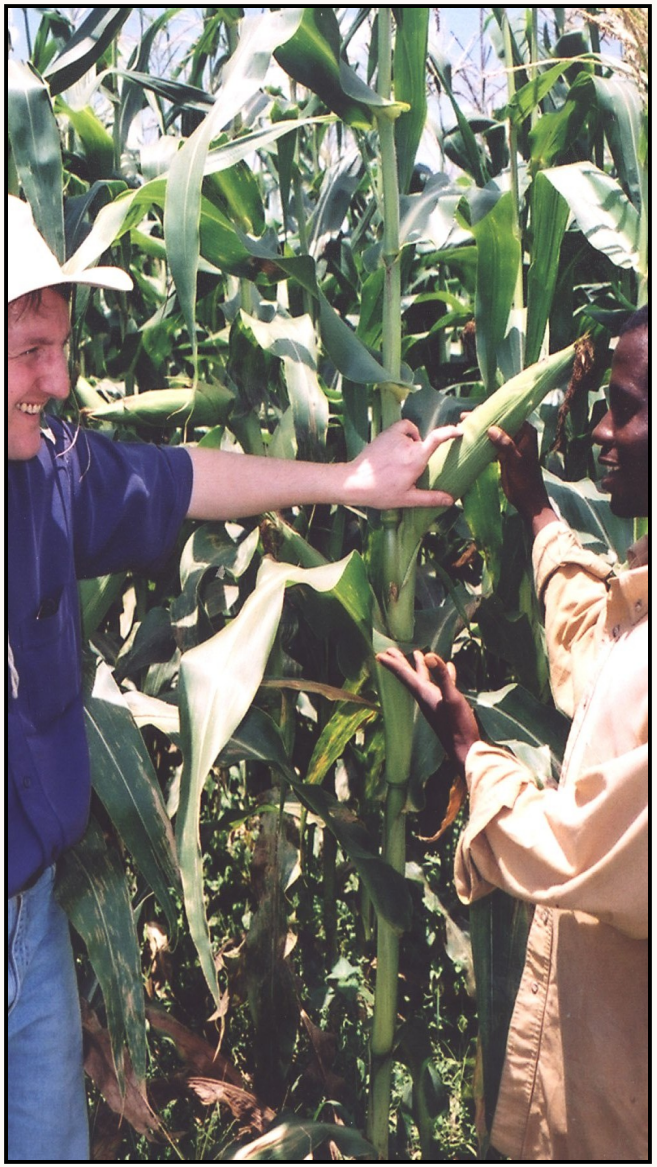
Rural livelihoods and community-based aglime production

Clive Mitchell, BGS

Kingsley Dunham Centre
Keyworth
Nottingham NG12 5GG
Tel 0115 936 3100



Overview

- Overview of FarmLime project
- Socio-economic survey
- Carbonate resource assessment
- Lime production research
- Crop trials
- Cost benefit analysis
- Mealie Mill proposal
- ESPA funding
- Conclusions

DFID Department for International Development

FarmLime

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- Aimed to improve the agricultural performance of small-scale farms through the use of low-cost lime
- Started in 1999, based in Zambia, in collaboration with the University & the Geological Survey Dept.
- UK Department for International Development (DfID)
- Main activities: socio-economic survey, carbonate resource assessment, lime production, crop trials and cost benefit analysis

Socio-economic survey

- In Zambia, agricultural lime is rarely used by small-scale farmers due to a lack of availability, high cost of transport and poor promotion of its benefits
- Knowledge of the soil condition was poor – primarily due to a lack of soil sampling and testing (too expensive and time consuming)
- Subsistence farmers living outside the cash economy could not afford to buy aglime – bartering option?
- Aglime sold in bulk to large farmers – whereas 50kg bags often not available

Carbonate resource assessment

- Zambia has ample resources of carbonate rock
- Calcium Carbonate Equivalent (CCE) – ideally >80%
- Plant nutrient contents of CaO and MgO – ideally MgO >6%
- Grindability Index ('ease of pulverisation') – limestone often easier to grind than dolomite
- Reactivity ('agronomic effectiveness') – limestone reacts at a faster rate with acid than dolomite

Dolomitic limestone, Solwezi, NW Province, Zambia

Aglime production trials

- Aim to identify a low-cost, small-scale method using appropriate technology and manual labour
- Aglime specification:
  - 100% <2mm, 60% <400mm & up to 50% <150mm
- Manual quarrying using fire and crow bars
  (alternative option: drilling & blasting)
- Manual crushing using sledgehammers
  (alternative option: manual jaw crushing)
- Milling using a modified TD hammer mill

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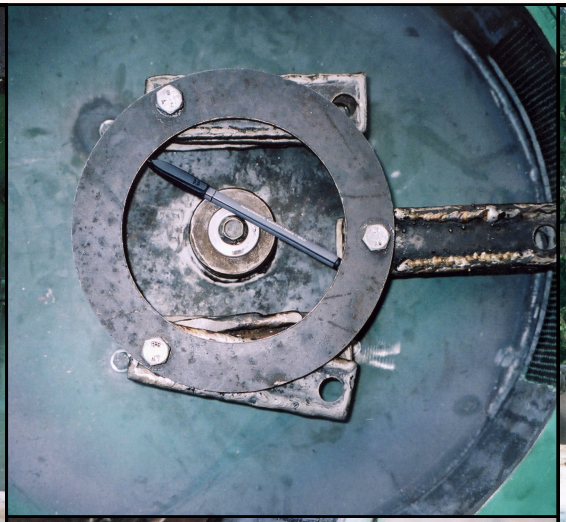

Hammer mill feed

Hammer mill product

Crop trials

- Aim to demonstrate the benefits of using aglime
- Target areas were small-scale farming districts within carbonate resources suitable for aglime production
- Aglime used was produced by the project
- Maize and groundnut trials
- Short-term trials demonstrated the benefits
- Uptake was good but short-term

Cost Benefit Analysis

- Value:Cost Ratio (VCR) – ideally additional crop value after liming should be double the cost of the aglime
- Variables include market rates for crops (US$50 –200 per tonne maize), ex-works cost of aglime (US$14 to 22), transport cost (US$5 – 20 per tonne) and response to liming (from <1 unlimed to 8 tonnes after liming, maize per hectare)
- Irrespective of VCR, uptake of liming requires cash and confidence in the benefits – both in short supply

Distribution of aglime to workshop participants, Solwezi, NW Province, Zambia

Mealie Mill proposal

- Four-year project to promote & encourage the diversification of small-scale mineral producers and the availability of low-cost aglime in southern Africa
- Small-scale mineral –based enterprises are well placed to diversify into aglime production
- Identify existing operations to act as demo sites
- Dissemination of technical know-how
- Parallel aglime production in community-based settings e.g. agricultural co-operatives

ESPA programme

- Ecosystem Services & Poverty Alleviation
- Joint initiative between UK Research Councils and DfID
- Multidisciplinary research programme aimed at achieving sustainably managed ecosystems to help reduce poverty & improve wellbeing in developing countries
- Address key challenges driven by population growth, economic development, land-use changes & climate change
- http://www.nerc.ac.uk/research/programmes/espa/

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… and finally – thanks to those who had a ‘hand’ in this research !

Contact: Clive Mitchell

British Geological Survey

Keyworth, Nottingham, UK, NG12 5GG

Tel. +44 (0)115 936 3257

Email: cjmi@bgs.ac.uk

Website: www.bgs.ac.uk/MineralsUK