NBudget: a simple tool for farmers and advisors for N management in Australia’s grain cropping

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**Nbudget (DS tool)**

- NBudget is an Excel-based DS tool that does not require associated soil testing, making it different from other DS tools.
- NBudget requires:
  - Simple soil/paddock assessment and last two years crop information
- NBudget estimates:
  - Sowing soil mineral (nitrate) N (empirical data, simulations, rules-of-thumb, linked algorithms)
  - Sowing soil water (empirical data, fallow efficiency, standard functions)
  - N₂ fixed by the legume crops (functions derived from empirical data)
  - Expected grain yields for a range of crops (using soil water and WUE)
  - Fertiliser N required for those crops (using NUE from empirical data)
- Used published and unpublished data from, amongst others, NSW and Qld farming systems, nutrition expts during past 35 years.
**Nbudget – does it work?**

- The greatest value of NBudget may be estimating sowing soil nitrate-N.
- Evidence that the ultimate decision about fertiliser N inputs is complex. Farmers and advisors want accurate information to help make decisions, but don’t want to be told what to do.
- Accuracy of estimated sowing soil nitrate-N tested against three independent data sets from northern NSW (Cryon) and southern Qld (Warra, Nindigully) (n = 65).
- Reasonably good agreement, but does not account for denitrification losses, e.g. very wet 2011-12 summer fallow, N over-estimated by 65-90 kg/ha at 3 of 7 sites.
- Needs to be converted to/released as a stand-alone app.

**Graph:**

![Graph showing the relationship between simulated and measured sowing soil nitrate-N](https://grdc.com.au/~media/6E5659619C7C4063AB3C8E58A4DE39E7.pdf)

- $y = 0.91x + 16.8$
- $r^2 = 0.78$

**Associated manual:**