

Kestrel infographic — scanned English version

Supplied interpretation, not an independent trial. Claims about mechanisms, fertilizer replacement, density or commercial returns require direct measurements and appropriate comparisons. The beet percentage also requires reconciliation with the trial replicates.

Full text and tables in the selected language. Automatic translation with terminology and numerical checks; not a certified translation. Author statements, including disputed claims, are retained. Editorial notes are separate.

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Editorial note

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[NanoImport — Editorial note ↗](#)

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Description of the infographic summary on the effect of chitohumus on table beet cultivar Kestrel (June 2026)

Infographic summary: emergent effect of ChitoHumus (ULD) on sugar beets (June 2026, memorandum for Klyavinsh)

Figure: comparative yield, root density, leaf growth and proposed mechanisms.

Table 1	
Treatment	Yield, t/ha
NPK0	41.36
NPK CONTROL	55.33
NPK0 C2	57.67
NPK C1	62.84

Maximum yield: +13.6% over NPK control. Emergent effect: +39.4% over NPK0.

Root density: control NPK0 — $m = 184 \text{ g}$; $r = 3.4 \text{ cm}$; $V = 164.64 \text{ cm}^3$; $\rho = 1.118 \text{ g/cm}^3$. Treated NPK0 C2, 0.2 L/ha — $m = 251 \text{ g}$; $r = 3.45 \text{ cm}$; $V = 172.01 \text{ cm}^3$; $\rho = 1.459 \text{ g/cm}^3$. Density increase: +30.5%.

Leaf top growth and linear density: NPK0 — mass 76 g, length 40.1 cm, linear density 1.895 g/cm. NPK0 C2, 0.2 L/ha — mass 166 g, length 42.0 cm, linear density 3.952 g/cm. Top biomass growth +118.4%; linear density +108.5%.

Scientific assessment: nonlinear biomodulation. Enhanced photosynthesis (lettuce data); magnesium increase +34.8%; ultra-low dose (ULD) acts as a trigger elicitor for systemic response. Root exudates stimulate microbiota. P-K unlocking (pea data): P +323%, K +133%.

The presented figure is a summary infographic report (memorandum) for June 2026, addressed to Klavins. The figure systematizes data on the emergent effect of applying the Chito Humus bioproduct at ultra-low doses (ULD) to Kestrel beet crops. The information is structured into four interconnected blocks.

| 1. Block "Comparative Yield (t/ha)"

The histogram visualizes the yield of four experimental variants of the Kestrel beet variety: NPK0 (Absolute control): 41.36 t/ha. NPK CONTROL (Mineral background): 55.33 t/ha (application of 500 kg/ha of the YM NPK 11-11-21 complex).

NPK0 C2 (without fertilizer + ChitoHumus 0.2 L/ha): 57.67 t/ha. A qualitative leap in the emergent effect — was recorded (+39.4% compared to the absolute NPK0 control), exceeding the total mineral background.

NPK C1 (Mineral background + ChitoHumus 0.1 L/ha): 62.84 t/ha. The maximum synergistic effect is graphically highlighted: a 13.6% yield increase relative to the NPK control.

2. Block "Root Specific Density Analysis"

This section demonstrates the mathematical calculation of changes in the physical structure of root crop tissues (assuming an ideal spherical shape for standardized comparison):

Control (NPK0): $m = 184 \text{ g}$, $r = 3.4 \text{ cm}$, $V = 164.64 \text{ cm}^3$, physical specific density $\rho = 1.118 \text{ g/cm}^3$.

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Treated (NPK0 C2): $m = 251 \text{ g}$, $r = 3.45 \text{ cm}$, $V = 172.01 \text{ cm}^3$, physical specific density $\rho = 1.459 \text{ g/cm}^3$.

The central vector records an increase in the specific density of the tissue by 30.5%, which indicates a denser packing of cellular structures under the influence of the drug.

3. Block "Leaf Top Growth & Linear Density"

Assesses morphometric shifts of the leaf apparatus:

Control (NPKO): Top weight = 76 g, leaf length = 40.1 cm, linear density (Plin) = 1.895 g/cm.

Treated (NPKO C2): Top weight = 166 g, leaf length = 42.0 cm, linear density (Plin) = 3.952 g/cm.

Two key changes are graphically demonstrated: an intensive increase in the biomass of the tops by 118.4% and an increase in the linear (specific) density of the leaf by 108.5% (the formation of a thicker leaf blade).

4. Block "Scientific Assessment: Non-linear Biomodulation" (Scientific Assessment: Non- Linear Bio-Modulation)

The diagram reveals the internal physiological and biochemical mechanisms that explain the nonlinear growth observed in beets. Since direct data from chemical analysis of beet plant tissues in this test cycle were

limited, the maximum verified parameters from parallel experiments conducted by the same research center (Stendes PC, 2025) on other crops were integrated into the block:

« Data on phosphorus (P) and potassium (K): Taken from the report on vegetation experiments on peas.

The maximum percentage of unlocking of hard-to-reach elements in the soil was +323% for Ri and +133% for K. In the diagram, this is linked to root exudation and stimulation of soil microbiota. *« Magnesium (Mg) data: Taken from a qualitative analysis report for the lettuce. A 34.8% increase in magnesium concentration in dry matter was recorded. The diagram directly links this indicator to increased

photosynthesis, as magnesium is a structural center of the chlorophyll molecule (its chemical formula is shown).

| Justification for including third-party data in the figure (for clarity)

The inclusion of data on phosphorus, potassium (from experiments on peas) and magnesium (from experiments on lettuce) in the general infographic on the Kestrel variety of table beet was done for the purpose of modeling a comprehensive scientific and physiological justification and is due to the following reasons:

1. Filling the gap in direct data: Due to the lack of detailed tissue analysis of chemical elements specifically for beetroot, data from related crops serves as a proven biological model for the action of ChitoHumus.

2. Commonality of Fundamental Mechanisms: The processes of phosphorus/potassium mobilization in the

rhizosphere and magnesium accumulation for chlorophyll formation are universal for higher plants. Extrapolation of maximum verified parameters (Stendes PC, 2025) allows for visualization of the "black

box of internal processes.

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3. Illustrating the cause and effect relationship: Putting these numbers on the drawing clearly explains Professor Klavins and the expert committee explained why beetroots experience thickening of their tops (+108.5% density) and a sharp compaction of root tissue (+30.5% specific gravity) at an ultra-low dose without fertilizer application. The P, K, and Mg values serve as evidence of the trigger (elicitorial) effect of the preparation on metabolism.

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