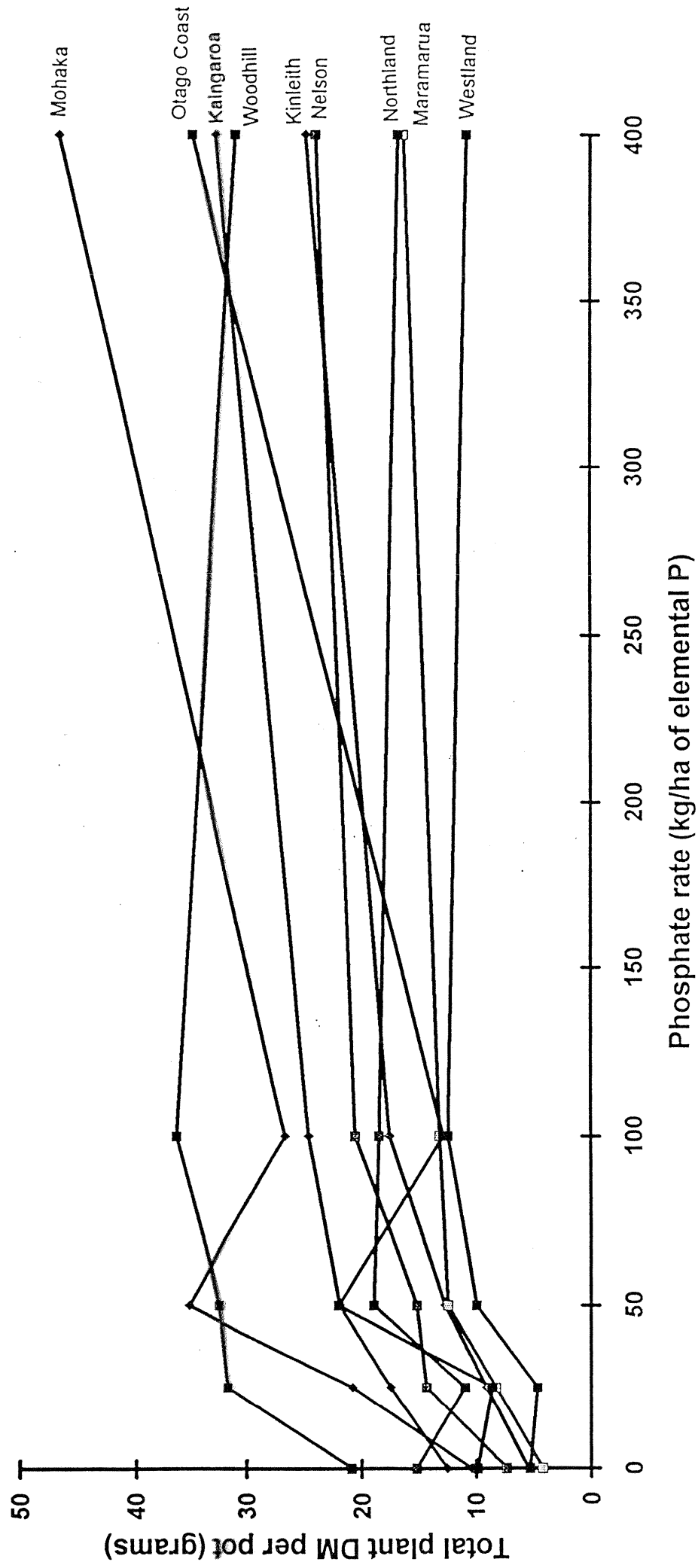
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- 0
- 25
- 50
- 100
- 400
- 50+ 100kg/ha - Ca,K,S,Mg & 3kg/ha Mo

Response in Above Ground dry matter of Maku Lotus to additions of Phosphate

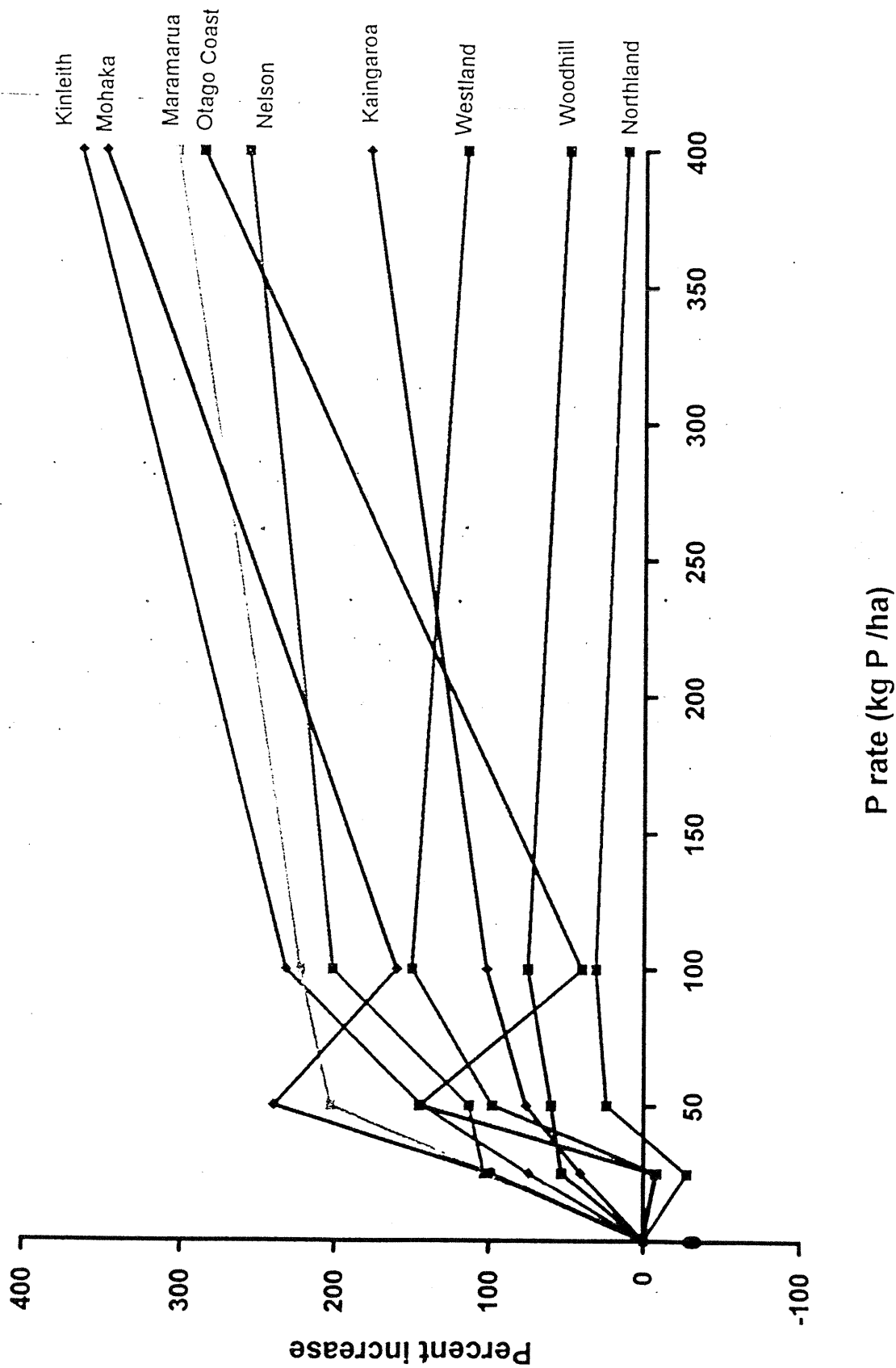


Response in Total plant dry matter to additions of Phosphate

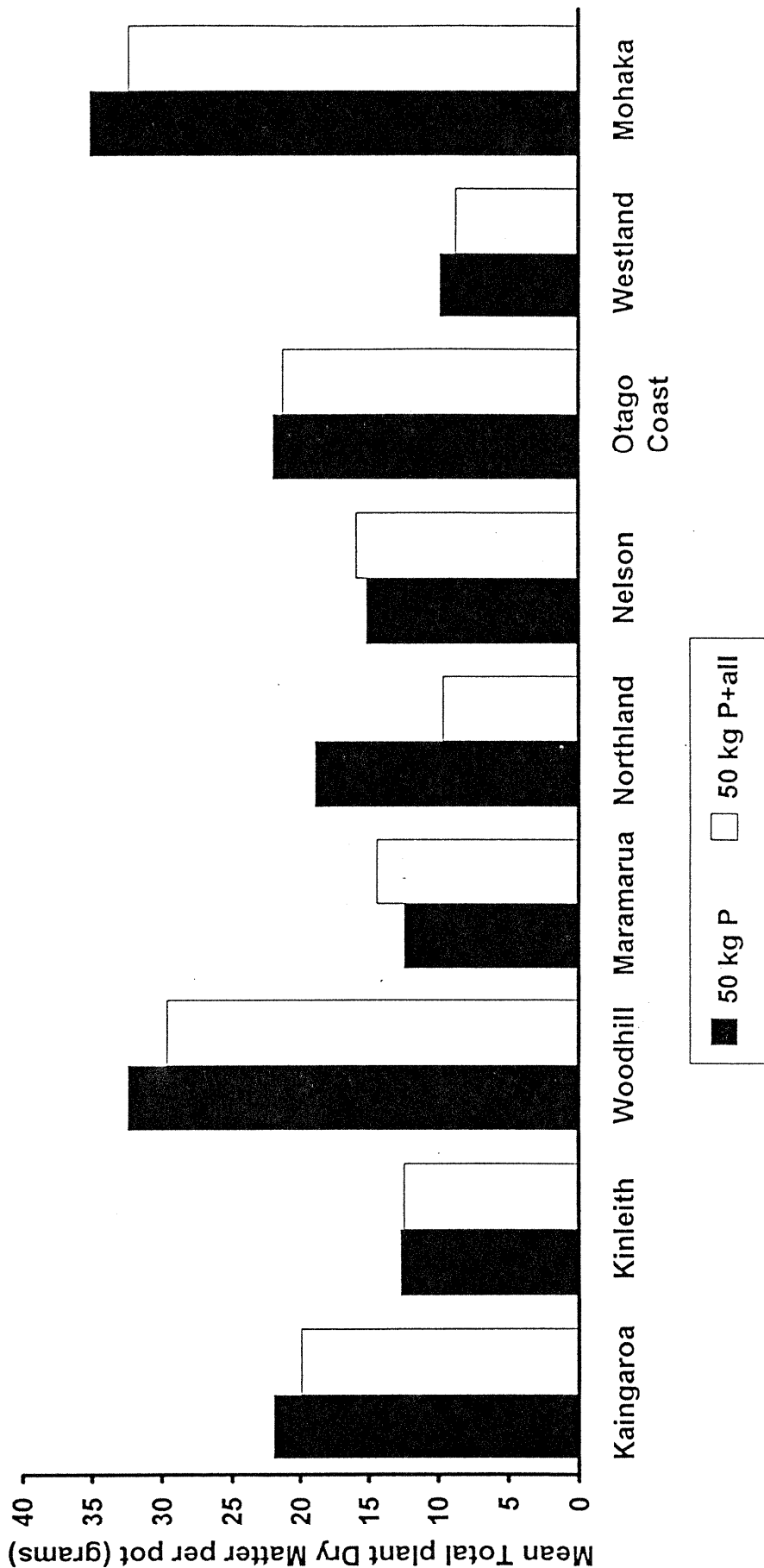




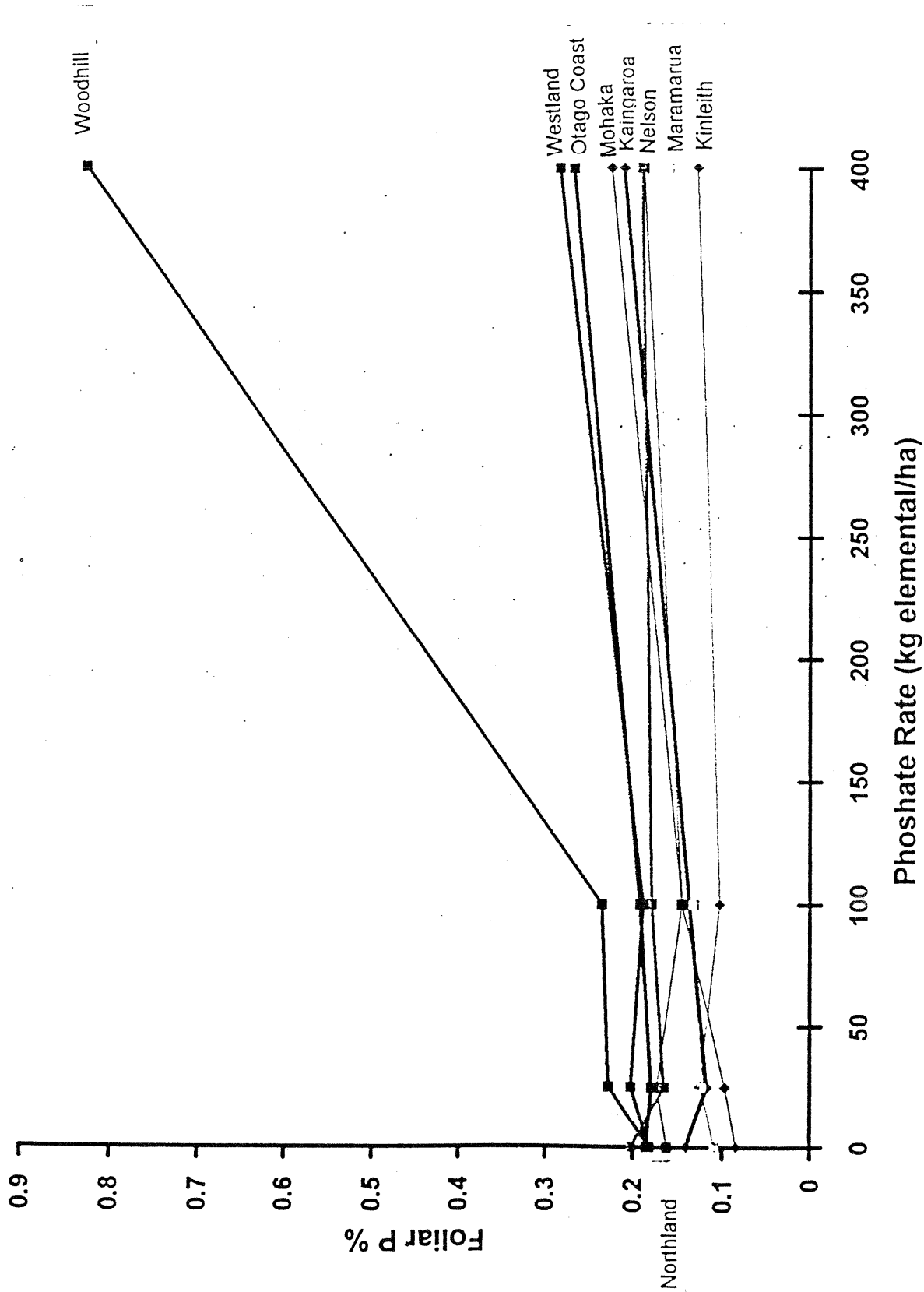
# Percent response in Total Plant Dry Matter compared to the Control



The effect on total plant Dry Matter Yieild of Maku Lotus of unlimited other nutrients  
at 50 kg/ha of Phosphate

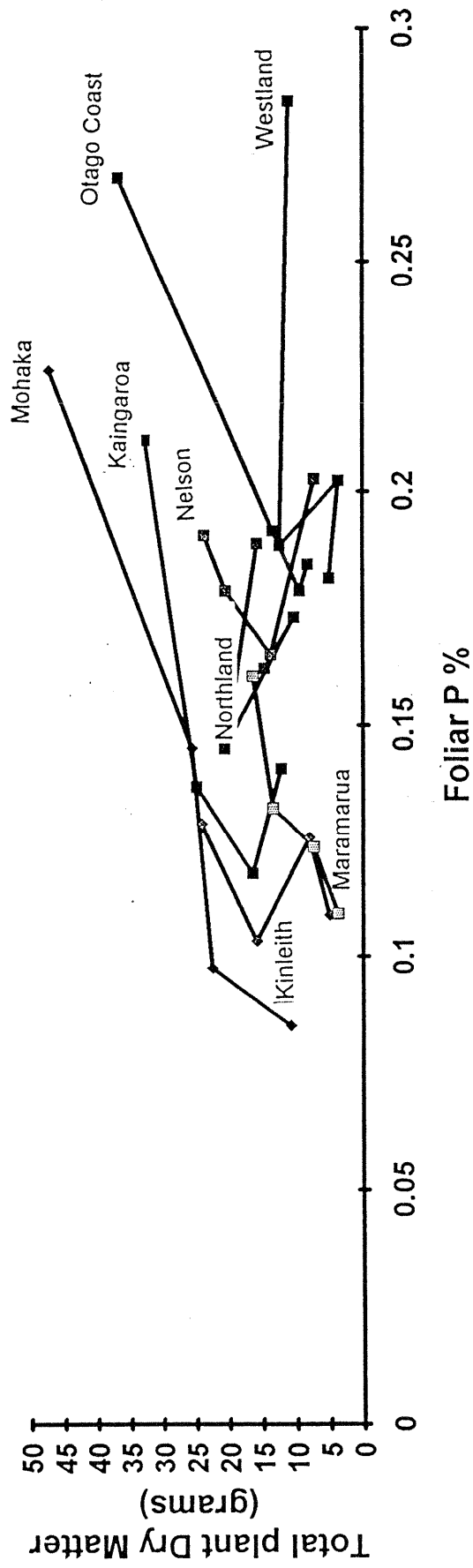


# The response of Foliar P in Maku lotus to additions of P to the soil





The relationship between plant dry matter and foliar P



# Conclusions

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Developed pot trial methodology.

Maku Lotus responds to Phosphorus.

Level of response is site dependent.

Poor relationship between foliar P and Dry Matter production.

- dependent upon soil type.

**UPDATE ON GRANULATION OF MAGNESIUM**

**FERTILISER - PACIFIC RAW MATERIALS**

**JOHN CANDY**

UPDATE ON GRANULATION OF MAGNESIUM FERTILISER  
JOHN CANDY, PACIFIC RAW MATERIALS LTD.

Pacific Raw Materials has been a major importer of agricultural and industrial raw materials into New Zealand since 1984 and via its principles supplies annually around 200,000 tonnes of fertiliser raw materials and micronutrients.

One of the significant products we have developed is Calcined Magnesite and we now produce and market a variety of grades suitable for industrial, animal health and fertiliser applications.

China is the worlds main source of magnesite, and while the raw material is excellent, it became apparent to us very early on that standards of grading, packaging and shipping are far from satisfactory. This caused us to look at the feasibility of processing Calcined Magnesite in New Zealand.

In 1988 we established a pilot plant at Tauranga and imported 5000 tonnes of raw material as feedstock. Operation of this plant proved to be viable and enabled us to meet market requirements of quality, grading and packaging, it also showed us that operation on a larger scale was required.

In early 1989 we undertook trials utilizing the phosphate rock grinding circuits at Morrinsville that were idled due to the merger of FERNZ and BOP Fertiliser.

These trials proved to be very successful and the next year was spent in reconfiguring this plant to suit the new product. In December 1989 we commenced production as a joint venture between Pacific Raw Materials and BOP Fertiliser.

The demands of our customers have lead to the production of an ever increasing range of Magnesite products under the CALMAG brand and total production of the plant is now around 12,000 tonnes per year.

Of most interest to you are our larger size ranges:

**Coarse:** screened between 0.2 and 2 mm

**Very Coarse:** screened between 2 and 12 mm

and more recently a grade suitable for aerial spreading of approximately 1 to 4 mm size range for forestry use.

Recognizing that a coarse screened material may have a number of limitations for fertiliser use, PRM has embarked on a program to develop a Magnesite based product with the following attributes:

- 1) Dust Free
- 2) Suitable for spreading (uniform size distribution)
- 3) Readily available to plants, Possibly with variable release characteristics.
- 4) Able to include other trace elements.



To achieve this we have constructed a plant to granulate our finer grades of CALMAG into a 2-6 mm product, giving a granular product that is constructed from many smaller particles. The size range is selectable depending on how we choose to operate the plant and we have chosen 2-6mm as a size range that should be useful for helicopter spreading.

Initial trial work shows that we can produce a material that is:

- of uniform size distribution
- that will maintain its integrity due to the hardness of the granule
- that will be good to spread from aerial or ground systems and
- will be able to have a variety of release characteristics depending on what additives we use.

The samples being distributed have about 75% MgO and analysis by FRI shows that this Mg is released at about the same rate as our traditional agricultural CALMAG.

These samples are from some of the first production runs from our plant, from which we have been able to establish the basic operating parameters. We also proved however that some modifications were required.

These modifications have been completed over the last month and the plant will restart this week with increased throughput and screening capacity.

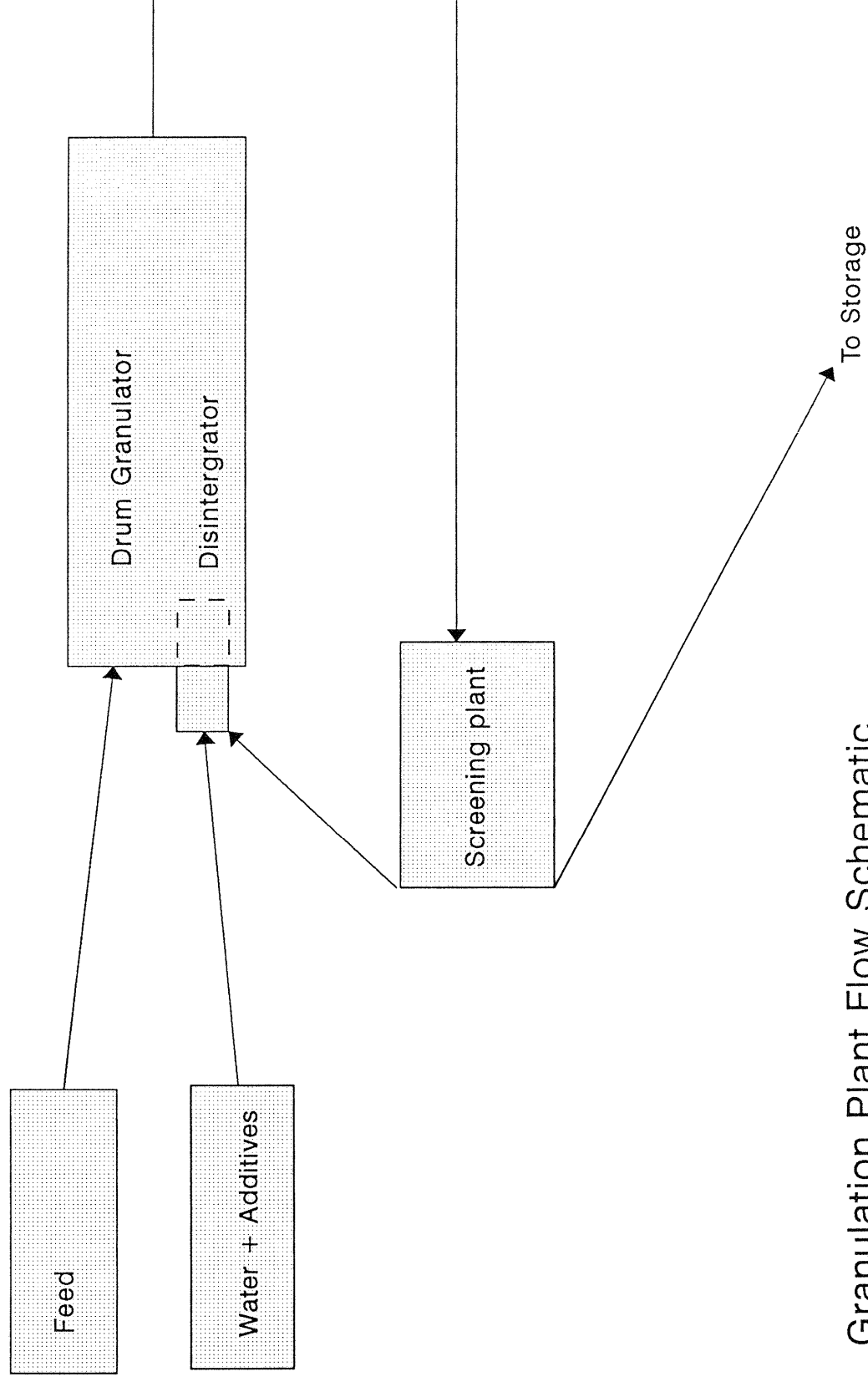
We expect to have the plant producing commercial quantities later in the first quarter of 1993

From there we intend to progress to producing a product that will release a "burst" of Mg followed by a lower sustained release, a product that should be ideal for areas under severe Mg Stress.

Given market acceptance and sufficient base volume, consideration has already been given to the establishment of a plant in the south island and this will easily be accomplished at the appropriate time.

We believe that the unique properties of fine CALMAG give us the ability to produce materials that will contain other trace elements such as boron. This is another area of R&D that has limitless possibilities and products will be produced as demanded by the market.

Recognizing that requirements will vary from area to area, we have designed this plant to be flexible enough to produce custom runs to our customers specifications. We welcome any input from this meeting that will help us design products that will be required for forestry.



Granulation Plant Flow Schematic

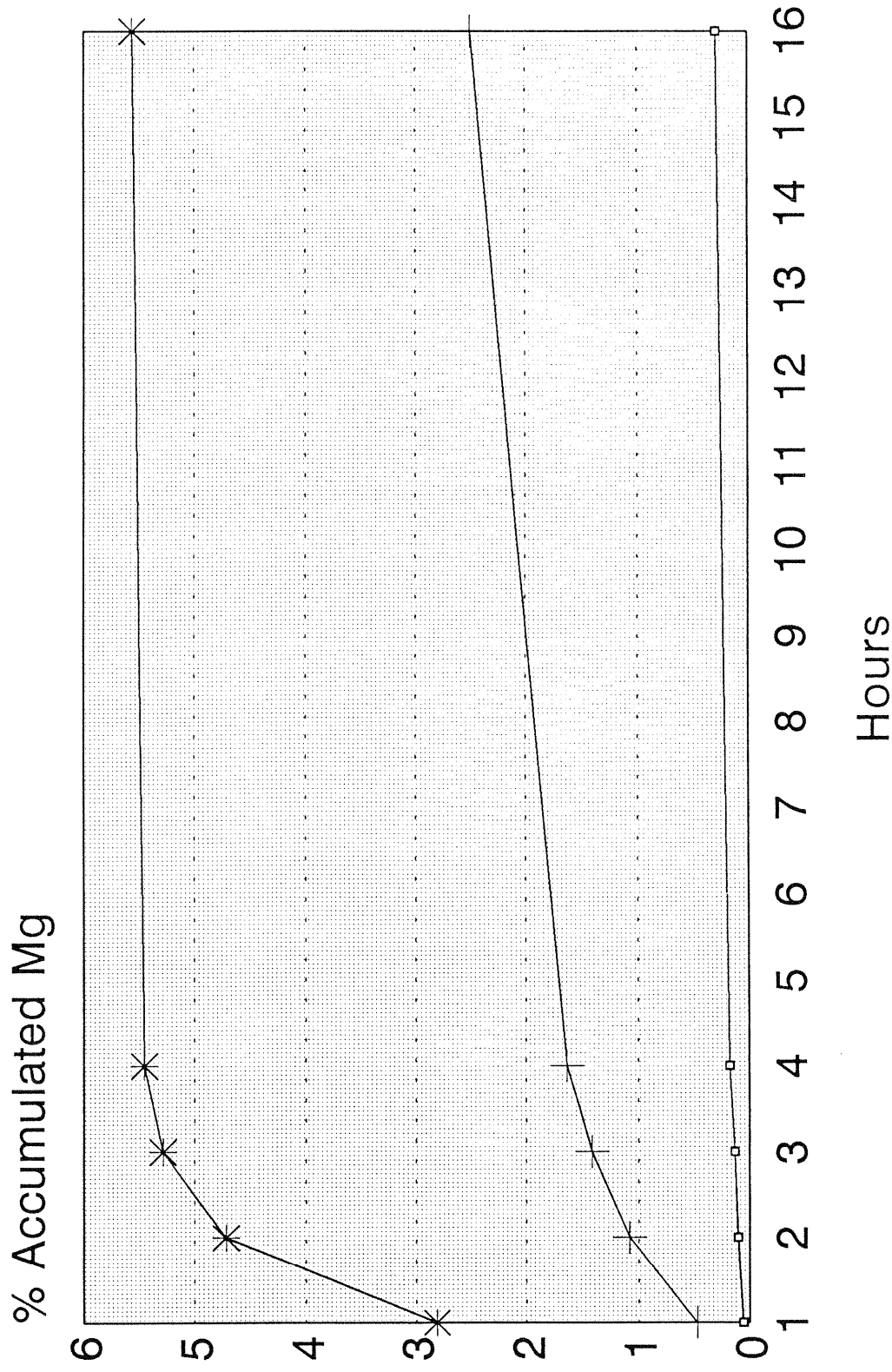
GRANMAG COMPARISONS

|-----ACID ADDED-----|

GRADE	VERY COARSE	GRANMAG 0%	GRANMAG 20%	GRANMAG 40%
% Mg	53.2	43.7	25.0	17.5
%S	0.0	0.02	6.0	10.8

# Calmag Fertiliser

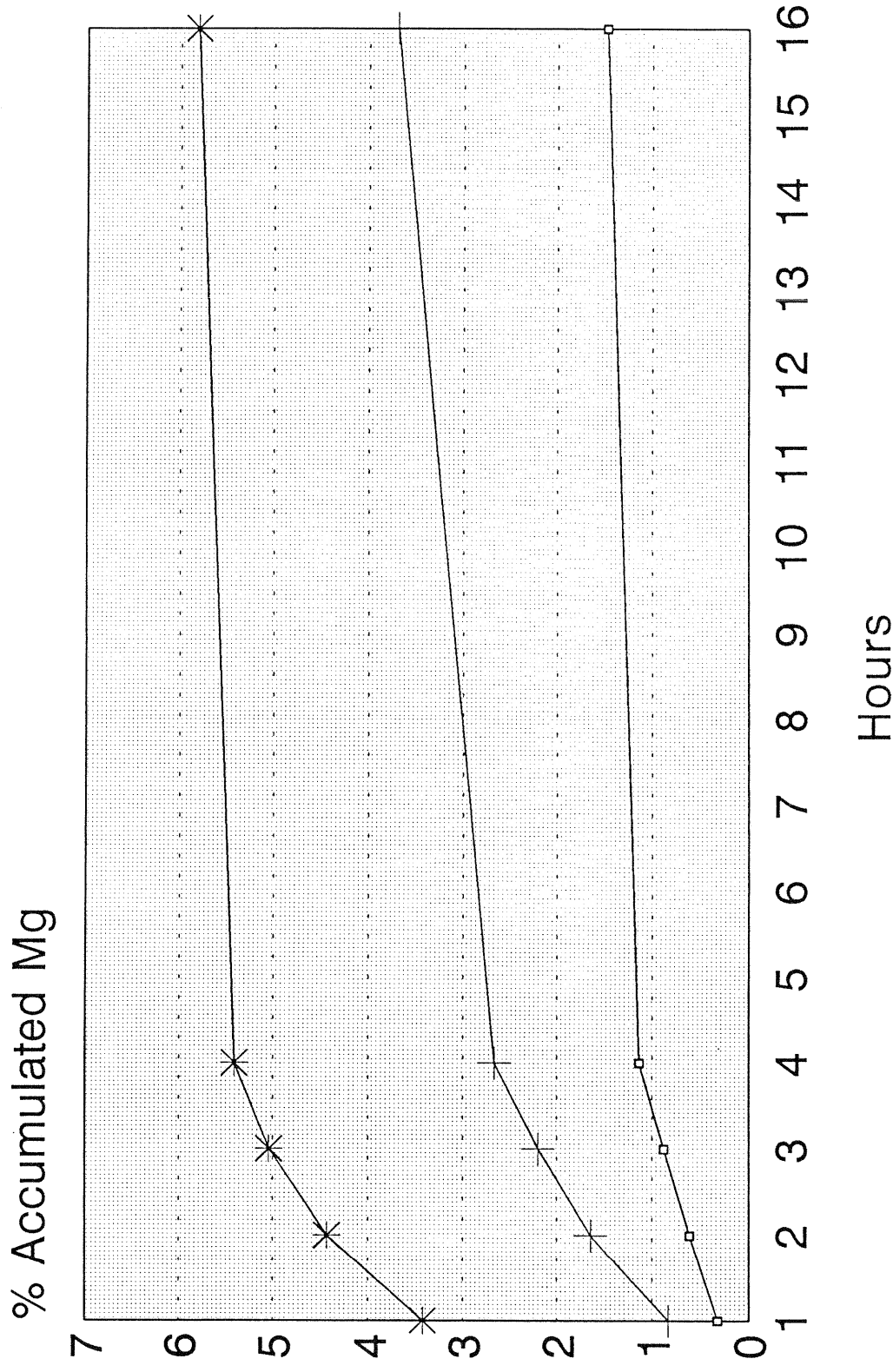
## Solubility Study



Distilled water extract

# Calmag Fertiliser

## Solubility Study



Buffered extract pH 5.5