PRODUCT KNOWLEDGE · PHOSPHORUS

V-Phosphate

10-44-0 · micronutrient-coated · fully soluble

The fertigation phosphorus for the middle of the season — fully soluble, ammonium-form nitrogen, and a micronutrient coating, for the second phosphorus peak that a basal bag never reaches.

PS 933-2026

Licence CM/L-4297/2026

Fertigation

Formerly V-Ammonium Phosphate

BEFORE ANYTHING ELSE

This product changed its name and its registration.

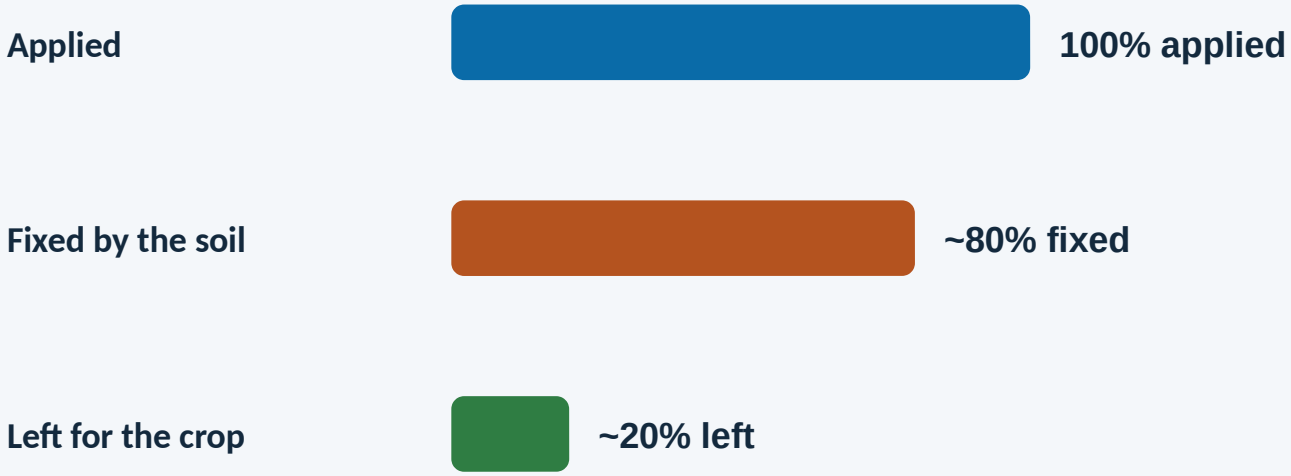
If you are holding older literature, or an older bag, this is what changed.

1	**The old identity**	V-Ammonium Phosphate, NPK 12-44-0. This is what the 2026 training deck, and the artwork currently in the market, still say.
2	**The new identity**	V-Phosphate, 10-44-0, re-registered under PSQCA marks licence CM/L-4297/2026. This is the current registration and it governs.
3	**Same product**	It is the same product doing the same job. The name and the declared nitrogen figure changed; the role in the programme did not.
4	**Where you will still see the old name**	VAN's 26 locked crop plans print what the plan printed when it was locked. The crop pages on van.com.pk carry a note saying so, rather than silently rewriting the plans.

THE PROBLEM

The bag goes on at sowing. The crop asks again in the middle.

What happens to conventional phosphate on calcareous ground.



80–95%

of Pakistani soils are phosphorus-deficient

and most growers buy a bag or two of phosphate — all of it at sowing

The crop needs phosphorus for the development of the whole plant, not only for germination. By the time the second demand peak arrives, the basal application has largely been fixed.

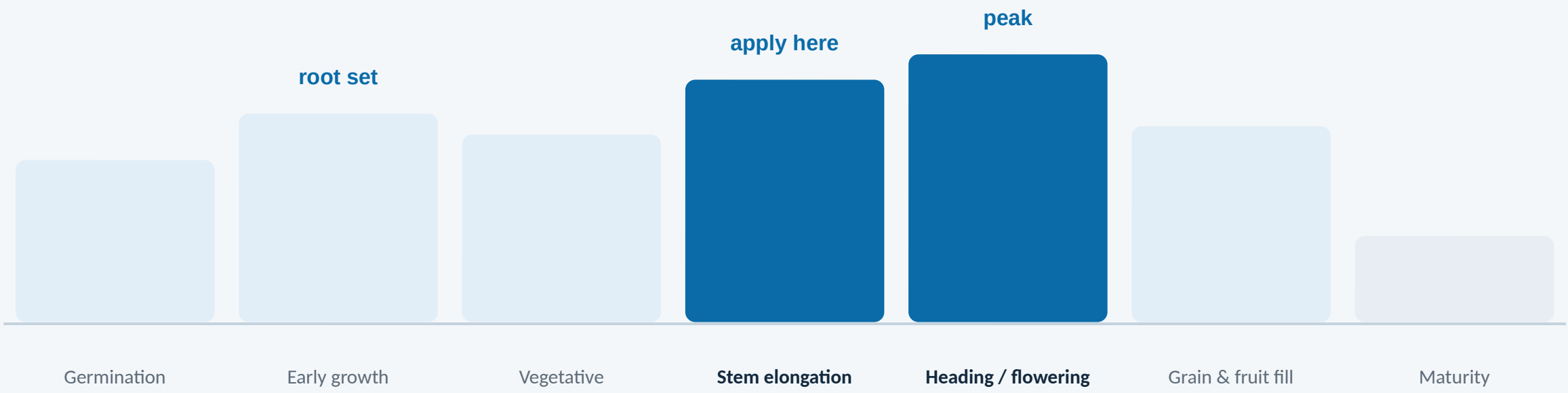
Figures as cited in VAN's 2026 product literature; see the sources slide.

! A basal phosphate and a mid-life phosphate are two different jobs. This is the second one.

THE DEMAND CURVE

Phosphorus demand peaks at flowering, not at sowing.

Relative phosphorus demand across the season. The early rise builds the root; the later, larger rise builds the crop.



Phosphorus applied by fertigation during stem elongation puts the nutrient in place for the heading and reproductive stages, when demand peaks — instead of asking a granule applied four months earlier to still be available.

The band shows the shape of demand, not measured uptake for a named crop. VAN publishes stage-by-stage programmes for 26 crops at van.com.pk/crops/.

THE PACK

What is actually in the bag.

⚠️ The artwork currently in the market still carries the previous name and grade.

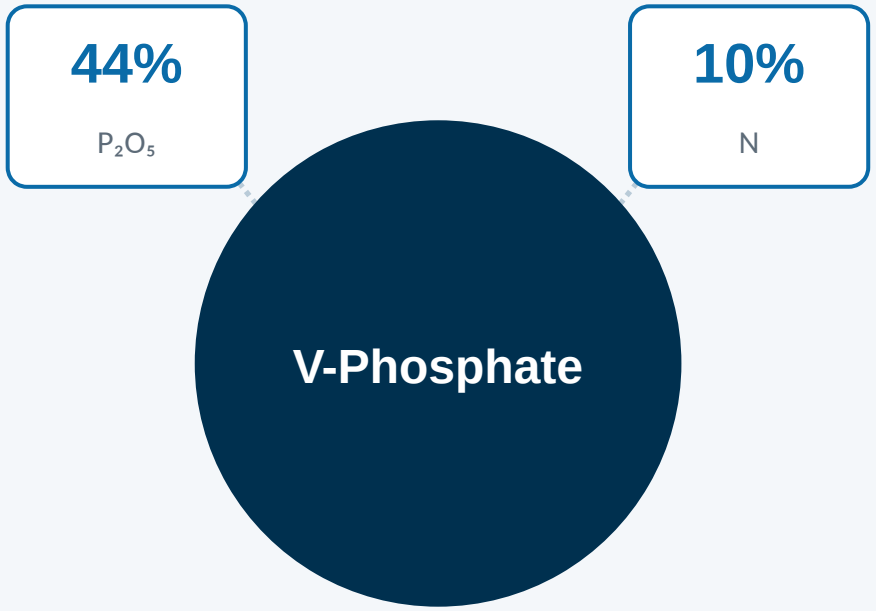
Current artwork — reads "V-Ammonium Phosphate · NPK 12-44-0"

CURRENT REGISTRATION	V-Phosphate 10-44-0 — N 10% · P_2O_5 44%
LICENCE	PSQCA marks licence CM/L-4297/2026
PHYSICAL	Solid, light yellow powder — fully soluble
SOLUBILITY & PH	250 g/L · pH 5 – 6.5, slightly acidic to neutral
⚠️ ARTWORK	Pack still shows "V-Ammonium Phosphate 12-44-0" and needs reprinting

THE REGISTERED ANALYSIS

What the label declares.

As re-registered under CM/L-4297/2026.



REACTION

pH 5 – 6.5

acidic in solution — it does not raise irrigation-water pH

SOLUBILITY

250 g / L

fully soluble; no residue in drip emitters or nozzles

FORM & COLOUR

Light yellow powder

dissolves completely for fertigation

THE TECHNOLOGY

Ammonium nitrogen, and a micronutrient coating.

What is engineered in beyond the two declared nutrients.

1 Ammonium-form nitrogen

The nitrogen is ammoniacal and immediately plant-available. It does not have to be converted first, and ammonium uptake mildly acidifies the root zone, which is exactly what a phosphate wants on calcareous ground.

2 Acidic in solution

The product goes into solution acidic rather than alkaline, so it does not raise the pH of already-alkaline irrigation water on its way to the root.

3 Iron coating

Iron is carried on the granule. Iron is suppressed both by the free calcium of a calcareous soil and by phosphate itself, so carrying it on the phosphate is the one way to be sure it arrives where and when the phosphorus does.

4 Complete dissolution

It dissolves fully in irrigation water, which is what allows one application to reach a whole acre evenly rather than the strip a spreader covered.

Iron is part of the formulation. It is named here without a figure because it is not label-declared. The 2026 training deck says "Magnesium & Iron" and the 2021 specification sheet says Fe, Mn and Cu — both are superseded. Iron only.

AGAINST THE ALTERNATIVE

Ammonium phosphate and urea phosphate are not interchangeable.

Both are soluble phosphates for fertigation. They behave differently in the tank and in the soil.

Urea phosphate

A reaction product of urea and phosphoric acid. Strongly acidic, and its nitrogen is urea-N.

- Nitrogen is 100% urea-N and must be converted before the plant can use it
- Strongly acidic — useful for cleaning a line, harder on the root zone
- Phosphorus efficiency moderate
- Conversion step means a lag between application and availability

V-Phosphate

A true ammonium phosphate salt. Mildly acidic, and its nitrogen is already in the form the root takes up.

- Nitrogen is ammoniacal — available immediately, no conversion needed
- Mildly acidic reaction, and ammonium uptake acidifies the root zone further
- Phosphorus fixed less readily under alkaline conditions
- Stable ammonium nitrogen also reduces loss and supports root development

This comparison is between two chemistries, not between two companies.

NUTRIENT INTERACTIONS

Why a phosphate carries iron and magnesium.

Established interactions between soil nutrients — after Mulder. These describe how nutrients behave with one another, not how V-Phosphate performs.

+ Works with

Balanced phosphorus improves magnesium uptake, and balanced magnesium improves both nitrogen and phosphorus uptake in return

Ammonium-form nitrogen acidifies the root zone as it is taken up, which keeps phosphorus in solution nearby

Magnesium sits at the centre of the chlorophyll molecule — a crop given phosphorus for energy still needs magnesium to capture the light

Iron delivered alongside phosphorus offsets the suppression that free calcium and applied phosphate both cause

– Competes with

Excess phosphorus reduces zinc, iron and copper uptake — a phosphate applied without micronutrients can create a micronutrient deficiency

Excess calcium suppresses phosphorus, magnesium, iron, zinc, manganese and boron together — the standing condition of a calcareous soil

Excess iron in turn reduces phosphorus availability, so the balance matters in both directions

Excess potassium suppresses calcium and magnesium, so a heavy potash programme needs magnesium watched

The micronutrient coating exists because of the first line on the right. Applying phosphorus alone, season after season, is a known route into zinc and iron deficiency.

THE MECHANISM

What phosphorus is actually doing in there.

Six functions, none of which the plant can perform without it.

1 Energy currency

Captures and converts solar energy into chemical energy — ATP is a phosphate molecule

2 Pays for uptake

Gives the crop the energy it needs to extract every other nutrient from the soil

3 Cell division

Present in every living cell; central to division and to new tissue

4 Root architecture

Drives root development, which then governs water and nutrient access for the rest of the season

5 Genetic material

The backbone of DNA and RNA is a sugar-phosphate chain

6 Seed and grain

Concentrates in seed and grain — a phosphorus-short crop sets and fills poorly

IN THE FIELD

What a phosphorus-short crop looks like.

General agronomy, not a VAN measurement — but it is what the grower sees first.

1 Purpling

A purple or reddish cast, beginning at the leaf edges

2 Oldest leaves first

Phosphorus is mobile: the plant strips it from old tissue to feed new growth

3 Stunting without yellowing

The plant simply stays small, which is easy to blame on water or on nitrogen

4 Thin roots

A shallow root system, which then limits every other nutrient

5 Late flowering

Delayed flowering and maturity — in Pakistan that can push harvest into the wrong weather

6 Poor set

Flowers set badly and grain or fruit fills unevenly

WHERE IT IS USED

In 24 of VAN’s 28 published crop programmes.

These are the programmes VAN publishes on van.com.pk. Several still print the former name, because a locked plan is reproduced as it was locked.

Wheat · Maize · Cotton · Sugarcane · Ratoon Sugarcane · Basmati Rice · Hybrid Rice · Potato · Onion · Garlic · Tomato · Chili · Canola · Sunflower · Soybean · Lentil · Chickpea · Mungbean & Mash · Turmeric · Watermelon · Strawberry · Citrus — 5 years and over · Banana — 1st year · Banana — 2nd year

24 of 28 crop programmes, published in full and free at van.com.pk/crops/.

i The crop pages carry a note wherever a locked plan prints the former name V-Ammonium Phosphate 12.44.0 — same product, renamed and re-registered.

4R STEWARDSHIP

Right source, right rate, right time, right place.

The published doses, by crop group. VAN publishes a rate and a stage, not a yield promise.

SUGARCANE

10 + 10 kg

at the grand growth stage, by fertigation

CEREALS

10 kg

maize at tasselling, rice at panicle initiation, wheat at booting

COTTON

10 kg

at flowering, by fertigation

HORTICULTURE

10 kg

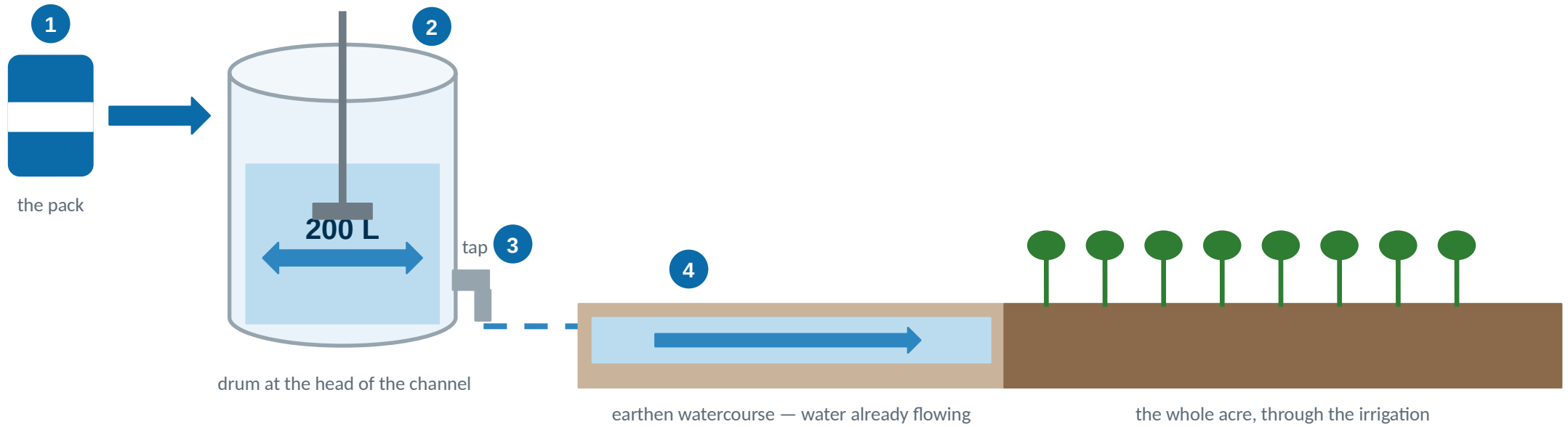
fruiting vegetables at flowering and fruit formation; orchards at fruit formation

Potato, onion, garlic, oilseeds and leafy vegetables all have published stages and rates on van.com.pk. Every one of them is by fertigation.

HOW IT IS APPLIED

It goes in at the drum, not at the bag.

A soluble phosphate delivered in water skips the fixation a broadcast granule meets.



1 Measure it

10 kg per acre — split on sugarcane. Weigh it. A guessed dose is the commonest error in the field.

2 Dissolve and agitate

Into a 200 L drum of water at the head of the watercourse. Stir until it is fully in solution — undissolved product settles and blocks the tap.

3 Meter it in

Open the tap so the drum empties across the whole irrigation, not in one slug. The water should already be flowing.

4 At the right stage

Through the season, with the irrigation. Into the wetted root zone, across the whole acre.

Doses are per acre, from VAN agronomy. The drum is drawn at 200 L because that is what is standing at the head of most Punjabi watercourses — scale the water, not the product.

HOW TO APPLY IT

Three steps, and the mixing ratio is 1 to 10.

1 · Pour	V-Phosphate and irrigation water into the tank at 1 part product to 10 parts water. For 10 kg of V-Phosphate, that is 100 litres of water.
2 · Mix	Stir until fully dissolved. The product goes into solution completely — if anything is left in the bottom of the tank, it has not been given long enough.
3 · Fertigate	Release into the water channel at the point where irrigation water enters the field, so the solution travels with the water across the whole acre.

STANDARDS AND ASSURANCE

What is behind the bag.

1	**Licence CM/L-4297/2026**	PSQCA marks licence under the new registration as V-Phosphate 10-44-0.
2	**PS 933-2026**	Registered against the Pakistan Standard for multinutrient fertilizer.
3	**Tested before it ships**	Every batch is tested in VAN's own PNAC-accredited laboratory, ISO/IEC 17025:2017, LAB-336.
4	**Certificate on request**	Send the batch number off the bag and VAN will send the certificate of analysis for that batch. Free, no sample, no form.

For information only. VAN may change a product's composition at any stage for agronomic, efficiency or upgrade reasons.

IN ONE LINE

Four reasons, and none of them is a yield claim.

1	**Right stage**	Delivered at the mid-life peak, when phosphorus demand is highest and a basal application has largely been fixed.
2	**Fully soluble**	Dissolves completely, so one application reaches the whole acre and nothing is left in the emitter.
3	**Nitrogen already usable**	Ammoniacal nitrogen needs no conversion, and its uptake acidifies the root zone in the phosphate's favour.
4	**Iron included**	Iron travels with the phosphorus, offsetting the suppression that both calcium and phosphate cause.

SOURCES

Where every figure in this deck came from.

Current identity	V-Phosphate 10-44-0, PSQCA CM/L-4297/2026 — recorded 17 Aug 2026, ruled current by VAN 19 Aug 2026
Former identity	V-Ammonium Phosphate 12-44-0 — retired 2026; page and documents in _superseded/
Iron coating	VAN, 19 Aug 2026 — iron only. Supersedes both the 2026 deck ("Magnesium & Iron") and the 2021 specification sheet ("Fe, Mn, Cu")
P deficiency and fixation	Ahmad, M. et al. (2022). Sustainability 14(13), 7669
P uptake by growth stage	As compiled in VAN's V-Ammonium Phosphate LMS 2026, references 3–7 of that deck
Soybean P timing	Soil Science Society of America, as cited in the same deck
Nutrient interactions	After Mulder's chart — established relationships
Doses by crop	van.com.pk/crops/ — 24 of the 28 published programmes
⚠️ **Open item**	Pack artwork still reads V-Ammonium Phosphate 12-44-0 and needs reprinting against the current registration

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