PRODUCT TECH SHEET

Feather Meal – 14%N

Organic Nitrogen Fertiliser

High-protein, slow-release organic input for regenerative and organic systems

Feather meal is a dry, grounded powder fertiliser derived from steam-processed poultry feathers. It is rich in keratin-bound protein and provides a steady nitrogen supply primarily in amino form, promoting sustained plant growth and microbial activity. It is a renewable, non-synthetic input suitable for use in certified organic farming under ACO guidelines.

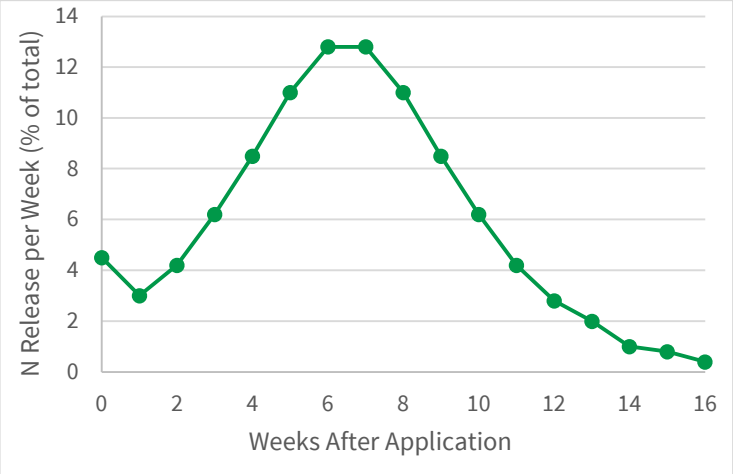

Fig 1: A simulation of N release dynamics of Feather Meal (Sims, 1990; Tisdale et al., 1993)

Core Features

- **Controlled Release Nitrogen**
  Feather meal releases nitrogen over 12–16 weeks, peaking between weeks 4–8 (Sims, 1990; Gale et al., 2006). This release curve makes it ideally suited for; Medium-duration crops (50–60 days) that require sustained nitrogen supply through early and mid-growth stages & Longer-season crops (120+ days) where nitrogen demand peaks mid-cycle and then tapers off for proper maturation and fruit quality.

- **Amino-form Nitrogen**
  Unlike nitrate or ammonium fertilisers, feather meal supplies nitrogen in amino form, which can be directly absorbed by both plants and microbes. This bypasses energy-intensive conversion steps, allowing for efficient uptake at lower application rates (Näsholm et al., 2009).

- **Strong Microbial Stimulant**
  The high protein content acts as a carbon and nitrogen source for beneficial microbial communities, enhancing nutrient cycling, aggregation, and root-zone resilience (Brady & Weil, 2016).

- **Low leaching and volatilisation risk**
  The slow-release pattern helps stabilise nitrogen in the soil profile, mitigating risks of leaching into groundwater or volatilisation losses (IPCC, 2019).

- **Zero fertiliser Salt Index**
  Free from soluble salts that can contribute to soil salinity or cause osmotic stress in plants.

- **Permitted input under:** ACO Organic Standards (Input for Soil Fertility and Nutrient Management).

Amino Acids in Feather Meal & Their Functions

Feather meal is naturally rich in keratin, a fibrous structural protein composed of a wide spectrum of amino acids. During decomposition in soil, microbial action gradually hydrolyses keratin, making its amino acids bioavailable to plants and microbes. These amino acids contribute directly to plant nutrition, stress tolerance, and metabolic function.

Amino Acid	Typical Presence in FM	Primary Plant Function
Cysteine	High (keratin-rich)	Sulfur source; antioxidant roles; precursor to glutathione; involved in root architecture and stress signaling.
Methionine	Moderate–High	Essential for ethylene synthesis; activates seed germination and stress response pathways.
Glycine	High	Central in chlorophyll synthesis; precursor in heme and purine formation.
Alanine	Moderate	Involved in carbon metabolism; buffers pH under anaerobic conditions.
Proline	Moderate	Accumulates under drought/salinity; stabilises proteins and membranes during stress.
Glutamic Acid	High	Precursor to glutamine; central in nitrogen assimilation and amino acid synthesis.
Glutamine	High	Primary nitrogen transport molecule within plants.
Serine	Moderate	Involved in synthesis of phospholipids and amino acid metabolism.
Leucine	Moderate	Protein synthesis; regulates energy use and plant growth.
Valine	Moderate	Helps in protein biosynthesis; involved in stress recovery.
Arginine	Moderate	Precursor to polyamines and nitric oxide; enhances cell division and stress tolerance.
Lysine	Low–Moderate	Structural component in proteins; involved in hormone regulation and seed development.
Tyrosine	Low	Precursor to secondary metabolites like lignin and alkaloids.
Phenylalanine	Low–Moderate	Precursor to flavonoids, lignin, and other phenolic compounds important for defence.
Histidine	Low	Involved in metal ion chelation and buffering.

Key Specifications

Parameter	Value
Total Nitrogen (N)	~14%
C:N ratio	~3.5
Moisture Content	<10%
Crude Protein	80% min
Crude Fat	8% max
Crude Fibre	1-2%
Pepsin Digestibility	80-85%
Particle Size	Fine Powder <2mm
Odour	Mild, non-rancid
Colour	Light brown

Available Packaging

- 12 kg bags
- 140kg Barel Trading System
- 800kg Bulk bag
- 1000kg Bulk Bag (on CHEP Pallet)
- B-Double 40 ton

References

Sims, J.T. (1990). *J. Environ. Qual.*, 19(4), 669–675.

Tisdale, S.L. et al. (1993). *Soil Fertility and Fertilizers*, 5th ed.

Näsholm, T. et al. (2009). *New Phytologist*, 182(1), 31–48.

Brady, N.C. & Weil, R.R. (2016). *The Nature and Properties of Soils*, 15th ed.

IPCC (2019). *Climate Change and Land: Special Report.*

Application Rates

Feather meal's slow-release, amino-based nitrogen makes it suitable across a range of cropping, pasture, and biological inputs. Its effectiveness depends on **soil microbial activity**, **aeration**, **moisture**, and **carbon-to-nitrogen balance**. Use the following as a guide and adjust based on crop demand, organic matter, and seasonal conditions.

1. Horticulture – Vegetables

Context	*Application Rate*	*Timing & Notes*
Leafy greens	250–600 kg/ha 25-80 g/m2	Apply base dressing pre-sowing or at seeding.
Fruiting vegetables	400–800 kg/ha 40-80g/m2	Apply base dressing pre-planting or side-dress before flowering.
Root crops	200–500 kg/ha 20-50g/m2	Base dressing at planting. Avoid excessive N from over application.

2. Orchards & Vineyards

Tree crops	200–600 kg/ha	Cast under dripline in spring or autumn
Grapevines	150–500 kg/ha	Apply late winter to early spring under vine

3. Pasture Systems

Permanent pasture	300–900 kg/ha	Broadcast pre-growth period.
Regenerative grazing	400–1000 kg/ha	Apply post-graze with mulch to fuel decomposition

4. Nursery, Turf & Potting Mixes

Potting media	1–3 kg/m3	Blend thoroughly. Avoid in seedling trays.
Turf establishment	30–60 g/m2	Incorporate prior to sowing.
Turf maintenance	10–20 g/m2	Apply every 8–10 weeks.

5. Compost, Cultures & Microbial Brews

Compost tea (aerated)	0.5–1 g/L	Add early as microbial feed. Pre-soak if needed.
IMO culture	1–2% by weight	Adds nitrogen source for microbial growth.
Composting	2–5% of total mass	Balances high-carbon inputs. Accelerates microbial activity.

We invite you to contact us to discuss how feather meal can support your agronomic goals

Handling & Storage

1. Store in a dry, covered location - ambient temperature in clean, dry bins, free from moisture, foreign matter and high heat.

2. Exclude contamination from rodents, insects, birds and any other animals.

3. Product is hygroscopic – reseal opened containers.

4. Use gloves and dust mask when handling in bulk.

5. Product activates upon contact with moisture, leading to rapid microbial growth. All handling should be completed before microbial activation begins.

Soil Type Consideration:

Heavy, compacted soils – Use lower application rates and incorporate lightly to avoid oxygen depletion at depth and localised anaerobic reactions.

Light, well-aerated soils – higher rates can be applied with deeper incorporation allowed as they are able to maintain aeration.

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