



PRODUCT KNOWLEDGE · PHOSPHORUS

Green Phosphate

6-32-0 · humic-coated acidic phosphate

An acidic, humic-coated phosphate built for the one soil condition that destroys ordinary phosphate: free calcium at high pH. Less fixation, less waste.

PS 933-2026

Licence CM/L-2719/2023

50 kg & 35 kg

Granular



Vital Agri Nutrients (Pvt) Ltd · van.com.pk

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

THE PROBLEM

Pakistan imports phosphate. Then the soil takes most of it back.

What happens to a bag of conventional phosphate on calcareous ground.

Applied  100% applied

Fixed by the soil  ~80% fixed

Left for the crop  ~20% left

80–95%

of Pakistani soils are phosphorus-deficient

and about 80% of what is applied is fixed, because pH is far above the 6.0–7.0 window where phosphorus stays available

This is the largest single line in Pakistan's fertilizer import bill, bought in dollars and locked up in the first season.

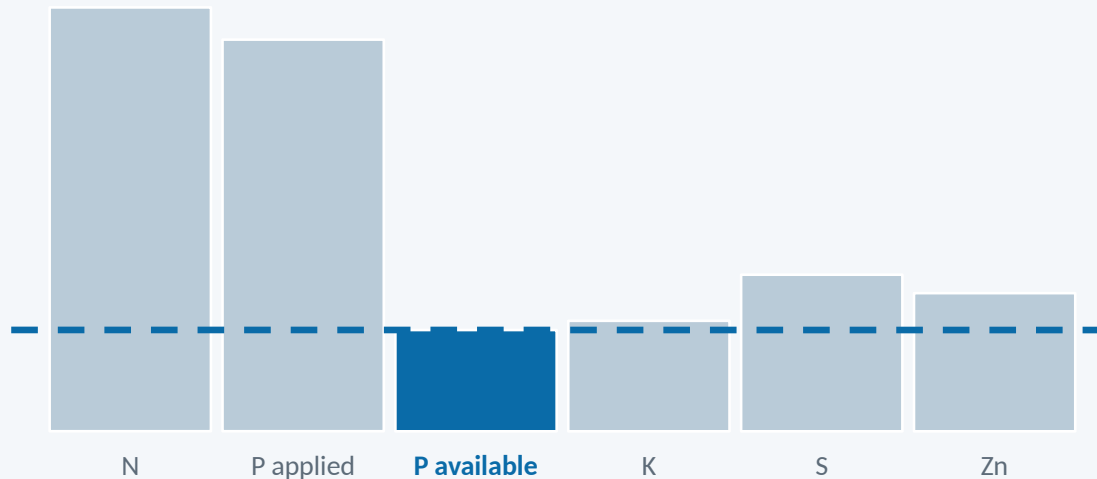
Figures as cited in VAN's 2026 product literature; see the sources slide.



Phosphorus is not lost to the air like nitrogen, or leached like potassium. It is still there. It is simply in a form the root cannot take.

You cannot fix a phosphorus problem with more phosphorus.

Carl Sprengel set the law out in 1840; Justus von Liebig made it famous. If the limitation is availability rather than quantity, adding quantity raises nothing.



— the water line — what the crop actually yields

Applied $\neq$ available

A soil can hold years of accumulated phosphate and still starve the crop of it. Green Phosphate raises the third stave — the available one — by changing the chemistry immediately around the granule instead of adding to the pile.

The staves show the shape of the problem, not measured soil values. Your own shortest stave is a soil test away — VAN Lab publishes its prices.

Phosphorus availability has a narrow pH window, and Pakistan sits outside it.

How much applied phosphorus stays plant-available, by soil pH. Fixation happens at both ends — by iron and aluminium below pH 6, by calcium above pH 7.

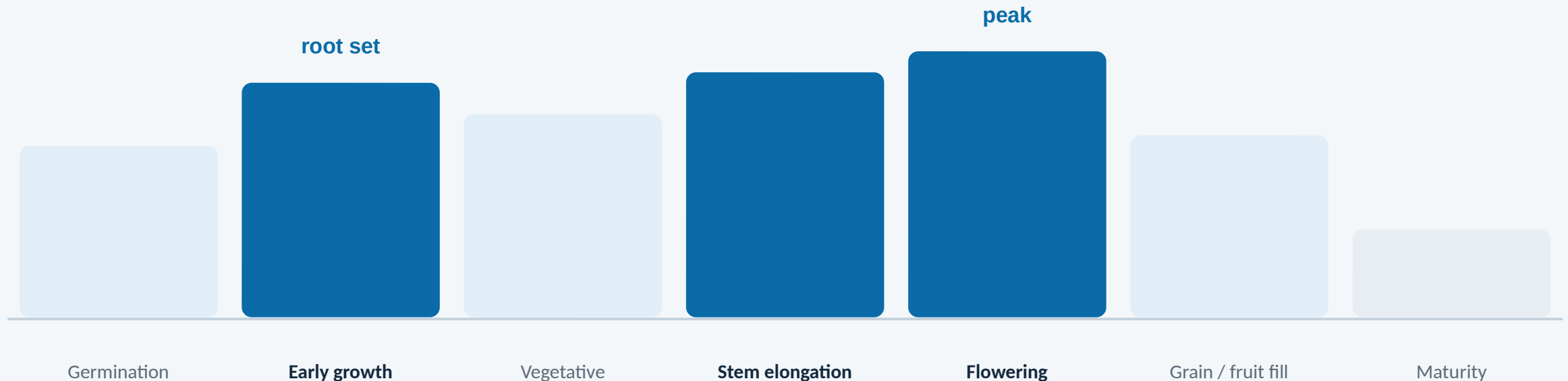


Most Pakistani cropping soils sit in the last three columns. Green Phosphate is built acidic — pH 5 to 6.5 — so the granule creates the window it needs in the few centimetres of soil that matter, rather than waiting for the field to become something it is not.

The shape of this relationship is standard soil chemistry. The band is illustrative; it is not a measurement of any particular field.

The crop wants phosphorus early — and again in the middle.

Relative phosphorus demand across the season. Most of a Pakistani grower's phosphate goes on once, at sowing, and nothing is left for the second rise.



Green Phosphate covers the basal requirement without fixing away before the crop reaches it. For the mid-life rise, VAN's answer is a soluble fertigation phosphate — V-Phosphate — applied at the stage the second peak occurs.

The band shows the shape of demand, not measured uptake for a named crop.

What is actually in the bag.

Two pack sizes, one analysis.



Green Phosphate — 50 kg and 35 kg

ANALYSIS

N 6% · P₂O₅ 32% — the 6-32-0 grade

PHYSICAL

Solid granular and powder grades, brown to light brown

REACTION

pH 5 – 6.5, slightly acidic to neutral

SOLUBILITY

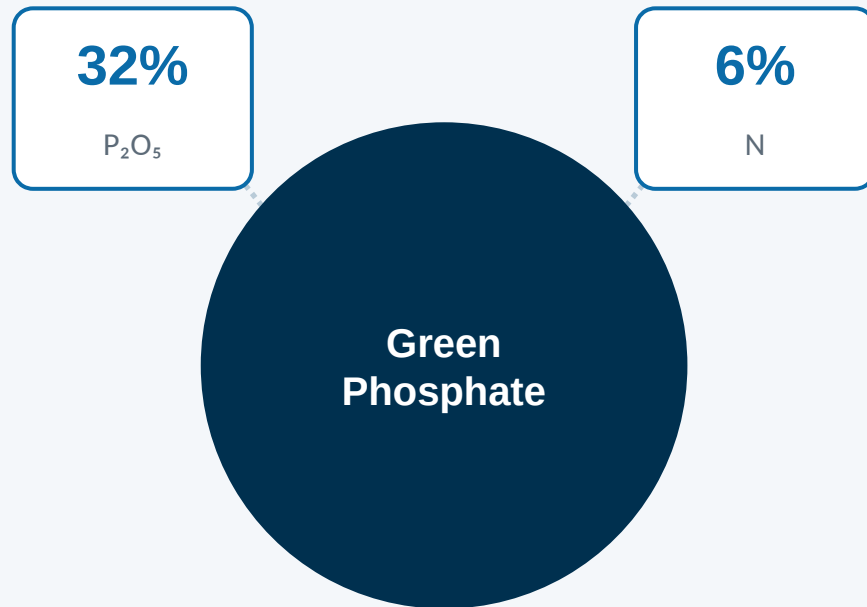
250 g/L — moderately soluble; band placement or broadcasting

STANDARD & LICENCE

PS 933-2026 · PSQCA marks licence CM/L-2719/2023

What the label declares.

As registered under PS 933-2026 and as published on van.com.pk.



REACTION

pH 5 – 6.5

acidic granule — the opposite of the soil it goes into

SOLUBILITY

250 g / L

moderately soluble; band placement performs best

FORM & COLOUR

Granular

brown to light brown; a powder grade also exists

Three things happen around this granule that do not happen around DAP.

What is engineered in, beyond the two declared nutrients.

1 An acidic granule

The granule is acidic rather than alkaline, so it creates a small zone of favourable pH around itself. Phosphorus stays in solution there long enough for a root to find it, instead of meeting free calcium and precipitating.

2 A humic coating

Humic substances are coated onto the granule. They chelate the calcium, iron and aluminium that would otherwise capture the phosphate, and they improve soil structure and biology where they land.

3 Fermentable sugars

Bio-available fermentable sugars feed the soil microbial population, raising phosphatase activity — the enzyme route by which stable organic phosphorus is mineralised back into an available form.

4 Restrained nitrogen

Nitrogen is held at a basal level rather than loaded in. High ammoniacal nitrogen at sowing risks ammonia injury to a germinating seedling; this grade is built to sit safely beside seed.

Magnesium and a biostimulant fraction are also part of the formulation. They are named here without figures because they are not label-declared.

Green Phosphate and DAP are not the same trade.

DAP is the phosphate most Pakistani growers buy. This is what differs.

Di-ammonium phosphate

A true salt, high in ammoniacal nitrogen, alkaline in its immediate reaction zone.

- Excess ammoniacal nitrogen at the basal stage — risk of seedling ammonia injury
- Creates an alkaline micro-zone, which is the condition that fixes phosphate
- No humic acid, no biostimulant, no organic-matter contribution
- Phosphorus efficiency low on calcareous ground

Green Phosphate

An acidic, humic-coated granule carrying only as much nitrogen as a basal dose needs.

- Controlled nitrogen at 6% — safe next to germinating seed
- Acidic reaction zone — phosphate stays available where the root is
- Humic acid and fermentable sugars raise soil biology and phosphatase activity
- Phosphorus protected from fixation for longer

VAN publishes no head-to-head efficiency percentage between the two. The chemistry is the argument.

Phosphorus is the nutrient most affected by its neighbours.

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



Works with

Balanced phosphorus improves magnesium uptake

Balanced magnesium in turn improves both nitrogen and phosphorus uptake

Humic substances chelate calcium, iron and aluminium — the three cations that capture phosphate — keeping the phosphate in solution

Sulfur acidifying its surroundings has the same effect from a different direction, which is why VAN's coated urea helps phosphorus too



Competes with

Excess calcium — the defining feature of a calcareous soil — suppresses phosphorus along with magnesium, zinc, iron, manganese, boron and potassium

Excess phosphorus itself reduces zinc, iron and copper uptake: over-applying DAP is a common route into a zinc deficiency

Excess iron reduces phosphorus availability, which is what happens at the acid end of the pH curve

Excess zinc reduces phosphorus uptake — the antagonism runs in both directions

This is why the answer to poor phosphorus is rarely more phosphorus. It is usually a change in the chemistry around the granule.

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 the plant can spend — 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 building new tissue

4 Root architecture

Drives early root development — the reason a phosphate goes on at sowing rather than later

5 Genetic material

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

6 Grain and seed

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

What a phosphorus-short crop looks like.

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

1 Purpling

Leaves take on a purple or reddish cast, starting at the edges — the classic phosphorus signature

2 Oldest leaves first

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

3 It advances

Mild: purpling from the edges. Prolonged: the leaf goes purple. Severe: completely purple.

4 Stunting

Overall growth slows, and the plant stays small without obvious yellowing

5 Poor rooting

A thin, shallow root system, which then limits every other nutrient

6 Delayed maturity

Flowering and ripening are late, which in Pakistan can push harvest into the wrong weather

In 26 of VAN's published crop programmes.

These are the programmes VAN publishes on van.com.pk, with a dose and a growth stage for each.

Wheat

Maize

Cotton

Sugarcane

Ratoon Sugarcane

Basmati Rice

Hybrid Rice

Potato

Onion

Garlic

Tomato

Chili

Canola

Soybean

Lentil

Chickpea

Sesame

Mungbean & Mash

Turmeric

Watermelon

Strawberry

Mango

Date Palm

Citrus — 5 years and over

Banana — 1st year

Banana — 2nd year

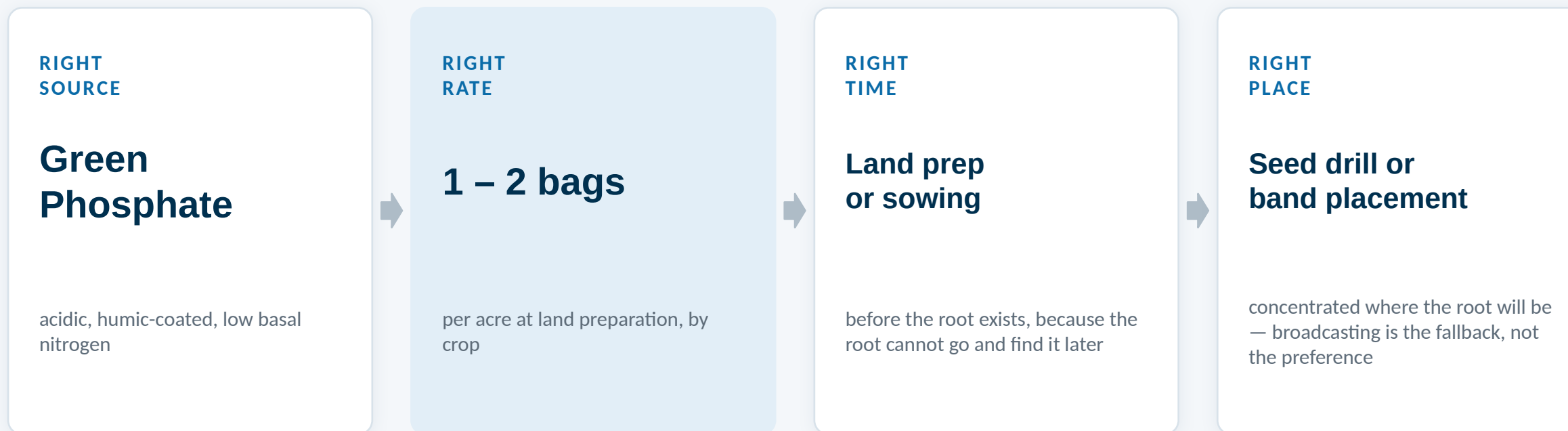
26 crop programmes, every one published in full and free at van.com.pk/crops/.



The published programme is the rate to start from. A soil test is the rate to finish with — VAN Lab tests soil and fertilizer at prices published on the site.

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

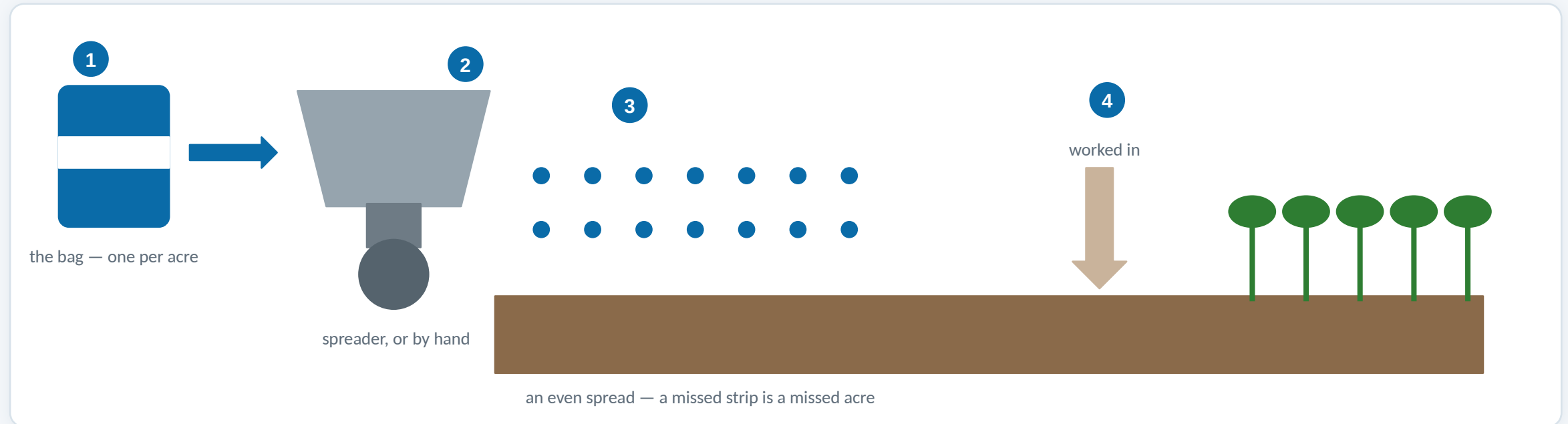
Phosphorus is the nutrient where placement matters most, because it does not move to the root — the root has to reach it.



Band placement and drilling both beat broadcasting for phosphorus, because a concentrated band saturates the fixing capacity of a small volume of soil instead of spreading thinly across all of it.

An even spread, then worked in.

Phosphorus does not travel. Placement is most of the agronomy.



1 Measure it

1-2 bags per acre, by soil test.

2 Spread evenly

Spreader or by hand. A missed strip is a missed acre and it shows at harvest, not on the day.

3 Work it in

Incorporate into the root zone. Material left on the surface is not where the roots are.

4 At the right stage

At land preparation or sowing — before the root exists.

Doses are per acre, from VAN agronomy. Incorporation is not optional — it is the difference between feeding the crop and feeding the surface.

Three ways in, in order of preference.

1

1 · With the seed drill

The best option. Places the granule in the seed row at sowing, exactly where the first roots will emerge, in one pass.

2

2 · Band placement

A concentrated band beside or below the row. Saturates the fixing capacity of a small soil volume rather than feeding all of it.

3

3 · Broadcasting

Even spread at land preparation, incorporated. Simplest and the most common — and the one that exposes the most granule surface to the most soil.

What is behind the bag.

1

PS 933-2026

Registered against the Pakistan Standard for multinutrient fertilizer.

2

Licence CM/L-2719/2023

PSQCA marks licence, printed on the pack.

3

Tested before it ships

Every batch is tested in VAN's own PNAC-accredited laboratory, ISO/IEC 17025:2017, LAB-336, before it leaves the plant.

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.

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

1

Less fixation

An acidic granule in an alkaline soil holds its own micro-environment, so the phosphate stays available where the root is looking.

2

Two macronutrients

Phosphorus and a controlled basal nitrogen, in one pass, without the ammonia load that risks a young seedling.

3

Soil biology, not just chemistry

Humic acid and fermentable sugars raise phosphatase activity and help mineralise phosphorus the soil already holds.

4

Built for this ground

Designed against Pakistani soil pH rather than imported from a market where the soil is neutral.

SOURCES

Where every figure in this deck came from.

Analysis, standard, licence

van.com.pk — Green Phosphate 6-32-0, PS 933-2026, CM/L-2719/2023

P deficiency and fixation

Ahmad, M. et al. (2022). Managing phosphorus availability from organic and inorganic sources for optimum wheat production in calcareous soils. Sustainability 14(13), 7669

Phosphatase and molasses

Wu, Q. et al. (2023). Combined chemical fertilizers with molasses increase soil stable organic phosphorus mineralization in sugarcane seedling stage. Sugar Tech 25(3), 552–561

P uptake by growth stage

As compiled in VAN's Green Phosphate LMS 2026, references 3–8 of that deck

pH fixation relationship

Standard soil chemistry — Fe/Al below pH 6, Ca above pH 7

Nutrient interactions

After Mulder's chart — established relationships, not manufacturer-specific

Law of the minimum

Carl Sprengel (1840), popularised by Justus von Liebig

Crop programmes

van.com.pk/crops/ — 26 published programmes name Green Phosphate

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