

Name: **John Sample**

Sample: **Sample**

Analysis no.: **0-0**

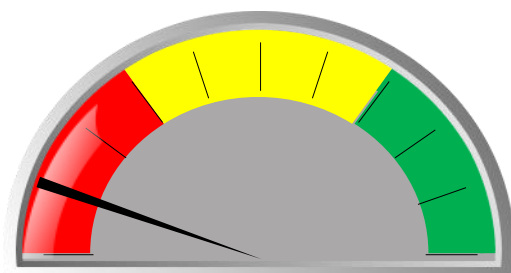
Date: **1/01/2000**

**Customer name** John Sample  
**Client name** J Sample  
**Sample name** Sample  
**Crop** Sample  
**Date sampled** 8

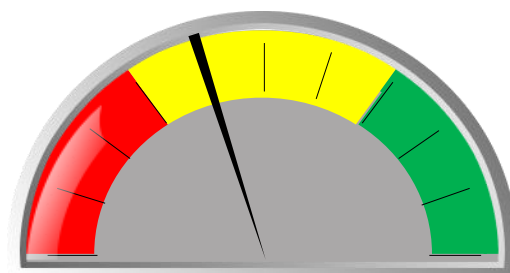
**Date received** 1/01/2000  
**Agent** 1/01/2000  
**Advisor** John Sample & Sons  
**Authorised by** Dr Ash Martin  
**Analysis no.** 0-0

## Soil Nitrogen (N) Indicators

**N Fixation**



**NH<sub>4</sub> → NO<sub>3</sub> Conversion Rate**



## Soil Nitrogen (N) Data

	Yours	
Ammonium (NH <sub>4</sub> <sup>+</sup> ) N (mg/kg)	10.0	
Nitrate (NO <sub>3</sub> <sup>-</sup> ) N (mg/kg)	15.0	
Labile N (mg/kg)		
(mg/kg)	25.0	
Easily Available N (kg/ha)*	30.0	
(%)	2.5	
Total N (kg/ha)*	30,000	

	Yours	Guide
N fixation @ 28°C & 30% MC see reckoner p2 for other values (mg/kg/month)	21.4	50.0
(kg/ha/month)*	25.7	60.0
N Release on Rewetting (mg/kg)	64.2	35.4
(kg/ha)*	77.0	42.5
NH <sub>4</sub> to NO <sub>3</sub> conversion (%/wk)	40.0	30.0

Key

Poor	Fair	Good
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\* Assumes a sampling depth of 10 cm and a bulk density (BD) of 1.2 kg/L. For other depths and densities use mg/kg × (depth (cm) ÷ 10) · BD (kg/L).

## Calculation Table to Help Optimise N Fertilisation

Variable	Formula	Result	Instructions
Average soil temperature (°C)	a		1. Write the average soil temperature and moisture content over the growth period of your crop next to cells a and b. 2. Write the result of the formula d, where n = the growth period in months. 3. Write the crop N requirement next to cell f. 4. Subtract the values for rows d and e from f. This is the amount of fertiliser N required for the crop.
Average soil moisture content (%)	b		
N fixed/°C/%MC (mg/kg/month)	c	0.026	
N fixed (kg/ha)* [10 cm depth & 1.2 BD]	d	a × b × c × 1.2 × n	
Easily Available N (kg/ha)	e	30.0	
Crop N requirement (kg/ha)	f		
N requirement from fertiliser (kg/ha)	g	f - e - d	

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## Ready Reckoner

### N fixation at different soil temperatures and moisture contents (mg/kg/month )

Soil Temperature (°C)	Soil Moisture (% w/w)							
	<5	5	10	15	20	25	30	>30
<10	limited	<1.3	<2.6	<3.8	<5.1	<6.4	<7.7	<7.7
10	limited	1.3	2.6	3.8	5.1	6.4	7.7	<7.7
15	limited	1.9	3.8	5.7	7.7	9.6	11.5	<11.5
20	limited	2.6	5.1	7.7	10.2	12.8	15.3	<15.3
25	limited	3.2	6.4	9.6	12.8	15.9	19.1	<19.1
28	limited	3.6	7.1	10.7	14.3	17.9	21.4	<21.4
30	limited	3.8	7.7	11.5	15.3	19.1	23.0	<23.0
35	limited	4.5	8.9	13.4	17.9	22.3	26.8	<26.8
>35	limited	<4.5	<8.9	<13.4	<17.9	<22.3	<26.8	<26.8

\*To convert mg/kg/month to kg/ha/month use:  $\text{mg/kg/month} \times (\text{sampling depth (cm)} \div 10) \times \text{soil bulk density (kg/L)}$

#### Comments (Detailed Custom Report available - see Order Form)

N fixation rate was [insert key level]. Ammonia to nitrate conversion rate was [insert key level]. These results suggest that nitrogen fixation and cycling process are working very well in this soil. Management actions should aim to build soil N fixation by microbial action and the Ammonia to nitrate conversion rate further to help minimise N fertiliser requirements and increase gross returns per hectare. N fertiliser applications should be optimised (see Calculation Table).

#### Explanations

**N Wise** is a unique, advanced analysis that helps you manage N fertilisation better to help save you money and improve soil health. It takes into account **Labile N** (N that is readily available from the organic and microbial N pools), and N fixation by soil microbes over time and under a simulated crop. This gives users the ability to optimise N fertility management to minimise inputs, maximise outputs and increase gross returns, while improving soil health by avoiding over-fertilisation. **N fixation** is the amount of N fixed from atmospheric N, predominantly by microbial action. **NH<sub>4</sub> to NO<sub>3</sub> conversion** is the percentage of ammonium N (NH<sub>4</sub>) converted to nitrate N (NO<sub>3</sub>) by microbial action after one week. Use the **Calculation Table** to optimise the N fertilisation required for your crop. Use records or best estimations of soil temperatures and moisture contents and enter them into the Calculation Table, along with the crop N requirement (average if no specific data available). The **Ready Reckoner** helps you to calculate N fixation for a given set of soil temperature and moisture conditions. The **Calculation Table** and **Ready Reckoner** make the assumption that N fixation, soil temperature and soil moisture content are correlated linearly.

#### Disclaimer

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