Fertilizers – How to enter value per nutrition/substance

ENTER VALUE PER NUTRITION

This way of entering fertilizer data is more suitable when:

1. The farmer uses multiple fertilizer products over time

- Different products in different years
- Different formulations depending on availability or price
- Sometimes mineral fertilizer, sometimes organic inputs

➡️ The farmer still knows **total N, P, K applied**, but not always the exact product split for the year.

2. The farmer follows a nutrient budget or nutrient balance

In these systems:

- nitrogen limits are defined in **kg N/ha**
- P and K are managed to **replace crop removal**
- compliance and planning are **nutrient based**, not product based

3. Fertilization is based on soil + plant analysis

Examples:

- soil tests (P, K, mineral N)
- leaf or petiole analysis (grapes, apples)
- Yield based nutrient removal calculations

➡️ The farmer can say:

"I applied 45 kg N/ha this year"
even if that N came from **3 different products**.

4. Fertilizer decisions are made by an advisor or cooperative

- The farmer receives a recommendation like:
  - "Apply 50 kg N, 20 kg P_2O_5, 60 kg K_2O"
- The actual product choice may be:
  - spreader mix,
  - fertigation blend,
  - custom compound.

➡️ Nutrients are stable; products are interchangeable.

Example: Vineyard

The farmer knows:

- soil test P and K (every 3–5 years)
- petiole or leaf N status (every year)
- yield last year (kg grapes/ha)
- target vigour and quality

From this, they derive **nutrient totals**, e.g. "This block needs about 30 kg N/ha this year."

Whether that N came from: fertigation, compost, ammonium nitrate, or a mix is secondary.

Summary table – What data to enter in the CarbonCloud platform

Nutrient	Value	(comments)
Mineral Nitrogen	**20 kg N/ha/yr**	From fertigation + mineral fertilizer
Organic Nitrogen	**10 kg N/ha/yr**	Estimated from compost / soil OM mineralisation
Phosphorus	**5 kg P_2O_5/ha/yr**	Maintenance only, based on soil test
Potassium	**40 kg K_2O/ha/yr**	To replace removal in harvested grapes

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Example: Apple orchards

Orchard nutrient management is explicitly based on:

- **nutrient budgets**
- **fruit removal**
- **leaf analysis**

Based on tree status, the nutrients totals needed for replacing removed nutrients at harvest, ends up as in the table below.

Summary table – What data to enter in the CarbonCloud platform

Nutrient	Value
Mineral Nitrogen	35 kg N/ha/yr
Organic Nitrogen	15 kg N/ha/yr

Nutrient	Value
Phosphorus	10 kg P_2O_5/ha/yr
Potassium	70 kg K_2O/ha/yr

ENTER VALUE PER SUBSTANCE

This way of entering fertilizer data is more suitable when:

- the crop is annual and input driven (e.g. maize, wheat, barley)
- fertilizer is applied once or twice with known products
- invoices clearly list products and quantities

The farmer probably derive the amount of fertilizer products from:

1. Soil testing

- Soil nitrate N, P, and K measured before planting
- Determines how much fertilizer is needed to reach target levels

2. Yield and protein targets (malting contract)

- Contract specifies acceptable protein range (typically ~9–12 %)
- Nitrogen rate is capped accordingly

3. Nutrient balance calculations

- Expected grain removal (kg N, P_2O_5, K_2O per ton grain)
- Adjusted for straw removal and soil reserves

4. Fertilizer invoices & application logs

- Product name, amount (kg/ha), and date recorded

Example: Malting barley

Context for the example

- **Crop:** Malting barley
- **Production system:** Conventional, quality focused (protein control)
- **Key constraint:** Nitrogen must be carefully managed to avoid high grain protein
- **Typical approach:**
    - Pre-plant mineral N
    - Balanced P and K based on soil test

1. Mineral nitrogen fertilizer

Product: YaraBela® Axan

- **Type of fertilizer:** Ammonium nitrate based fertilizer
- **Nutrient content:** 27 % N (ammonium + nitrate)
- **Amount applied:** 260 kg/ha/yr

(Nitrogen supplied: 260 × 0.27 = 70 kg mineral N/ha/yr)

Why this product is used

- Provides fast but controllable nitrogen uptake
- Suitable for split or single early application

2. Phosphorus fertilizer

Product: YaraMila™ P 20

- **Type of fertilizer:** Monoammonium phosphate (MAP-based)
- **Nutrient content:** 20 % P_2O_5
- **Amount applied:** 100 kg/ha/yr

(Phosphorus supplied: 100 × 0.20 = 20 kg P_2O_5/ha/yr)

Why this product is used

- P is critical for early root development and establishment in barley
- Applied based on soil P class from soil testing

3. Potassium fertilizer

Product: Muriate of Potash (KCl) – e.g. K+S Korn-Kali

- **Type of fertilizer:** Potassium chloride
- **Nutrient content:** 60 % K_2O
- **Amount applied:** 85 kg/ha/yr

(Potassium supplied: 85 × 0.60 = 51 kg K_2O/ha/yr)

Why this product is used

- Barley removes significant K with grain and straw
- K supports disease resistance and grain fill

4. Compound fertilizer (optional base dressing)

Product: NPK COMPLEX 15-15-15

- **Nutrient content:** 15 % N + 15 % P_2O_5 + 15 % K_2O
- **Amount applied:** 100 kg/ha/yr

(Nutrients supplied: 15 kg N/ha, 15 kg P_2O_5/ha, 15 kg K_2O/ha)

Used as a **starter fertilizer**, especially on lighter soils.

Summary – What data to enter in the CarbonCloud platform

Type of Fertilizer	Amount (kg/ha/yr)
Ammonium nitrate based fertilizer	260
Monoammonium phosphate (MAP)	100
Potassium chloride	85
NPK COMPLEX 15-15-15	100