# Fertiliser Quantities for an NPK Dose (Urea, DAP, MOP)

Quantities of DAP, urea and muriate of potash to supply a recommended N, $P_2O_5$ and $K_2O$ dose per hectare, with the number of 50 kg bags for a field.

**Method:** Nutrient balance of straight fertilisers

## Input parameters

Unit system: SI

| Parameter | Value | Unit |
|---|---|---|
| Nitrogen dose (kg N per ha) | 120.00 | |
| Phosphate dose (kg $P_2O_5$ per ha) | 60.000 | |
| Potash dose (kg $K_2O$ per ha) | 40.000 | |
| Field area | 1.0000 | ha |
| N in DAP | 18.000 | % |
| $P_2O_5$ in DAP | 46.000 | % |
| N in urea | 46.000 | % |
| $K_2O$ in muriate of potash | 60.000 | % |

## Calculated results

| Parameter | Value | Unit |
|---|---|---|
| DAP per hectare (kg) | 130.43 | |
| Urea per hectare (kg) | 209.83 | |
| MOP per hectare (kg) | 66.667 | |
| DAP bags for the field | 3.0000 | |
| Urea bags for the field | 5.0000 | |
| MOP bags for the field | 2.0000 | |

### Notes for this case

- DAP is chosen to meet the phosphate dose; it also supplies some nitrogen, and urea makes up the rest. Muriate of potash supplies the potash. Bags are rounded up to whole 50 kg bags for the field. Split nitrogen into basal and top dressings as recommended for the crop.

## Formula and method

$$m_D = \frac{P_2O_5}{p_D}, \quad m_U = \frac{N - n_D m_D}{n_U}, \quad m_M = \frac{K_2O}{k_M}$$

### Variables

| | | |
|---|---|---|
| $N$ | Nitrogen dose (kg N per ha) | - |
| $P_2O_5$ | Phosphate dose (kg $P_2O_5$ per ha) | - |
| $K_2O$ | Potash dose (kg $K_2O$ per ha) | - |
| $A$ | Field area | m² |
| $n_D$ | N in DAP | - |
| $p_D$ | $P_2O_5$ in DAP | - |
| $n_U$ | N in urea | - |
| $k_M$ | $K_2O$ in muriate of potash | - |
| $m_D$ | DAP per hectare (kg) | - |
| $m_U$ | Urea per hectare (kg) | - |

| | | |
|---|---|---|
| $m_M$ | MOP per hectare (kg) | - |
| $b_D$ | DAP bags for the field | - |
| $b_U$ | Urea bags for the field | - |
| $b_M$ | MOP bags for the field | - |

### Method and standards

NPK quantities.

### Assumptions and limits

- Straight fertilisers as entered; no organic sources counted.

### References

Nutrient balance of straight fertilisers

## Report details

| | |
|---|---|
| Report reference | FCC-K8H0-0RCJ (the same inputs always give the same reference) |
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| Release checks | 3 reference cases of this calculator, computed independently, are checked on every release |

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

### This calculator online

https://calc.firecad.com/civil/irrigation-farm/fertilizer-npk-quantity

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.