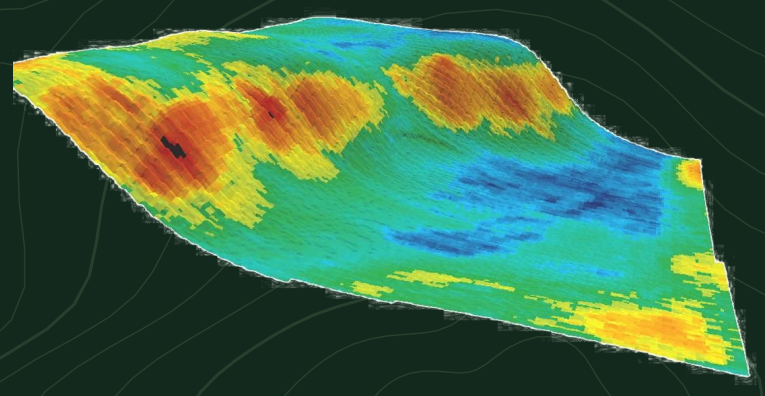
HINKSON LAND TECH

FIELD REPORT · CAIRO NEATA RESEARCH FIELD

Small Data, Big Results.

Correlating field data sets to yield — what slope, aspect and landscape position reveal that the cloud can't.



CAIRO RESEARCH FIELD · 3D SURFACE VIEW

EXECUTIVE SUMMARY

Improper slope costs you money. Small data proves it.

Slope analysis from **small data** shows big reasons why *macro and micro slope affect profitability*. The graphs and notes that follow go into more detail for anyone who wants reinforcing data that isn't available from **big data sets in the cloud**.

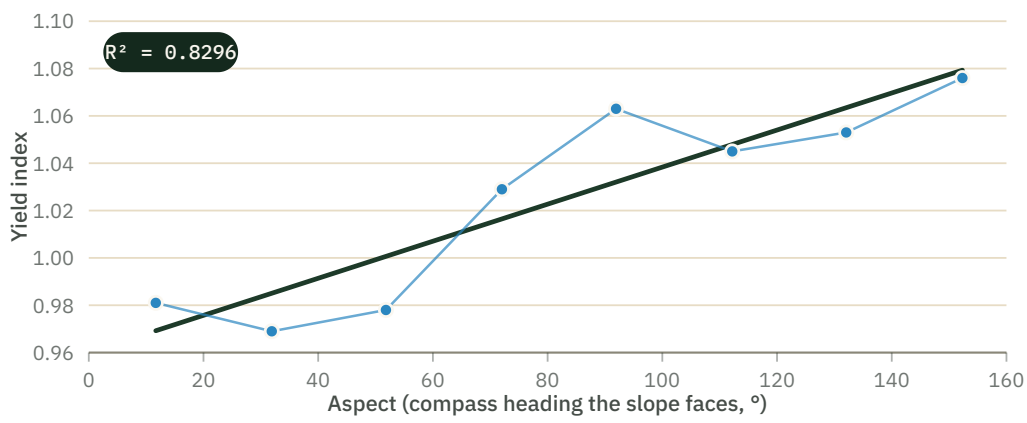
High corn prices brought about many stormy cloud agendas that, in our opinion, have created a lot of ground fog for agriculture. **It remains to be seen which cloud will prevail — and, if one does, what it will cost you at the farm gate.**

Some clouds are better than others, but in the end you pay a fee to ship your "data crop" to a "data silo" (not your silo), where it's aggregated like an elevator and shipped down the "rail line" for export. **No one paid you for your data crop the way they paid for the corn and beans you just delivered.**

Back to small data relationships. Every number in this report came from our own Cairo field, a couple of miles SSE of Cairo, NE — a field literally pounded with data collection in cooperation with NASA, UNL and USDA.

CHART 1

Yield vs. aspect



ASPECT

Which way the ground faces matters.

Aspect is the compass heading a slope faces. The closer a slope turns toward the south, the more sun energy it collects — and the higher it yields.

HOW TO READ THE CHARTS

● Observed — Trend R²

The higher the **R²**, the stronger the relationship between the horizontal (X) and vertical (Y) values. 1.0 is a perfect fit.

MACRO VS. MICRO SLOPE

Same field. Opposite stories.

The data behave differently on **steep, macro-sloping** ground than on **flat, micro-sloping** ground — even Veris shallow readings flip direction.

Steep (macro) slopes

Too much slope, not enough water.

CHART 2 — R² 0.9865

Yield

y = -0.0318x + 1.1412

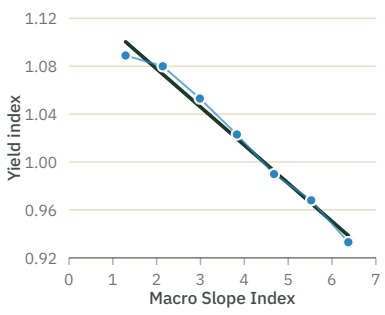
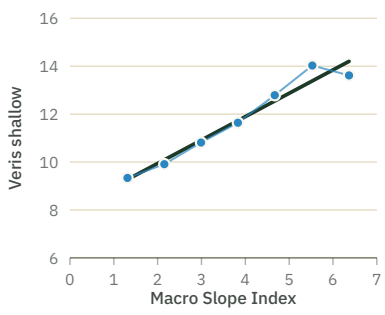


CHART 3 — R² 0.9577

Veris shallow

y = 0.9812x + 7.9716



Flat (micro) slopes

Too much water, not enough slope.

CHART 4 — R² 0.9176

Yield

y = 0.1365x + 0.9489

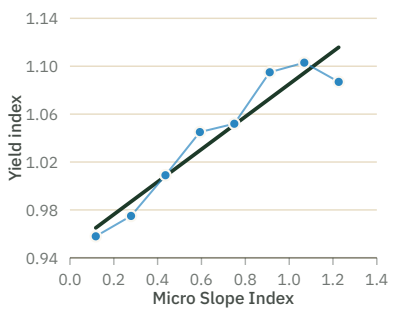
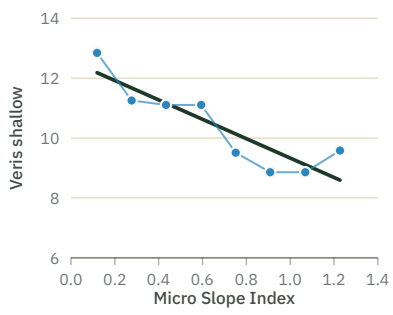


CHART 5 — R² 0.7948

Veris shallow

y = -3.2027x + 12.54



Your GPS data is "spatial" to us.

These data sets have given us conviction — and bias — from hard lessons learned. If you want a fresh view of things, call me.

(308) 380-4308

arnie@hinkson.com · HINKSON.COM

SMALL DATA, BIG RESULTS

Landscape position drives fertility — and yield.

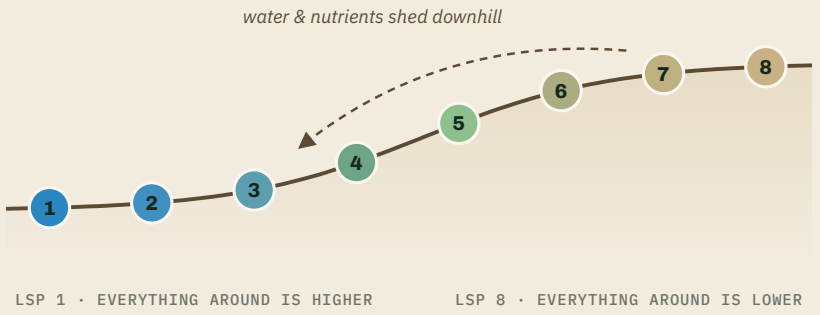
Slope — both macro and micro — is a big deal, and one of the largest contributors to yield variation, which goes straight to profit variation in a field.

Macro slopes tend to be too steep, letting water and **nutrients shed down the hill from LSP 6–8 areas toward the 4 and 5 areas**. **Micro** slopes tend to be too flat or "reverse grade," contributing to **potential anaerobic conditions in the LSP 1–3 areas**.

These are relative values by field, from a small data basis — not big data aggregations.

WHAT IS LSP?

Landscape Position scores every spot in a field from 1 to 8 against the ground around it. LSP analysis by Ren Clark (retired), Delta Data Systems.



SOIL TEST RESULTS BY LSP ZONE

Notice the soil test curves.

CHART 6 — R² 0.9522
Nitrate
Quadratic trend

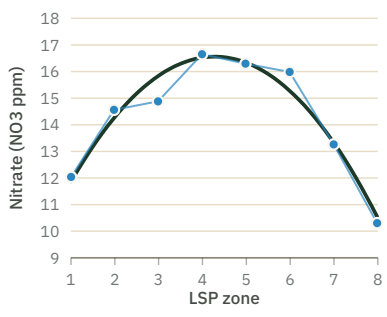


CHART 7 — R² 0.7922
Potassium
Quadratic trend

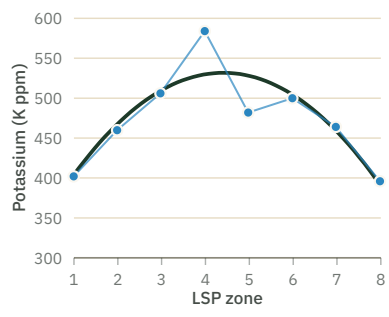


CHART 8 — R² 0.8528
Phosphorus
Quadratic trend

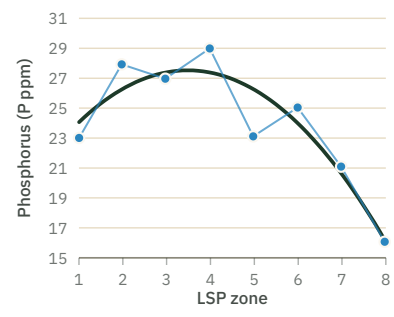


CHART 9 — R² 0.7666
Organic matter
Quadratic trend

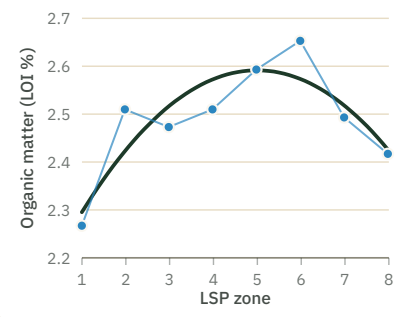
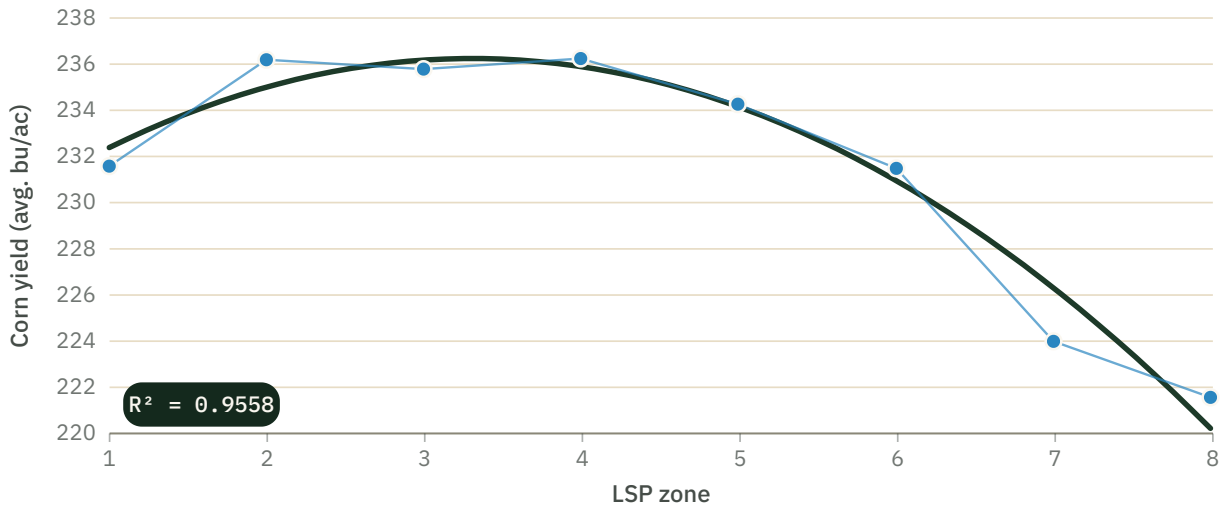


CHART 10
Corn yield by LSP zone



THE BOTTOM LINE

Yield peaks in LSP 2–4 and drops ~15 bu/ac at the hilltops.

These corn yields are older values, but the point stands: LSP has brought into focus the need to keep landshaping our fields — for us and for generations to come, *which we did on this field*.

OUR BIAS, STATED PLAINLY

Everyone has a bias. Some come from professional salesmanship; others come from hard lessons learned. My hard lessons started to take shape before RTK, with lasers and DGPS. As John Wagner pointed out to me through GIS data analysis, the real question is whether someone's bias is **data-driven** — or not.

Landshaping with RTK vertical machine control will improve micro-slope issues, and **variable-rate input control** can address macro-slope issues that can't be economically changed with vertical landshaping.

I have stated our bias. Now ask others how they came about theirs.

We design thousands of field acres.

And we help people put RTK vertical machine control on scrapers, tile machines, and related equipment and vehicles. Call for a free visit and initial evaluation.

(308) 380-4308
arnie@hinkson.com
HINKSON.COM · Cairo, NE