PRODUCT KNOWLEDGE · SOIL & ORGANIC

Humi Grow

Humic acid 40% · K_2O 7% · pelleted potassium humate

Concentrated potassium humate in pellet form. It is not a fertilizer — it is what makes the fertilizer you already bought work harder.

PS 5610-2023 | Licence CM/L-3281/2024 | 8 kg | Soil conditioner

THE PROBLEM

Most Pakistani soils are running below 1% organic matter.

What a soil needs to hold nutrients, and what it has.

A healthy soil

3–5% organic matter

Typical Pakistani cropping soil

under 1%

Indicative proportions. The point is the gap, and the gap is not controversial.

< 1%

organic matter in most cropping soils

and organic matter is what holds nutrients, holds water and holds structure

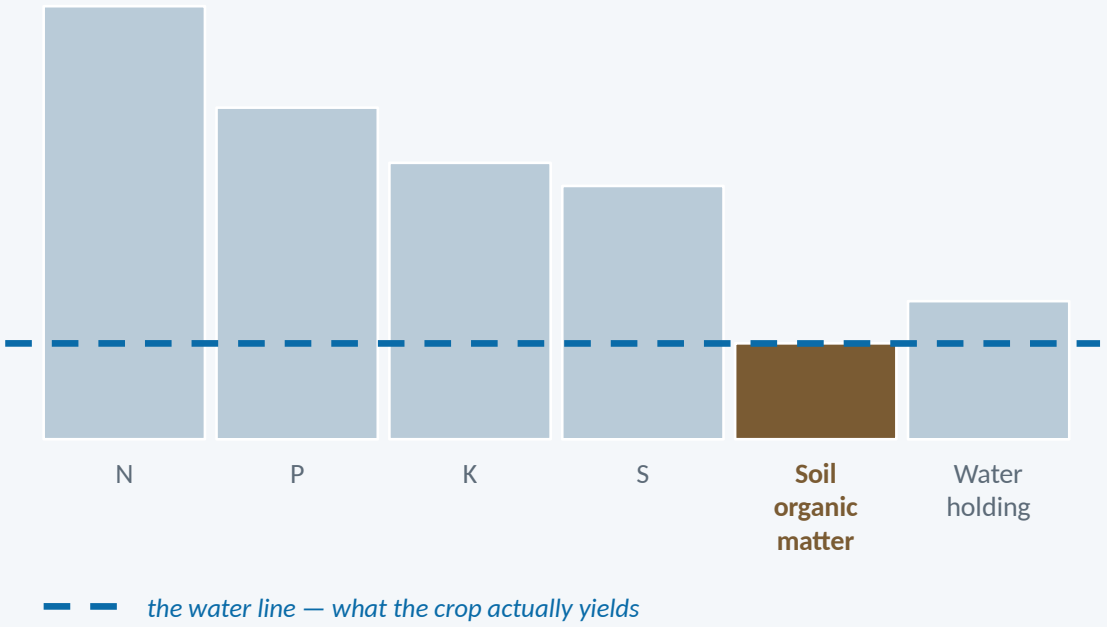
A soil below 1% organic matter cannot retain what you apply to it. Nutrients move through it instead of staying in it, and every bag after that is treating a symptom.

! This is why nutrient use efficiency in Pakistan is low almost regardless of what nutrient is applied. The problem is not always the fertilizer.

LAW OF THE MINIMUM

Sometimes the shortest stave is not a nutrient at all.

Carl Sprengel set the law out in 1840; Justus von Liebig made it famous. It is usually read as being about nutrients. It is really about whatever is limiting.



The soil itself

A soil with no organic matter cannot hold nutrients, cannot hold water and has no structure for a root to work through. Every nutrient stave above it is capped by that. Humi Grow does not add a nutrient — it lengthens the stave underneath all of them.

The staves show the shape of the problem, not measured soil values. A soil test reports organic matter as well as nutrients — VAN Lab publishes its prices.

THE PACK

What is actually in the bag.

A pelleted concentrate, not a liquid and not a bulk compost.

Humi Grow — 8 kg

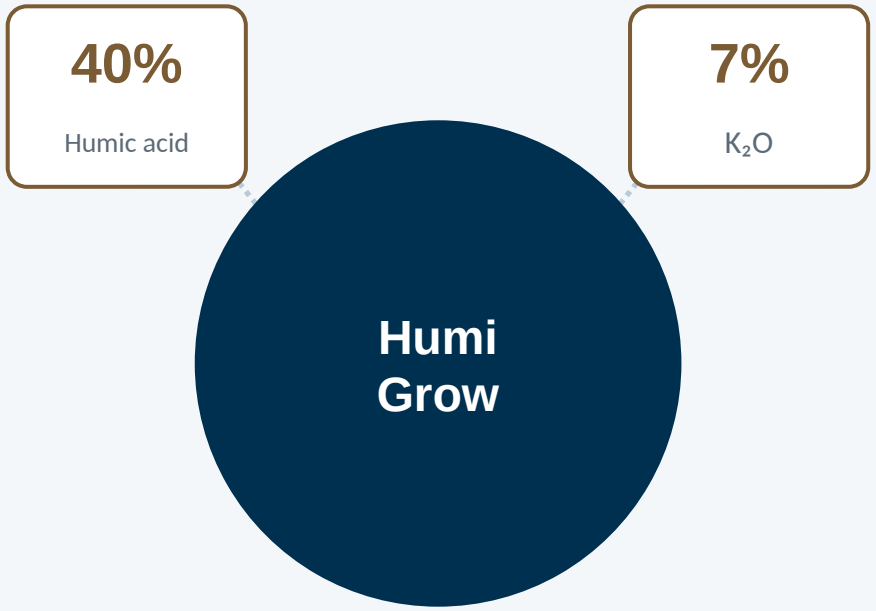
HUMIC ACID	40% or above — the potassium salt of humic acid
POTASH	K_2O 7% or above — the potassium that comes with the humate
FORM	Pellet — spreads and stores like a granule, disperses in water
ROUTE	Soil application at sowing; also water-soluble for fertigation
STANDARD & LICENCE	PS 5610-2023 · PSQCA marks licence CM/L-3281/2024

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

THE REGISTERED ANALYSIS

What the label declares.

As registered under PS 5610-2023 and as published on van.com.pk.



FORM

Pellet

concentrated — 8 kg does the work of a lorry-load of compost

SOLUBILITY

Water-soluble

disperses for fertigation as well as spreading

ROLE

Soil conditioner

a soil amendment, not a nutrient programme

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THE TECHNOLOGY

Four things a humate does that a nutrient cannot.

This product is bought for what it does to the soil, not for what it feeds the plant.

1 Builds aggregates

Potassium humate promotes the formation of larger soil aggregates. Aggregate structure is what creates pore space, and pore space is what lets air, water and roots move through the soil at all.

2 Holds water

Raises the soil's water absorption and retention. On irrigated ground in a water-scarce country, that is a second benefit sitting alongside the nutrition one.

3 Buffers the soil

Increases buffering capacity, so the soil resists swings in pH and in salt concentration instead of transmitting them straight to the root.

4 Chelates and holds nutrients

Humic substances bind nutrient cations and release them to the root — which is why they raise the efficiency and availability of the nitrogen and phosphorus already applied, and reduce run-off.

The measurable result is nutrient use efficiency. Humi Grow is sold into a nutrition programme to make the rest of the programme work, not to replace part of it.

NUTRIENT INTERACTIONS

Humates work on the interactions rather than the nutrients.

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

+ Works with

Humic substances chelate calcium, iron and aluminium — the three cations that capture phosphate — so applied phosphorus stays available for longer

The same chelation holds zinc, iron, manganese and copper in a plant-available form instead of letting calcareous soil precipitate them

Better aggregate structure and water retention improve the uptake of every nutrient, because uptake happens in the soil solution

It boosts the effect of phosphoric acid and of applied phosphates generally

– Competes with

Excess calcium suppresses phosphorus, magnesium, zinc, iron, manganese, boron and potassium together — this is the condition a humate is buying you out of

Excess phosphorus suppresses zinc, iron and copper; holding the phosphate in a chelated form reduces how much free phosphate is available to do that

Excess potassium suppresses calcium, magnesium and boron — worth watching, since this product carries potassium as well

Nutrient run-off is not an antagonism but it is a loss: a soil that cannot hold nutrients loses them regardless of what else is right

Almost every antagonism in the right-hand column is made worse by low organic matter and better by raising it. That is the argument for this product in one line.

THE MECHANISM

What it does for the soil.

Six effects, all of them structural rather than nutritional.

1 Aggregate structure

Promotes larger, more stable soil aggregates

2 Porosity and aeration

More pore space — roots, air and water can all move

3 Water holding

Raises absorption and retention, which matters most on light soils

4 Buffering

The soil resists pH and salinity swings rather than passing them on

5 Prevents run-off

Holds applied fertilizer in the root zone instead of letting it move off with the water

6 Softens hard soil

Improves workability of a soil that has been compacted by years of cropping

THE MECHANISM

What it does for the plant.

Indirect, but that is the point — this is a nutrient use efficiency product.

1 N and P efficiency

Raises the efficiency and availability of the nitrogen and phosphorus already in the programme

2 Balanced uptake

Combining nutrients with humic acid supports balanced nutrition rather than one nutrient dominating

3 Root environment

A structured, buffered, moist root zone is a better place to grow a root system

4 Micronutrient access

Chelation keeps micronutrient cations available on ground that would otherwise lock them up

5 Stress buffering

A soil that holds water buys the crop time through a heat or irrigation gap

6 Fertility over time

Organic matter is cumulative — this is one of the few inputs that leaves the field better than it found it

TWO WAYS TO RAISE ORGANIC MATTER

Bulk organic matter and a concentrate are not the same purchase.

Both have a place. They differ in what they cost to move.

Bulk compost or manure

Tonnes per acre of low-concentration material.

- Adds bulk organic matter and some nutrition
- Transport and spreading dominate the cost
- Quality and analysis vary from load to load
- VAN makes V-Compost for growers who want this route

Humi Grow

Kilograms per acre of concentrated humate.

- 40% humic acid — the active fraction, without the freight
- Consistent analysis, batch-tested before it ships
- Spreads with normal equipment, or dissolves for fertigation
- Aimed at nutrient use efficiency rather than at bulk

A grower with access to cheap local organic matter should use it. This is for the one who does not, or who needs the effect in the root zone rather than across the field.

WHERE IT IS USED

Across the programme, wherever the soil is the limitation.

Humi Grow appears in VAN's published crop programmes as a soil conditioner at land preparation, typically one bag per acre.

Wheat · Maize · Cotton · Sugarcane · Rice · Potato · Onion · Garlic · Tomato · Chili · Orchards · Strawberry

Published as a land-preparation application in the crop plans at van.com.pk/crops/.

i Humi Grow Plus is the liquid successor for fertigation and foliar programmes — humic acid with potash, for growers already running a liquid system.

4R STEWARDSHIP

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

A soil amendment is applied to the soil, before the crop needs anything from it.

RIGHT SOURCE

Humi Grow

pelleted potassium humate, 40% humic acid

RIGHT RATE

1 bag

8 kg per acre in the published crop programmes

RIGHT TIME

Land preparation

before sowing, so the structural effect is in place when the root arrives

RIGHT PLACE

Broadcast & incorporate

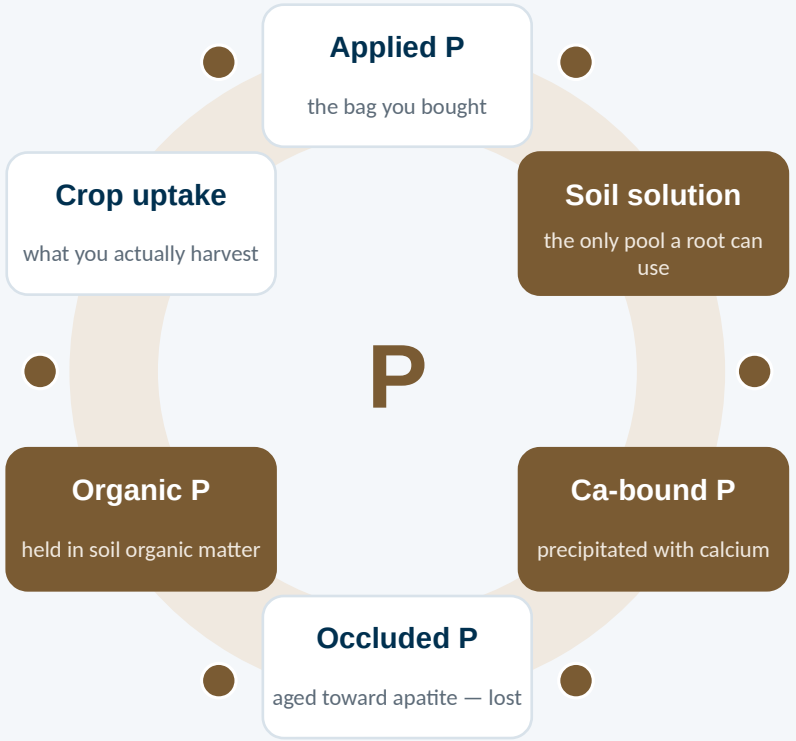
worked into the root zone, not left on the surface

The effect is cumulative across seasons. A single application is worth having; a programme across several seasons is what actually moves organic matter.

THE PHOSPHORUS CYCLE

Phosphorus moves between five pools. A humate reaches three of them.

Where applied phosphorus actually goes on a calcareous soil — and, honestly, where a soil conditioner can and cannot intervene.



1 Slows the ageing step

The irreversible loss is not precipitation — it is the slow ageing of calcium phosphates toward apatite. A structured, biologically active root zone keeps more of the pool cycling before that happens.

2 Builds the organic pool

Organic phosphorus is mineralised back into solution as the organic matter turns over. A soil under 1% organic matter has almost no such pool.

3 Widens the root's reach

Phosphorus diffuses about 0.13 mm a day. It does not come to the root; the root goes to it — through pore space that structure creates.

⚠️ *What this slide does NOT claim: that humic acid binds enough calcium at field rates to stop fixation. VAN tested that against its own soil numbers and it fails by orders of magnitude. The mechanism here is organic matter and root environment, not chelation arithmetic.*

THE DOUBLE EDGE

Bought for the soil. Paid for by the nitrogen and phosphorus already in the ground.

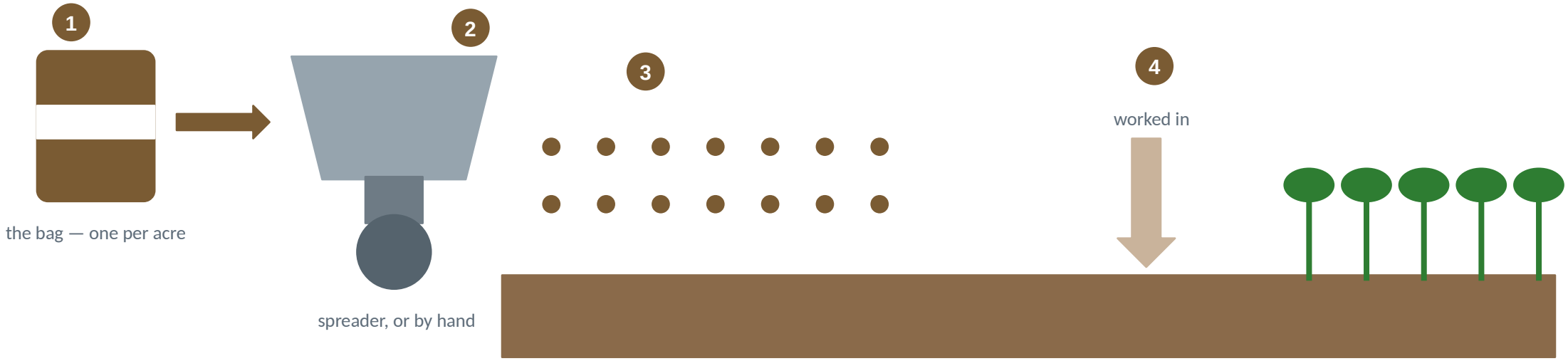
Two returns from one input — the only honest way to justify a product that feeds nothing.

1	**Edge one — the soil itself**	Cation exchange, water holding, aggregate structure, aeration and biology. Cumulative, and they compound: organic matter is one of the very few inputs that leaves a field in better condition than it found it.
2	**Edge two — nitrogen efficiency**	A soil with exchange capacity holds ammonium instead of losing it, and a structured soil takes water in rather than shedding it with dissolved nitrogen on top. Nitrogen you keep is nitrogen you do not buy twice.
3	**Edge two again — phosphorus efficiency**	Organic matter feeds the mineralisable P pool, and organic acids released as it turns over compete with phosphate for calcium. Applied phosphate stays in the cycling pool longer.
4	**So budget it against the loss, not the bag**	Do not compare Humi Grow with a bag of urea. Compare it with the share of your nitrogen and phosphorus that never reaches the crop.
5	**⚠️ And read soil tests carefully**	A rise in extractable phosphorus after adding humic acid is not by itself proof of higher plant availability — extraction methods are known to be perturbed by added organic matter. Judge it on uptake and yield.

HOW IT IS APPLIED

An even spread, then worked in.

The effect is on soil structure in the root zone, so it has to reach the root zone.



1 Measure it
1 bag — 8 kg per acre.

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, before sowing.

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

GETTING IT RIGHT

Four things that decide whether it works.

1	**It is not a fertilizer**	Do not budget it against a bag of urea. Budget it against the share of your nitrogen and phosphorus that currently never reaches the crop.
2	**Incorporate it**	The effect is on soil structure in the root zone. Material left on the surface is not in the root zone.
3	**Give it seasons, not weeks**	Aggregate structure and organic matter build over time. Expect the visible return in the nutrition programme, not in the first fortnight.
4	**Watch total potassium**	It carries K_2O 7%. On a programme already heavy in potash, count it in — excess potassium suppresses calcium, magnesium and boron.

STANDARDS AND ASSURANCE

What is behind the bag.

1	**PS 5610-2023**	Registered against the Pakistan Standard for the product class.
2	**Licence CM/L-3281/2024**	PSQCA marks licence, current, 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.
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.

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IN ONE LINE

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

1	**It fixes the limitation under the limitations**	Low organic matter caps what every nutrient in the programme can do. This is the stave underneath the others.
2	**Concentrated**	40% humic acid in a pellet — the active fraction without the freight cost of bulk organic matter.
3	**Nutrient use efficiency**	Raises the availability and efficiency of the nitrogen and phosphorus already being paid for.
4	**It compounds**	Organic matter is one of the few inputs that leaves the field in better condition than it found it.

SOURCES

Where every figure in this deck came from.

⚠ **What humic cannot do**	VAN stoichiometry check, 2026 — binding 1% of exchangeable calcium would need about 2.4 t/ha of humic acid; a 5 kg dressing reaches 0.002%. The bulk-soil calcium-chelation claim fails by orders of magnitude and VAN does not make it
⚠ **Reading soil tests**	Extractable-P methods are operationally defined and are perturbed by added organic matter — a rise in Olsen-P after adding humic acid is not proof of higher plant availability
The P cycle	Precipitation to DCPD and OCP is largely reversible; the irreversible loss is the slow ageing toward apatite. Tunesi et al. (1999); Cole, Olsen & Scott (1953); Freeman & Rowell (1981)
Diffusion	Phosphorus moves roughly 0.13 mm per day — Fertilizer Canada 4R, Chapter 3
Analysis	TECHNICAL DATA SHEET OF K-HUMATE / HUMIC ACID, Product Portfolio — humate 40% or above, potash 7% or above
Grade confirmation	VAN, July 2026 — Humi Grow is the 7-40 grade; the 7-60 option is dead
Standard and licence	van.com.pk — PS 5610-2023, CM/L-3281/2024
Soil effects	VAN Humi Grow product-knowledge deck — aggregate formation, porosity, water holding, buffering, run-off prevention
Nutrient interactions	After Mulder's chart — established relationships
Law of the minimum	Carl Sprengel (1840), popularised by Justus von Liebig
Crop programmes	van.com.pk/crops/ — published as a land-preparation application

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