## Soils, Nutrients and Fertiliser Factsheet

## Fertiliser Advice for Cereals

Complete soil sampling for cereal crops and use the results to complete a full Nutrient Management Plan (NMP). The NMP should focus on:

- Lime is the cheapest fertiliser and makes all other nutrients more available
- P & K requirement should be matched to off-takes at soil Indices 1 to 3
- At soil Index 4 where pH is lower than 7, then there is no P & K required
- In fields where straw was chopped, or organic manures applied, you can reduce P & K requirements
- 'Straight Fertilisers' products may be suitable for some sites where either P or K are at Index 4
- At soil Index 1 or 2 drill the compound fertiliser at sowing time

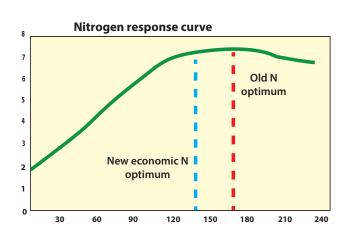
## 1. Nitrogen

The ratio between the value of grain and the cost of N has doubled in the last 12 months, so the economic yield response to the application of N has changed

- All crops have a N response curve, which reaches a point where the yield response to N flattens out. This point is called the agronomic optimum N rate (see curve below red line)
- The graph will also reach a point called the economic optimum rate where the additional yield will not cover the cost of the N applied. This is the Break Even Ratio (BER) (blue line). This BER point on the curve will occur this year before you reach the agronomic optimum nitrogen rate (see table 1)
- Based on the current cost of N versus the current value of grain, research shows that the maximum N rate at which this BER occurs is 20 to 30 kg/ha

lower than the current Teagasc Green Book recommended N rates (See table below)

Reducing the nitrogen rates may reduce yield by 0.2 to 0.5 t/ha, however despite this yield drop, and factoring in the costs of nitrogen, these crops will give a better return than continuing as normal



## N rate kg/ha

Example: Winter wheat 10 t/ha yield; N index 1

Note: Allowance of 20 kg N/ha per tonne grain yield/ha above reference yield

(see Nitrates Directive)

210 kg + 20 kg (Bonus Yield) = 230 kg/ha - 30 kg/ha = 200 kg N/ha (Economic Opt. N Rate)

Example 2: Spring feed barley 7.5 t/ha yield; N index 1

135 kg + 20 kg (Bonus Yield) = 155 kg/ha - 30 kg/ha = 125 kg N/ha (Economic Opt. N Rate)

Table 1. Nitrogen rates at different soil indices

| Crop          | Reference<br>yields | Nitrogen Index |              |              |              |  |  |
|---------------|---------------------|----------------|--------------|--------------|--------------|--|--|
|               | (t/ha)              | 1<br>(kg/ha)   | 2<br>(kg/ha) | 3<br>(kg/ha) | 4<br>(kg/ha) |  |  |
| Winter wheat  | 9.0                 | 210            | 180          | 120          | 80           |  |  |
| Spring wheat  | 7.5                 | 160            | 130          | 95           | 60           |  |  |
| Winter barley | 8.5                 | 180            | 155          | 120          | 80           |  |  |
| Spring barley | 6.5                 | 135            | 100          | 75           | 40           |  |  |
| Winter oats   | 7.5                 | 145            | 120          | 85           | 45           |  |  |
| Spring oats   | 6.5                 | 110            | 90           | 60           | 30           |  |  |

Index 1 = (continuous cereals), Index 2 (after a break crop – beans beet etc.)

Table 2: Fertiliser costs

Costs based on compound (P & K Index 3) + CAN up to target yield + 50% K top up

|                       | Winter<br>wheat<br>€/ha | Winter<br>barley<br>€/ha | Winter<br>oats<br>€/ha | Spring<br>wheat<br>€/ha | Spring F.<br>barley<br>€/ha | Spring<br>oats<br>€/ha |
|-----------------------|-------------------------|--------------------------|------------------------|-------------------------|-----------------------------|------------------------|
| Fertiliser costs 2021 | 345                     | 303                      | 271                    | 391                     | 262                         | 241                    |
| Fertiliser costs 2022 | 882                     | 765                      | 648                    | 713                     | 635                         | 563                    |
| (estimate)            |                         |                          |                        |                         |                             |                        |
| Multiply your costs   |                         |                          |                        |                         |                             |                        |
| by ha grown 2021      |                         |                          |                        |                         |                             |                        |
| Multiply your costs   |                         |                          |                        |                         |                             |                        |
| by ha grown 2020      |                         |                          |                        |                         |                             |                        |
|                       | €                       |                          |                        |                         |                             |                        |
|                       | €                       |                          |                        |                         |                             |                        |
|                       | €                       |                          |                        |                         |                             |                        |

Other crops can be added to this table to get the total costs for the entire farm

