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## NSD for pasture and grapes 2010/11

- Nodulised stack or kiln dust is a byproduct of Holcim's cement manufacture at Cape Foulwind. The kiln dust is granulated by the Buller Community Fertiliser Company (BCFC) to form NSD to make the dust easier to spread.
- NSD is a liming agent containing potassium (as potassium sulphate) and sulphate sulphur.
- As NSD is a byproduct its composition will vary, currently it averages >6% K and 4% SO<sub>4</sub>-S.
- NSD also contains traces of heavy metals such as selenium and thallium. Thallium levels are constantly monitored to avoid it excessively accumulating in the soil. To prevent this happening, **annual** application rates should not exceed **800-1000 kg/ha**.

### Uses

1. As a **POTASSIUM** fertilizer for dairy pasture, NSD of **250-500 kg/ha/application**, normally split, e.g. Oct/Nov and Dec/Feb. Spring applications are normally avoided to reduce the risk of hypomagnesaemia.
  - NSD can also be used at **400-500 kg/ha for hay and silage crops**.
  - NSD is currently being evaluated for **grapes** as the potassium is in the preferred sulphate form. Current recommendations are for a single application in spring (pre or post budburst) at rates of **700-800 kg/ha**.
2. NSD as a **LIMING agent**. When used at similar rates to agricultural lime NSD will increase soil pH to almost the same degree. Typical rates would be **400-800 kg/ha** depending on how much N is used and the rainfall.
  - NSD is easier to spread than agricultural lime.
  - NSD will react much **quicker** than agricultural lime.
3. Some dry hill country farmers, particularly in Marlborough view NSD as a liming and **SULPHUR fertilizer**. At **500 kg/ha it may meet 12-24 months maintenance sulphur** while providing a quick lift in surface soil pH that will aid legume growth.

### Cost Effectiveness

At \$45/tonne and 5%K potassium K is valued at 90c/kg. When its liming value is included this brings it down to about 50c/kgK. Compare this with K from potassium sulphate at approx \$2.63/kg and potassium chloride at \$1.97/kg.

Note: Avoid using NSD on **brassica greenfeed** crops which excessively accumulate some heavy metals.





## Grape trial

This is a three year trial sponsored by **Agmardt** and the BCFC. It is entering its last season. The replicated trial is on both Pinot Noir grapes and Sauvignon Blanc and has seven treatments aimed at applying 40kg or 80kgK/ha;

- a nil control, a standard (750-850kg/ha) and double rate of NSD, the equivalent as lime (500-600kg/ha) plus sulphate of potash (90kgSOP/ha), the lime/SOP at a double rate, and a standard and double rate of SOP alone.

The site is responsive to potassium (QTK 6) as soil magnesium levels are high.

Two years soil and herbage data is available for both cultivars but only one year's juice analysis for Sauvignon Blanc. Primary fermentation was carried out on juice to see the effects of treatments on juice pH and titratable acidity.

### Results to date

1. NSD and lime/SOP treatments significantly lifted soil pH over the control and SOP alone on both varieties. Small differences favoured NSD in year 1 but were reduced in year 2 as coarser lime particles broke down.
2. SOP alone lifted soil potassium levels in year 1 particularly over the low rate of NSD. Differences were reduced in year 2 presumably as any larger granulated nodules of NSD broke down.
3. No treatment significantly altered the potassium concentration of bunch leaf petioles in December. However all treatments gave darker foliage than the control in both years, particularly in the older leaf. In Pinot Noir NSD was the most effective, in Sauvignon Blanc SOP alone was the most effective, both particularly at the higher rates.
4. In year 2 the bunches of fruit in the Pinot Noir control treatment were smaller and as a consequence estimated yields lower than all other treatments.
5. There were no treatment effects on sugar, pH or TA levels in juice both pre and post fermentation.
6. While NSD significantly lifted soil thallium levels these were just above the laboratory detection level. NSD had a negligible effect on juice thallium levels.

Data to date shows NSD can be used as a lime potassium source on grapes as a cost effective alternative to SOP. At 800kg/ha of NSD this equates to about 100kg/ha of SOP. At this rate it has a liming effect equivalent to applying 500-550kg/ha of lime.

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