PADFERT - a computerised aid to whole farm fertiliser management

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Fertiliser selection is an important decision for South Burnett farmers. The type and rate of fertiliser used must be measured against the crop type and yield goal, soil fertility, paddock history, cost and practical application problems. Fertiliser may represent 25 - 30% of total farm variable costs so judicious application of fertiliser can have a significant impact on the farm's economic performance. Incorrect fertiliser decisions can also jeopardise both immediate crops and the medium term paddock performance.

PADFERT is a computer spreadsheet model designed to simplify fertiliser decision making. Best bet recommendations for each paddock can be calculated taking into account the nutrient status of the soil (N, P, K, S, Ca, Mg, Zn and pH), the crop fertiliser requirements, and the cost of the fertiliser. A whole farm summary of fertiliser requirements, tonnages and cost, is produced from the paddock record.

Table 1. Nutrient layout for each paddock

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Paddock Details                                   Nutrients
                                   pH    P    K    N    Ca   Mg   Zn    S
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Paddock 1          Soil Test       6.1  15.0  0.9  7.0  1.4  0.8  0.0  0.0
                   *Nutrients:-
Maize              Required             20.0  0.0 65.0  0.0  0.0  0.0  0.0
Goal - 4 t/ha      Applied              20.0  0.0 65.0  0.0  0.0  0.0  3.0
Area (ha) :-
      28.3         Required - Applied   0.0   0.0  0.0  0.0  0.0  0.0 -3.0
-----------------------------------------------------------------------------
*  Required - predicted from soil test and yield goal.  Zero values signify
                adequate soil test levels
   Applied  - total amount from fertiliser applied at rates indicated.
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Table 2. Fertiliser rate selection table for each paddock

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Fertiliser        Rate      Tonnes       Cost
   Name           kg/ha       t           $
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Urea              100.0      2.83        915.79
Muriate of K        0.0      0.00          0.00
D.A.P.            100.0      2.83       1227.09
CK55                0.0      0.00          0.00
Super               0.0      0.00          0.00
CK1                 0.0      0.00          0.00
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                                Total    2142.88
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The total farm summary can be incorporated into a whole farm budget and used to plan fertiliser orders.

The impact of a particular fertiliser plan is readily assessed both in agronomic and economic terms and can be easily and quickly adjusted to suit varying budgetary and agronomic constraints.

PADFERT has immediate use by extension officers in helping farmers to make better fertiliser decisions. With further development and refinement it will be able to be used by agents and farmers.