



PRODUCT KNOWLEDGE · POTASH

Vital Potash

N 11% · K₂O 44% · boron-coated

Nitrogen and potassium in one fully soluble powder, with two forms of boron coated onto the granule — for the mid-life window, when the crop takes up most of its potassium.

Crystalline powder

20 kg

Fertigation

Mid-life window



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 buys nitrogen. It barely buys potash.

Fertilizer nutrient applied, 2023 — as published on van.com.pk.



Bar length is to scale. One part of potash for every eighty-three of nitrogen.

2

kg / ha

the average potassium applied in Pakistan — the lowest rate in the world

40% of soils are now potassium-deficient, despite mica-rich parent material, from continuous cropping without replenishment.

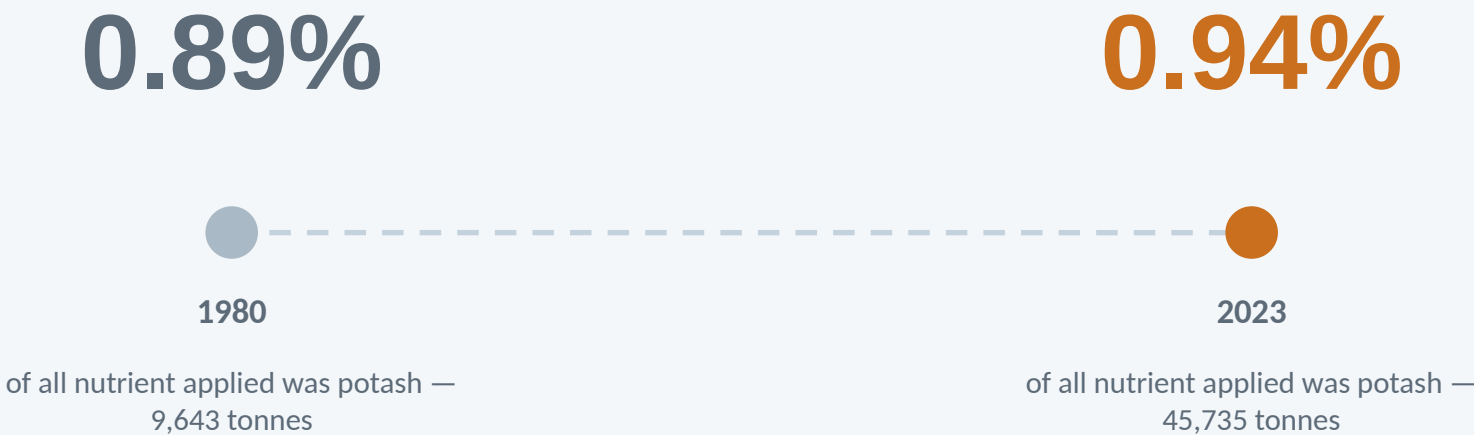


Potassium is the largest single nutritional deficit in Pakistani agriculture, and it has been for four decades.

THE TREND

Both went up. Only one of them mattered.

Nitrogen applied rose 4.5x. Potash applied rose 4.7x. The share did not move.



Unchanged

Potash grew slightly faster than nitrogen over forty-three years, and its share of the total is where it started. Growth from a very small base is not correction.



Nitrogen applied went from 843,574 tonnes to 3,808,775. Potash went from 9,643 to 45,735. The ratio is the story, not the growth.

Potash at mid-life is not a top-up. It is the peak.

Potassium uptake rises through vegetative growth and dominates the reproductive stages. Vital Potash is built for that window.

At sowing

Uptake is low. The crop is establishing roots and has not yet built the demand.

- A basal potash covers this — Fusion Potash is VAN's
- The requirement is real but small
- Most of the season-long demand is still ahead

At the mid-life window

Uptake peaks. Grain filling, tuber bulking, boll and fruit development all draw on potassium at once.

- Vegetative and reproductive stages take the maximum
- Delivered through fertigation, so it reaches the root when asked for
- Nitrogen goes with it — potassium governs how well nitrogen is used

The two products are not alternatives. One covers the base, the other covers the peak.

Sugarcane takes up more potassium than nitrogen.

Highest uptake recorded across the genotypes tested — published on van.com.pk.

Potassium (K)



264.99 kg/ha

Nitrogen (N)



219.90 kg/ha

Phosphorus (P)



62.70 kg/ha

4.2 ×

more potassium than phosphorus

and 1.2 × more potassium than nitrogen, in the same crop, in the same season

Phosphorus gets a dedicated product and a dedicated budget line. Potassium, which the crop asks for in four times the quantity, mostly does not.



This is the whole argument for a mid-life potash. The demand is real and it is large.

FOUR STUDIES, ONE FINDING

Most of the potassium is taken up before flowering.

Percentage of season-long uptake complete by flowering, in maize. Four independent research groups; potassium is the highest in every one.

122%

Ciampitti et al. — potassium peaks
then partly re-translocates

90%

Hanway et al. — potassium

88%

Karlen et al. — potassium

66%

Bender et al. (2013) — potassium



For comparison, nitrogen runs 65–70% and phosphorus 46–50% across the same four studies. Potassium front-loads harder than either — which is why it has to be in place before the reproductive stage, not after it.

What potassium is actually doing in there.

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

1 Sugar concentration

Drives sugar concentration in the cell — sweeter fruit and higher-value cane

2 Frost tolerance

Acts as an antifreeze agent, which matters most to winter crops

3 Standing ability

Cell-wall stability, osmosis and turgor — the crop resists lodging

4 Water regulation

Regulates how much water the plant holds and how it is moved

5 Balances nitrogen

Keeps growth in balance with nitrogen rather than soft and leggy

6 Yield capacity

Crucial to any crop being asked to yield near its potential

What a potassium-short crop looks like.

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

1 Oldest leaves first

Potassium is mobile: the plant strips it out of old leaves to feed new growth, so the old ones show it first

2 Marginal scorch

Yellowing then browning along leaf tips and margins, working inward

3 Brown speckling

Small brown spots around the leaf edge as the deficiency advances

4 Lodging

Weak stalks and poor standing ability before harvest

5 Poor filling

Small or unevenly filled grain, tubers and fruit

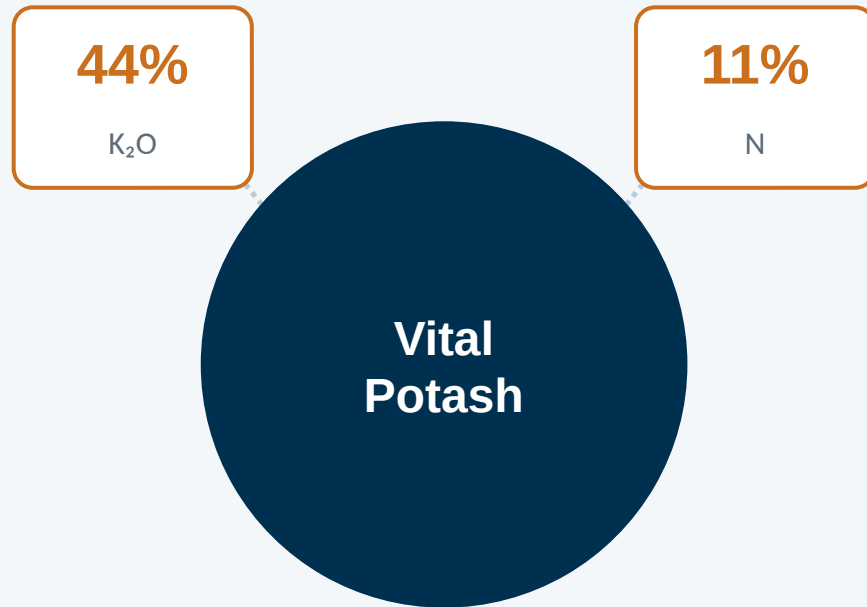
6 Stress intolerance

Less tolerance of drought, heat, frost and disease

THE PRODUCT

Two macronutrients, one soluble powder.

As published on van.com.pk.



PH

6 – 7

slightly acidic to neutral — no push on already-alkaline soil

SOLUBILITY

330 g / L

fully soluble; will not clog drip emitters or nozzles

FORM & COLOUR

Light blue powder

solid crystalline powder, easy to handle and to dose

The label is the minimum. The formulation does more.

What is engineered into the granule, beyond the two declared nutrients.

1 Boron, coated on

Boron is coated onto the potash granule rather than left to a separate pass most growers would never make. One application, and the boron arrives in the same place, at the same time, at the same rate as the potassium.

2 Two boron chemistries

A soluble form for immediate availability and a slow-release form for the later season. Their failure modes are opposite, so carrying both covers the season from both ends.

3 Why boron at all

Potassium is immobile in soil — the root must reach it and then move it across the membrane. Boron is directly involved in that traffic: membrane integrity, cell-wall structure, and the sugar transport potassium governs.

4 N and K together

Potassium governs how efficiently the plant uses nitrogen. Supplying both from one product at the mid-life window supports both — and is one pass, not two, at the busiest point of the season.

The behaviour of the two boron forms is established soil chemistry and belongs to nobody. What is VAN's is the decision, taken in 2012, to build a potash product around it, and the coating system that puts both forms on the granule.

One boron releases now. The other releases later.

Boron has the narrowest safe window of any nutrient the crop needs. Two chemistries widen it.

The soluble form

Highly soluble and immediately plant-available. Meets the demand that exists the moment the product dissolves.

- Available the instant moisture reaches the granule
- Matches early-season demand
- Weakness: being soluble, it leaches — it may be gone before late demand

The slow-release form

Intermediate to slow release. Stays in place and keeps supplying through the later part of the season.

- Still supplying when the fast form has leached away
- Holds through fruit, grain and tuber development
- Weakness: on its own it may not release fast enough for early demand

The two weaknesses are mirror images, which is exactly why both are on every granule.

A blend separates. A coated granule cannot.

Boron is needed in grams per acre and is damaging in tens of grams. How it is carried decides whether the field gets it evenly.

Blended

A separate boron granule mixed in beside the potash — bigger, fewer and heavier than the potash it travels with.

- Segregates in the bag, in transport and in the spreader
- Boron lands only where its own granules land
- Some ground gets none; some gets a damaging dose

Coated — Vital Potash

Two forms of boron coated onto every potash granule at manufacture.

- Cannot separate — there is nothing to separate from
- Boron lands wherever the potash lands
- The same ratio in every part of the field, all season

VAN publishes no distribution-uniformity percentage for either. The mechanism is the claim.

What the International Potash Institute credits to potassium.

These are IPI's figures for potassium as a nutrient. They are not VAN trial results and they are not claims for this product.

30–100%

higher tolerance to pests and diseases

20%

better nitrogen use efficiency

20%

higher crop yield and quality

20%

contribution to food security



IPI's own N-and-K trial work spans maize, rice, rapeseed, sugarcane, sunflower, wheat and winter rye across India, China and Indonesia, with supporting studies from Thailand, Brazil and Israel, at N 100–300 kg/ha and K 30–200 kg/ha split across two or three applications. Those are IPI's conditions and IPI's results.

WHERE IT IS USED

In 27 of VAN's published crop programmes.

Not a recommendation invented for this deck — 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

Sunflower

Soybean

Lentil

Chickpea

Sesame

Mungbean & Mash

Turmeric

Watermelon

Guava

Mango

Date Palm

Citrus — 5 years and over

Banana — 1st year

Banana — 2nd year

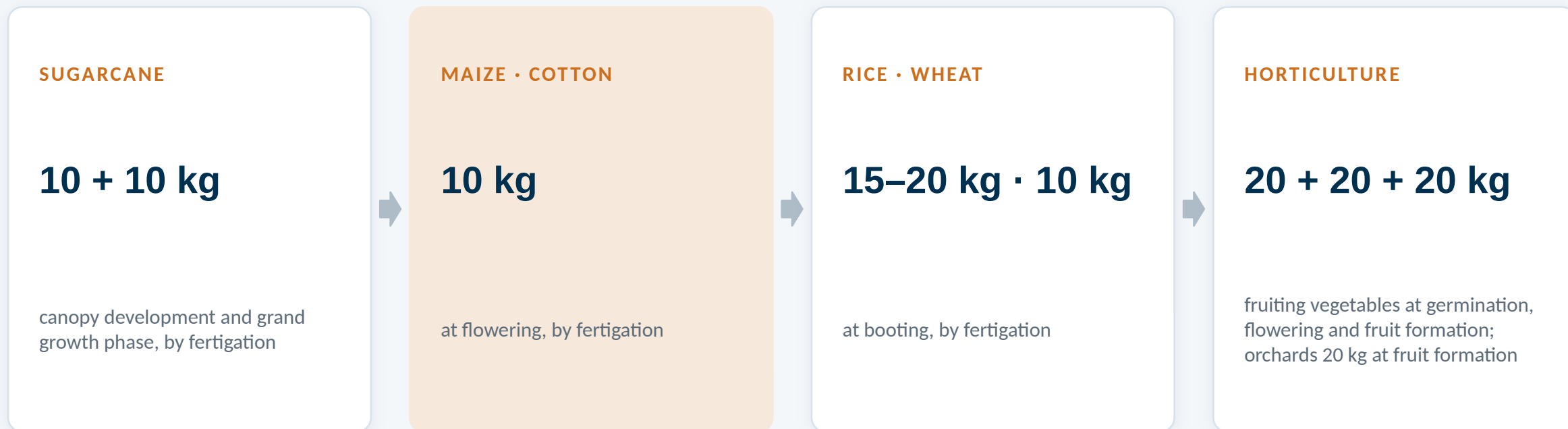
27 crop programmes — more than any other VAN product. Every one is published in full, free, at van.com.pk/crops/.

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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.

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

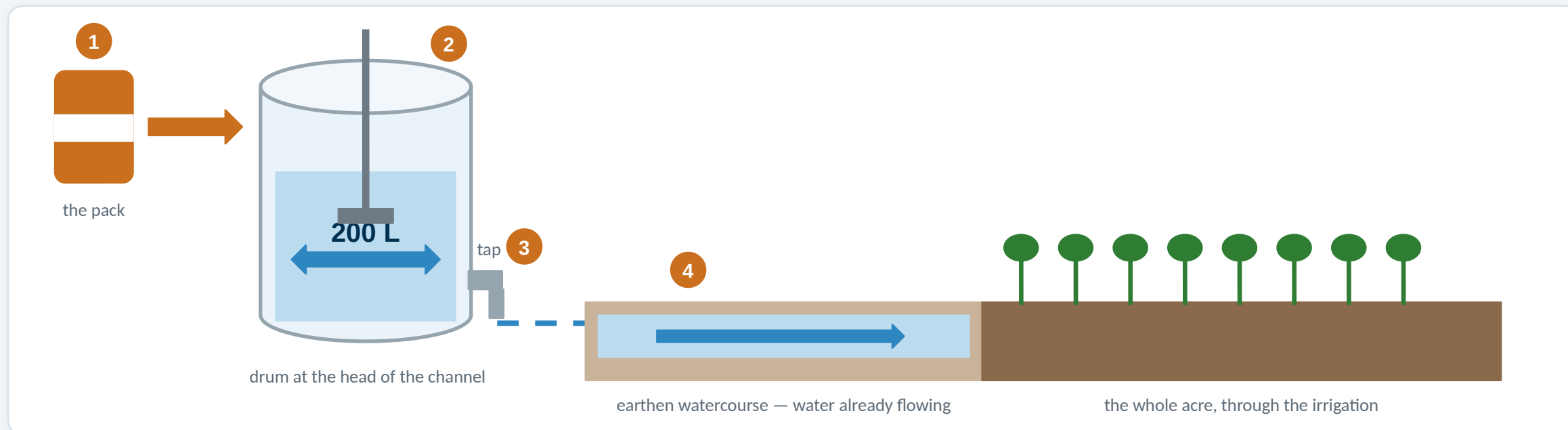


Potato takes 10 kg + 10 kg at tuber initiation and formation. Onion and garlic take 10 kg + 10 kg at flowering and bulb formation. Oilseeds take 15 kg at flowering. All by fertigation.

HOW IT IS APPLIED

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

Fully soluble, so it reaches the whole acre through the irrigation.



1 Measure it

10–20 kg per acre depending on the crop. 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

At the mid-life potassium window — booting, flowering, tuber initiation. 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.

Three steps, and the mixing ratio is the one that gets wrong.

1

1 • Pour

Vital Potash and irrigation water into the tank at 2 parts product to 10 parts water. For 20 kg of Vital Potash, that is 100 litres of water.

2

2 • Mix

Stir with a long stick for three to five minutes until fully dissolved. Do not mix it and leave it standing overnight.

3

3 • Fertigate

Open the tap into the water channel at the point where irrigation water enters the cropped area, so the solution travels with the water across the field.

What is behind the bag.

1 Registered with PSQCA

PS 933-2026, the Pakistan Standard for multinutrient fertilizer, under manufacturing licence CM/L-4124/2025.

2 Tested before it ships

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

3 Certificate on request

Send the batch number off the bag and VAN will send you the certificate of analysis for that batch. Free, no sample, no form.

4 Independent verification

If you have fertilizer from anywhere else, send VAN Lab 500 g and it will be measured. Prices are published on the site.

5 One number to ask

WhatsApp +92 300 5003041 reaches the same people who make it.

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

1 Powder formulation

Crystalline powder — easy to handle, easy to dose, and it goes into solution completely.

2 Two macronutrients

Nitrogen and potassium from one product, at the stage the crop takes up most of both.

3 A proven combination

The N-and-K pairing is backed by international research, not by VAN alone.

4 Boron coating

Raises uptake efficiency and acts as the vehicle that helps potassium reach the plant.

5 High solubility

330 g/L — suits drip, sprinkler, pivot and every modern irrigation system VAN has tested it through.

SOURCES

Where every figure in this deck came from.

Analysis and physical data

van.com.pk — Vital Potash: N 11%, K₂O 44%, pH 6–7, 330 g/L, light blue crystalline powder

1980 and 2023 figures

van.com.pk — national potash picture, from Pakistan Fertilizer Statistics

2 kg/ha and soil deficiency

Wakeel, A. & Magen, H. (2017). Int. J. Agric. Biol. 19(3)

Sugarcane uptake

VAN field measurement, published on van.com.pk

Uptake by flowering

Bender et al. (2013); Hanway et al.; Karlen et al.; Ciampitti et al.

Potassium benefit percentages

International Potash Institute (IPI) — cited as IPI's figures, not VAN's

Doses by crop

van.com.pk/crops/ — 27 published programmes name Vital Potash

Coating

Boron only (VAN, 19 Aug 2026). The 2021 specification sheet also lists trace Zn, Fe, Mn and Cu — superseded

The 2012 boron work

VAN in-house development.

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