



the natural biotechnology

CROP PRODUCTION OVERVIEW



penergetic b (for soil)

penergetic p (for plants)



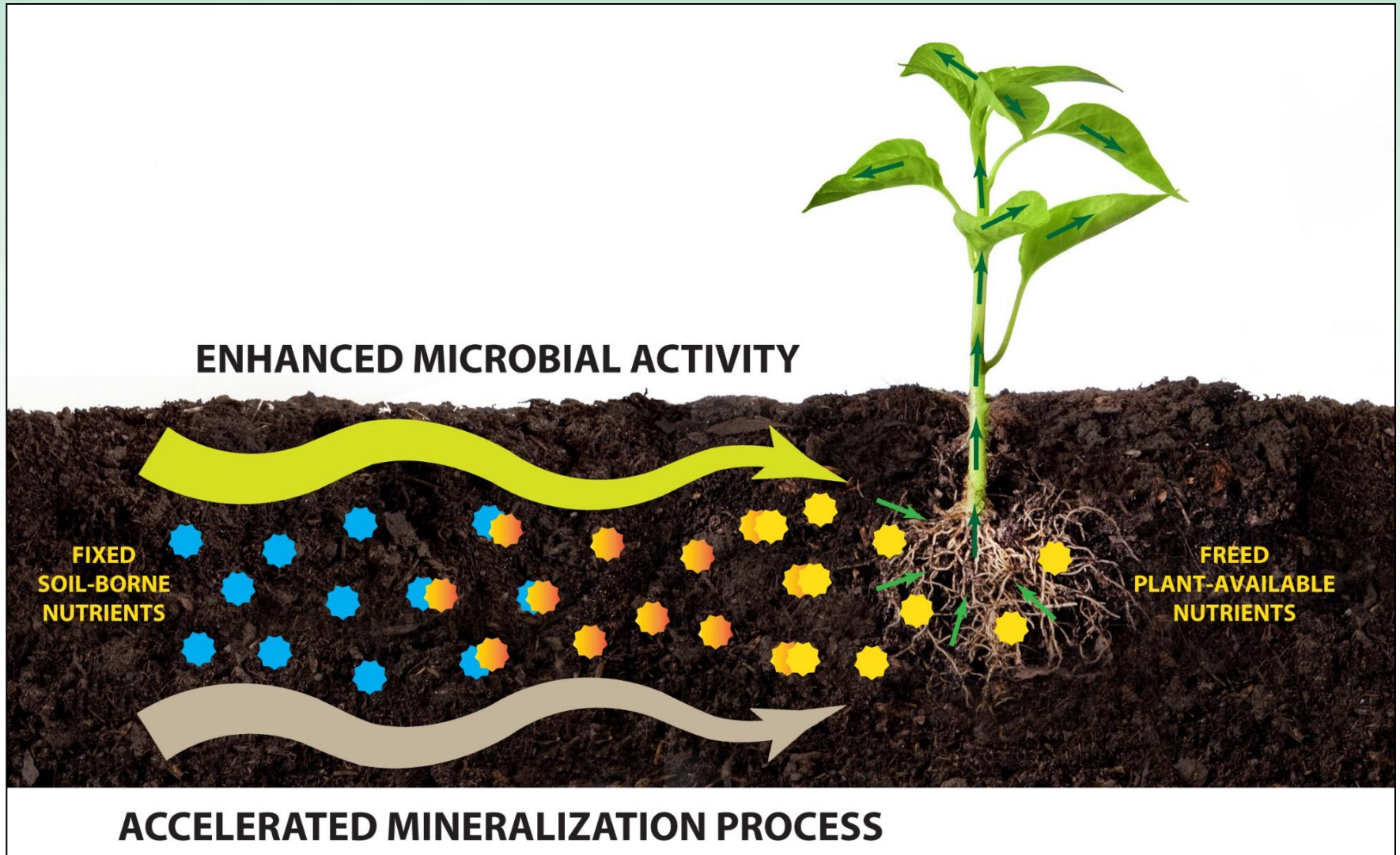
SOIL BIOACTIVATION

penergetic b (for soil)

≈ *Improves Soil Fertility* ≈

- Accelerates microbial activity
- Activates crop residue decomposition
- Increases phosphorus availability
- Revitalize land not suitable for cultivation
- Improves soil quality/texture
- Reduces weed pressure
- Promotes soil macro and micro organism
- Keeps soil warmer (Spring and Fall)
- Suppresses soil-borne plant pests
- Helps overcome soil compaction
- Works synergistically with other agri-inputs
- Potential to reduce fertilizer requirements

SOIL BIOACTIVATION



ACTIVATES CROP RESIDUE DECOMPOSITION



With penergetic b



Control (without penergetic b)

Nutrient content available per ton of (decayed) corn residue (in US\$)

<u>Nutrient</u>	<u>Pounds of Nutrient/Ton of Dry Corn Residue</u>	<u>Average Value/Ton Nutrient Content</u>	<u>Per Pound Cost of Nutrient</u>	<u>\$/Ton</u>
Nitrogen	15-25 pounds	20 pounds	N = \$0.40	\$8.00
Phosphorus (P2O5)	4-8 pounds	6 pounds	P2O5 = \$0.45	\$2.70
Potassium (K2O)	15-40 pounds	30 pounds	K2O = \$0.40	\$12.00
Sulphur	2-3 pounds	2.5 pounds	S = \$0.10	\$0.25
200 bu./acre corn yields 3.0 tons of corn stover (residue) = potentially \$68.85/ac in nutrient value.				Total = \$22.95

Source: Midwest Bio-Tech News, Sept. 2016

“WILL EVEN BREAKDOWN FLAX TRASH”

penergetic

ACTIVATES CROP RESIDUE DECOMPOSITION



Without penergetic b



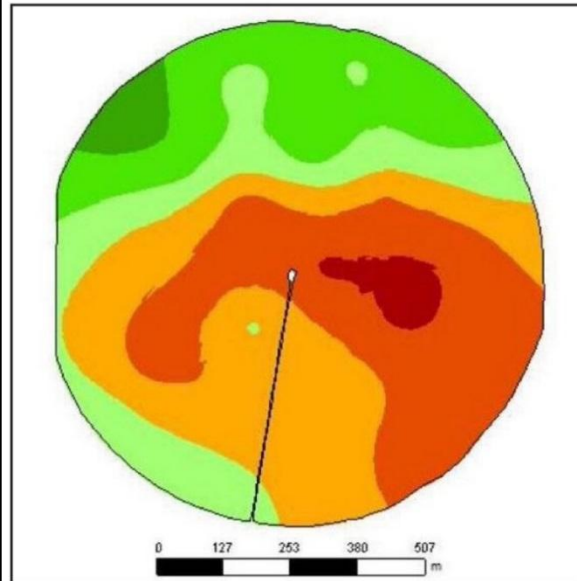
With penergetic b



Difference with penergetic b on corn stover

INCREASES PHOSPHORUS AVAILABILITY

Difference in Phosphorus Availability (2013 - 2015)



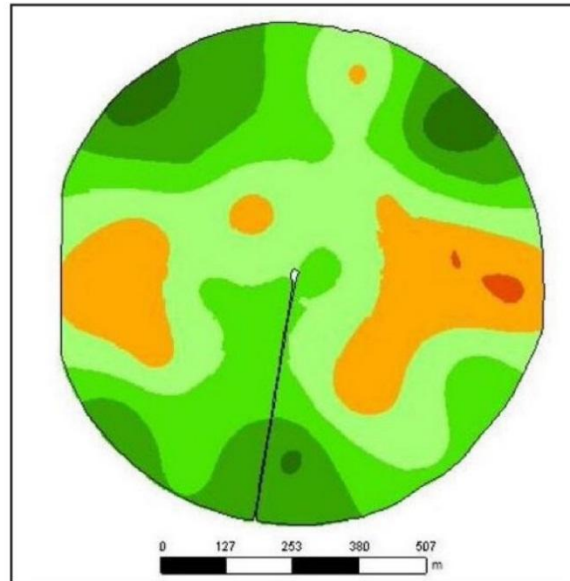
2013

ppm	ha	%
28.02 - 30.00	2.04	2.68
30.00 - 40.00	21.73	28.52
40.00 - 50.00	23.21	30.47
50.00 - 60.00	13.33	17.49
60.00 - 70.00	13.77	18.07
70.00 - 76.94	2.10	2.76

Min: 28.02 (ppm)

Méd: 47.62 (ppm)

Máx: 76.94 (ppm)



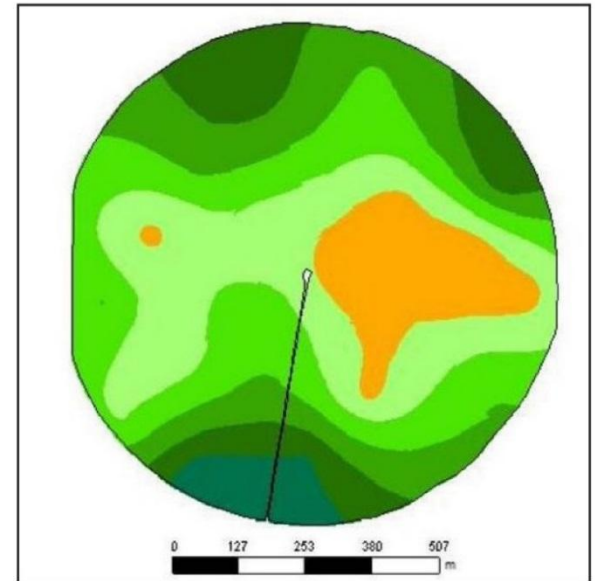
2014

ppm	ha	%
37.05 - 40.00	0.39	0.51
40.00 - 50.00	14.17	18.60
50.00 - 60.00	24.96	32.77
60.00 - 70.00	20.96	27.51
70.00 - 80.00	13.05	17.13
80.00 - 88.91	2.65	3.48

Min: 37.05 (ppm)

Méd: 60.23 (ppm)

Máx: 88.91 (ppm)



2015

ppm	ha	%
41.13 - 50.00	8.97	11.77
50.00 - 60.00	19.54	25.64
60.00 - 70.00	20.58	27.01
70.00 - 80.00	14.54	19.08
80.00 - 90.00	9.13	11.98
90.00 - 98.90	3.44	4.51

Min: 41.13 (ppm)

Méd: 65.87 (ppm)

Máx: 98.90 (ppm)

Available phosphorus increased 38.3% [Medium, PPM] in 24 months.

REHABILITATE LAND UNFIT FOR CULTIVATION

Before:

Unproductive heavily alkali soil.

After (using penergetic b):

< 1.0 year later harvested
healthy alfalfa crop (1.0 ton/acre)



SOLONETZIC SOIL CAN ALSO BE MADE PRODUCTIVE.

IMPROVES SOIL QUALITY / TEXTURE

Which soil would you rather have?



PRISMATIC

(Heavy – Chunky)



FRIABLE

(Loose – Granular)

*Farmers describe their soil as becoming “mellower”
(easier to work) after using penergetic b.*

REDUCES WEED PRESSURE

Spelt with Red Clover Underseeded



Penergetic Side: penergetic b 200 gram/acre (7.0 oz./acre) in Spring.

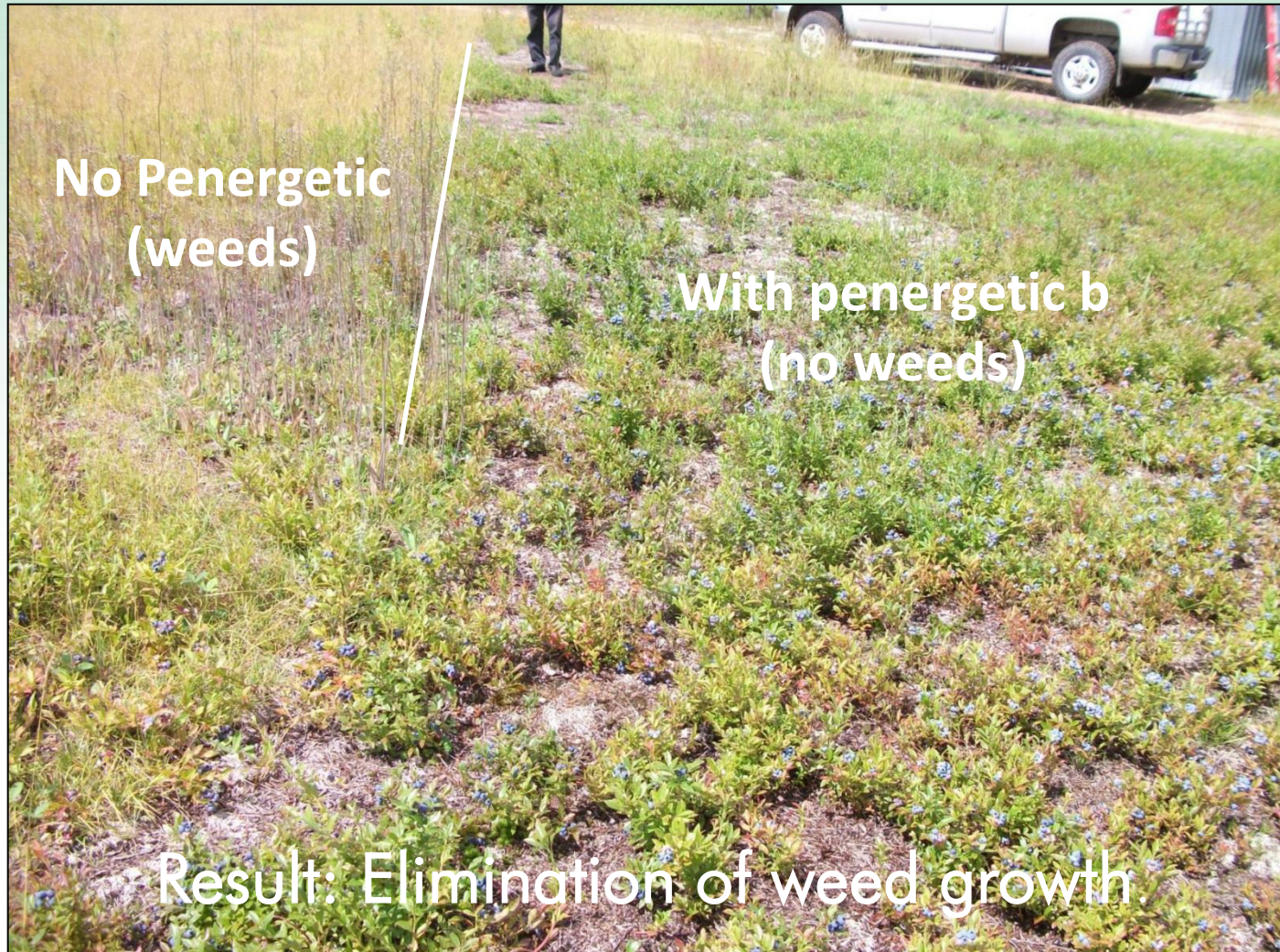
Control Side: No Penergetic

Difference: Penergetic side: clover well established and blooming.

Control side: clover struggling and competing with aggressive invasive weeds (Lambs Quarter and Pigweed)

REDUCES WEED PRESSURE

Over dosage of penergetic b during Sprayer Calibration



PROMOTES MACRO & MICRO SOIL ORGANISMS



Repopulates soil with worms



Evidence of mycorrhiza fungi
(even on corn residue)

SUPPRESSES SOIL-BORNE PESTS

NEMATODES RESULTS



CONTROL

penergetic



SUPPRESSES SOIL-BORNE PESTS

Wire Worm – Root Worm



Root worm damaged
corn

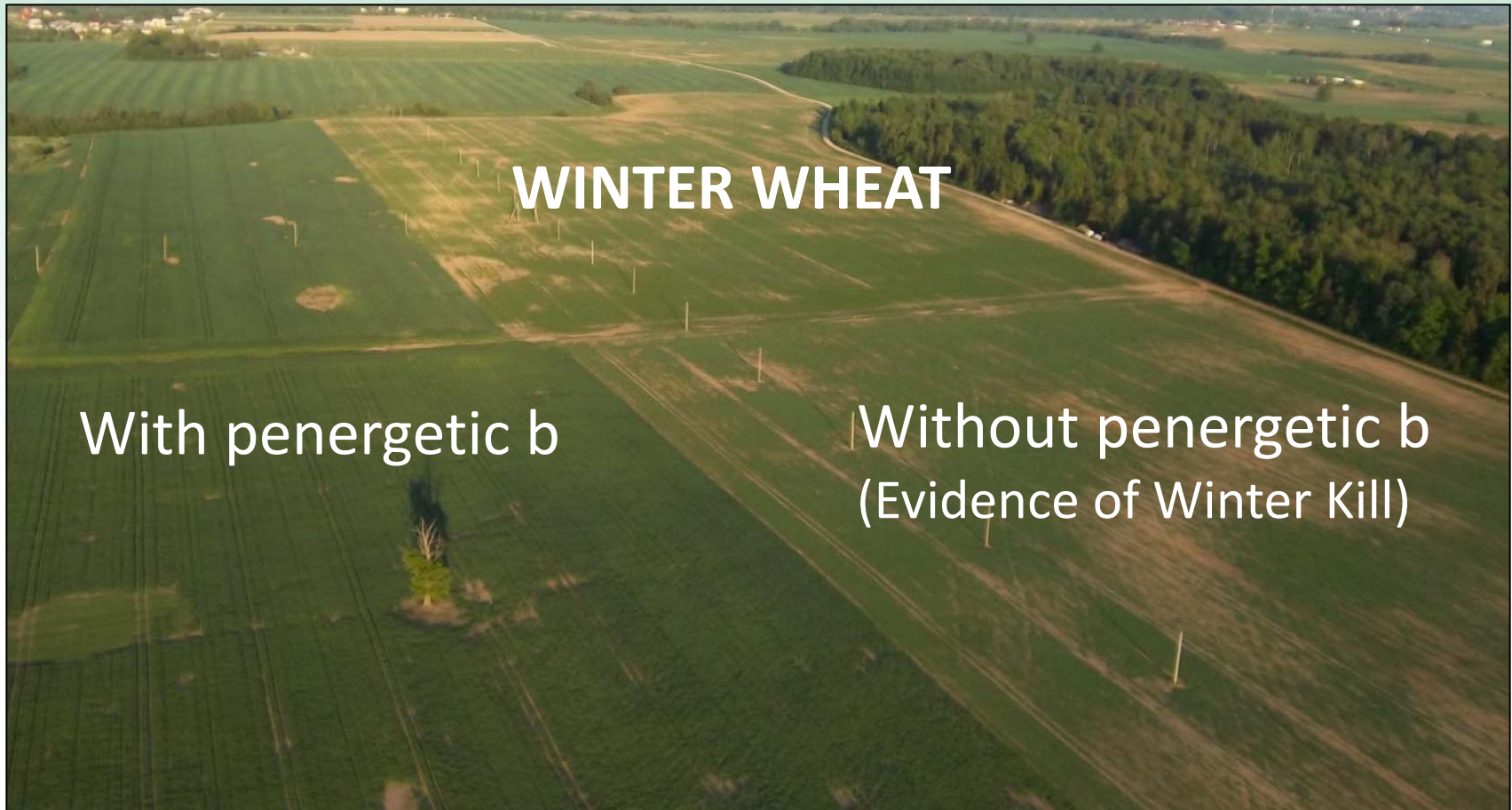


Corn comparison exposed
to root worm infestation



Adult root worm
on corn leaf

KEEPS SOIL WARMER (Spring & Fall)



ADDRESSES SOIL COMPACTION



PENERGETIC TREATED GROUND
With under 100 lbs. pressure testing rod sinks deep into soil.



UNTREATED GROUND
With over 250 lbs. pressure exerted testing rod sinks only partially into soil.



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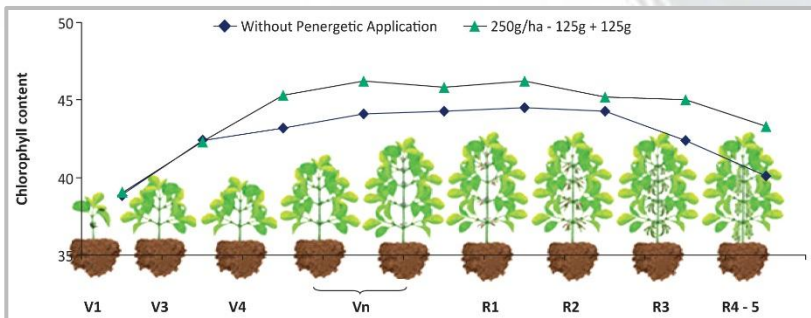
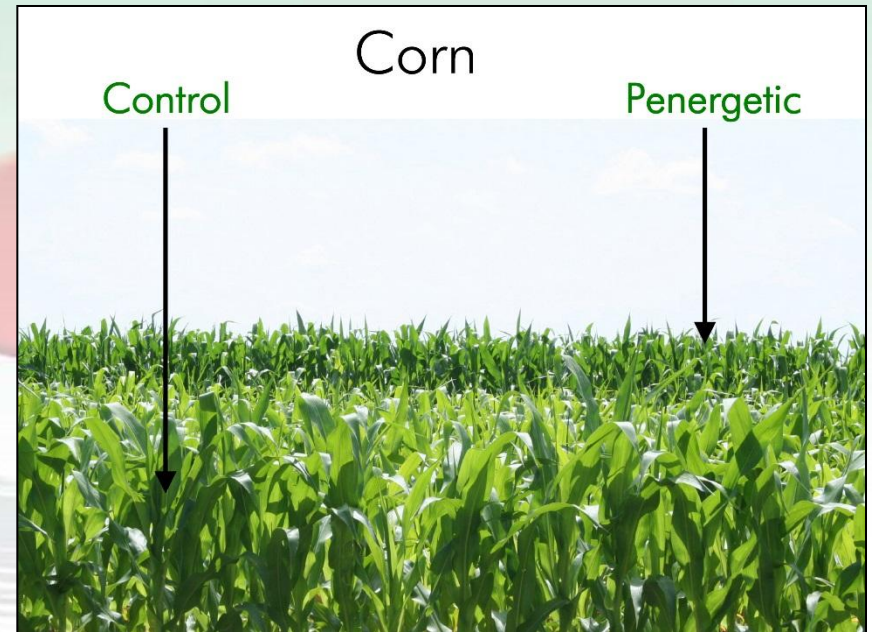
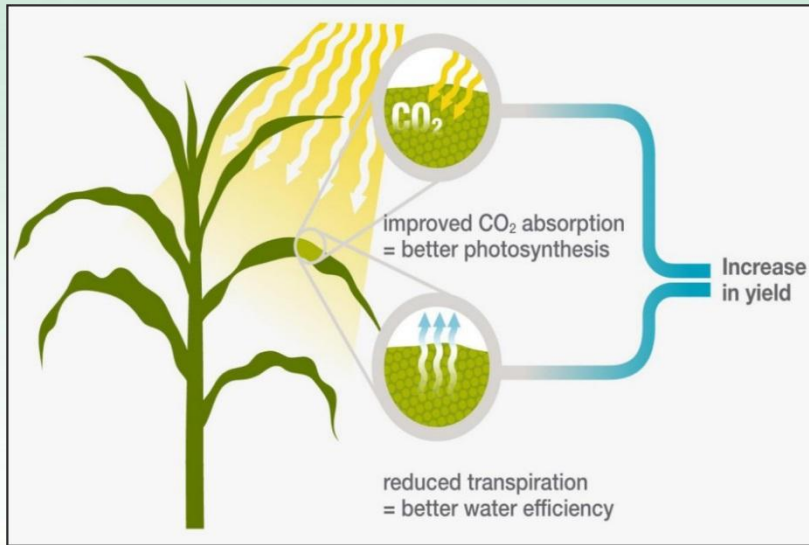
CROP BIOACTIVATION

penergetic p (for plants)

≈ *Enables Plants to Better Access Nutrients* ≈

- Increases chlorophyll and photosynthesis activity
- Optimizes leaf growth (nutrient assimilation)
- Improves nutrient (sap) flow in plants
- Increases mycorrhizal fungi and rhizobia
- Elevates Brix (energy) level in plants
- Strengthens plants and increases resistance
- Lowers susceptibility to pest and disease
- Promotes better root formation = stronger plants
- Use as seed treatment = better germination

PROMOTES INCREASED CHLOROPHYLL / PHOTOSYNTHESIS



OPTIMIZES LEAF GROWTH

(Increased Nutrient Assimilation)



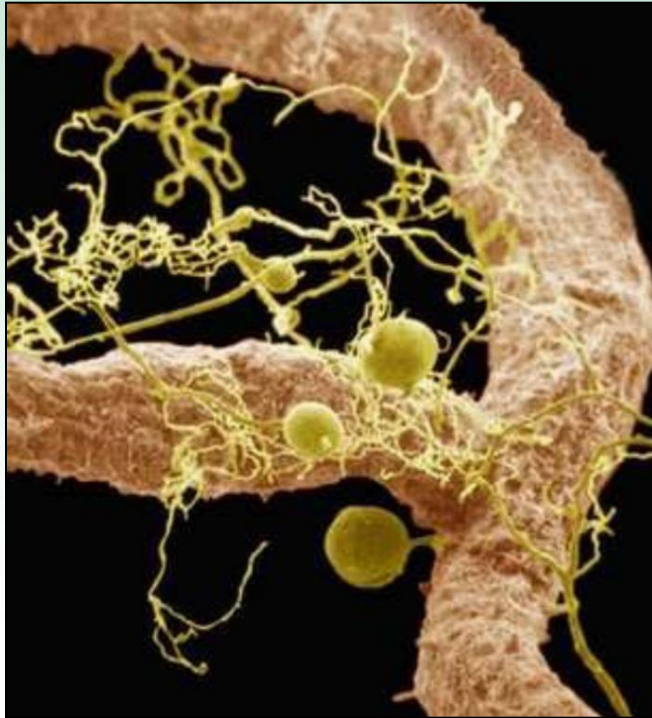
IMPROVES NUTRIENT (SAP) FLOW IN PLANTS



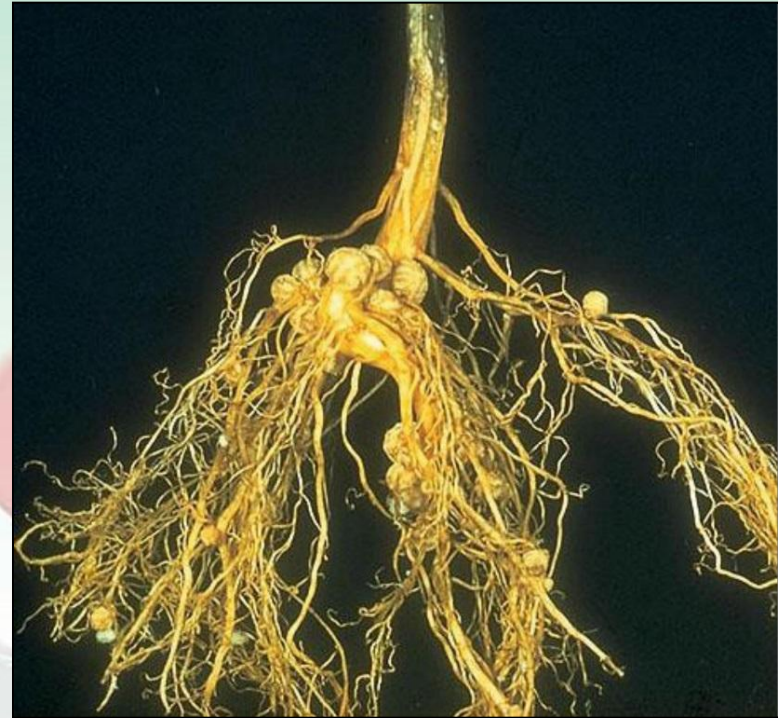
A look inside of a corn stalk. Second year penergetic b and p treated corn field. Notice that this is a very clean and healthy vascular system. If you look closely, you can see that there is so much sap inside this stalk that it is nearly dripping.



INCREASES MYCORRHIZAL FUNGI AND RHIZOBIA BACTERIA



Mycorrhizal Fungi



Rhizobia Bacteria

Penergetic p (for plants) can increase the number of mycorrhizal fungi by between 120% – 156% (STEFFEN, 2014, EPAMIG, 2011). Mycorrhizal fungi is responsible for 80% of phosphorus uptake by plant roots and can increase the volume of soil explored by plants by 5 to 700 times.

ELEVATES BRIX LEVEL IN PLANTS

- Higher brix = higher sugar = energy
- More nutrient density and tastier food
- Better insect and disease resistance
- Animals prefer high brix food



LOWERS SUSCEPTABILITY TO INSECTS



**No Penergetic – Spider Mites With Penergetic = No Spider Mites
Side by side portions of same field***

* Similar results observed at two other area farms with Penergetic vs. Control.

LOWERS VULNERABILITY TO DISEASE



RD LEGAULT SEED

Penergetic eradicated sclerotinia fungus in their soybeans.



LAURIDSON LAND & CATTLE

Penergetic treated field only field that was rust free! Saved as seed stock.

PROMOTES BETTER ROOT FORMATION

DURUM WHEAT **McCord, Saskatchewan - July 2016**



SEED TREATMENT ADVANTAGE

Seed Treatment Field Trials on Winter Wheat with Penergetic b and p versus Control (no treatment)



Treated with Penergetic b and p

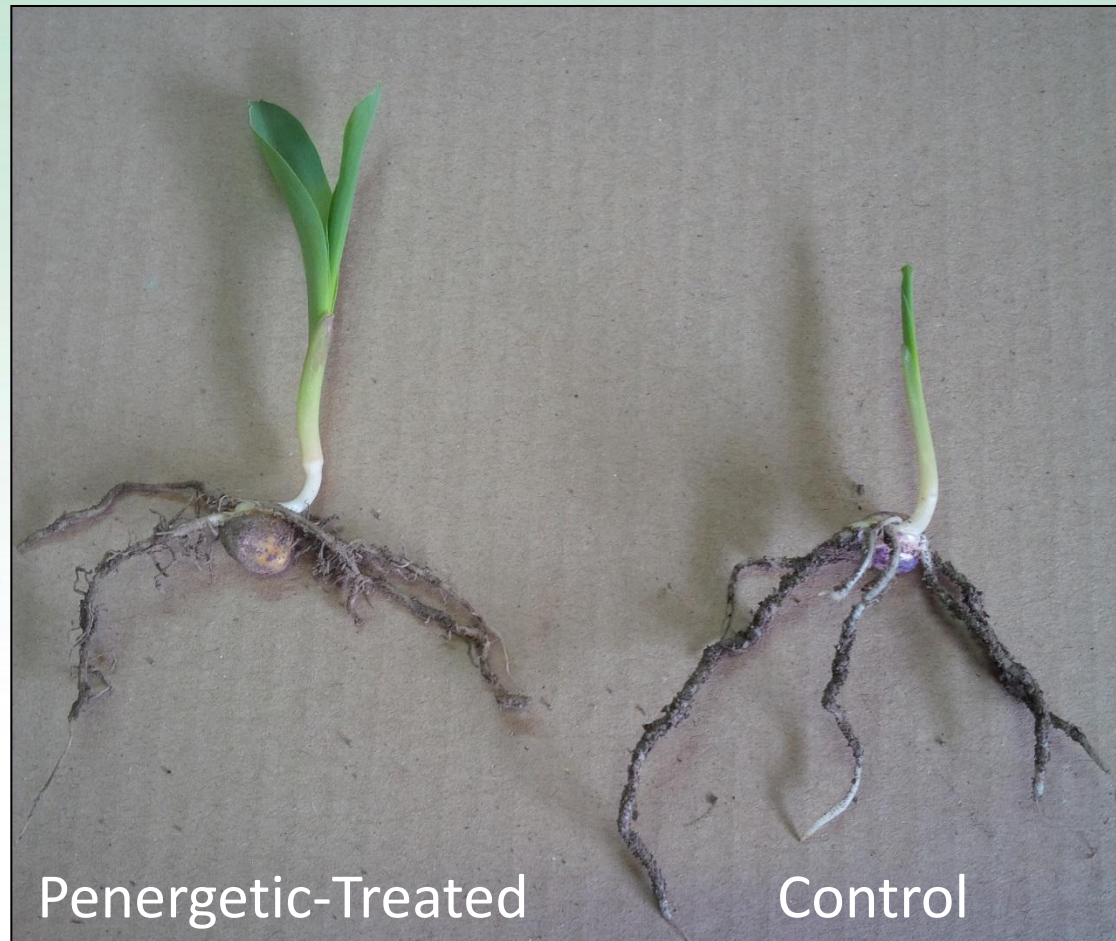


Control (no Penergetic used)



Treated with Penergetic p

SEED TREATMENT ADVANTAGE



Observations: Penergetic-treated seed exhibits more fine root hairs & more advanced (above ground) plant development.

ENHANCES SEED GERMINATION

Lentils – seed treatment with penergetic p



ENHANCES SEED GERMINATION

Onion Sets – treated with penergetic p



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