IPVS Congress 2016 DUBLIN IRELAND

Why vaccines feed the world?

Precision is the only future

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PREVENTION WORKS
Shaping the future of swine health

Boehringer Ingelheim

The challenge to 2050

Ferocious Demand

Scarce Global Resources

2 billion more people

70% more food production required

An innovation revolution will be required

The revolution has already begun

Production agriculture is being transformed to a precision process

Precision brings increased output
with the same resources,
less waste,
higher quality production,
increased sustainability
and economic resilience

Achieving long-term, low variance, higher- than-average profitability

will require **precision production**

Precision brings ***resilience***

the ability to quickly restore economic stability in the presence of random, unforeseen shocks

Achieving the Purpose of Irrigation When Water is Free

A Change in Government Policy Brought This

The Transition to Precision Agriculture

The Problem of Imprecise or High Variance Pig Production

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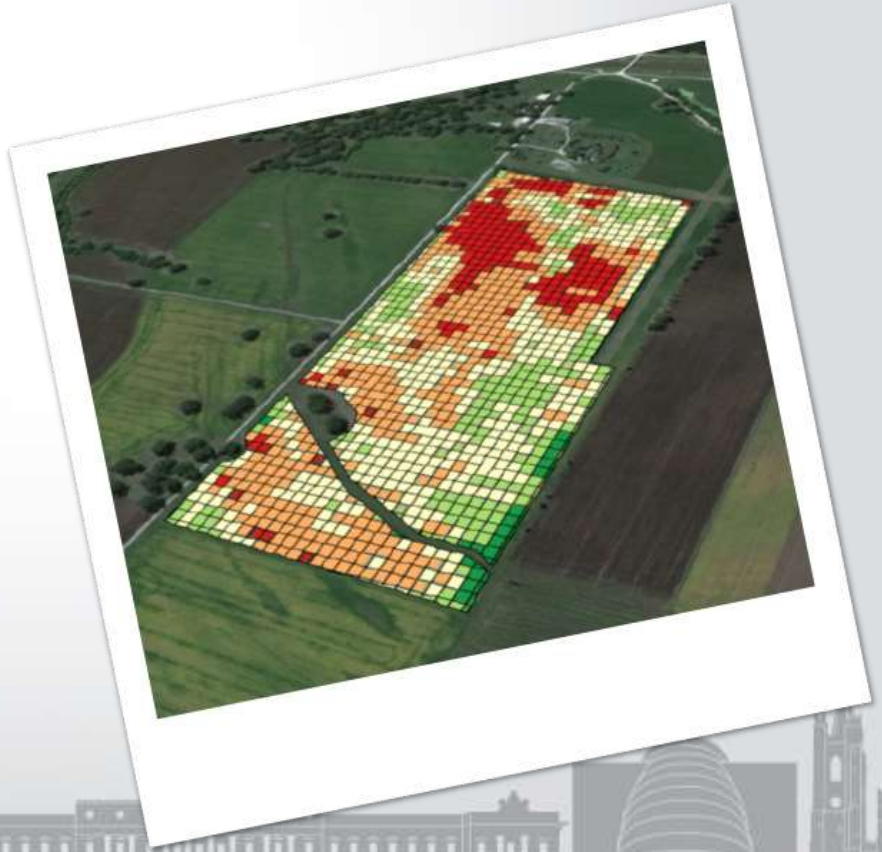
- *Biological variation is a natural process integral to species improvement*
- *Failure is "built-in" to modern batch systems which were designed around providing a large group of animals the group average requirements.*
- *Humans executing production processes multiply natural variation through lack of knowledge about biological requirements of the animals and by failing to provide those requirements even when known*
- *Individual animal measurements are not taken, assessments of the production process occur after remediation is not possible.*
- *Summarized output performance (such as from kill sheets) and closeout or group averages hide critical production information about variation*
- *Economic damage from emerging high variance outcomes is not easily detected or successfully remediated.*

What is Precision Agriculture?

It Came First to Crop Agriculture



Use technology to discover key processes which were previously hidden from the manager

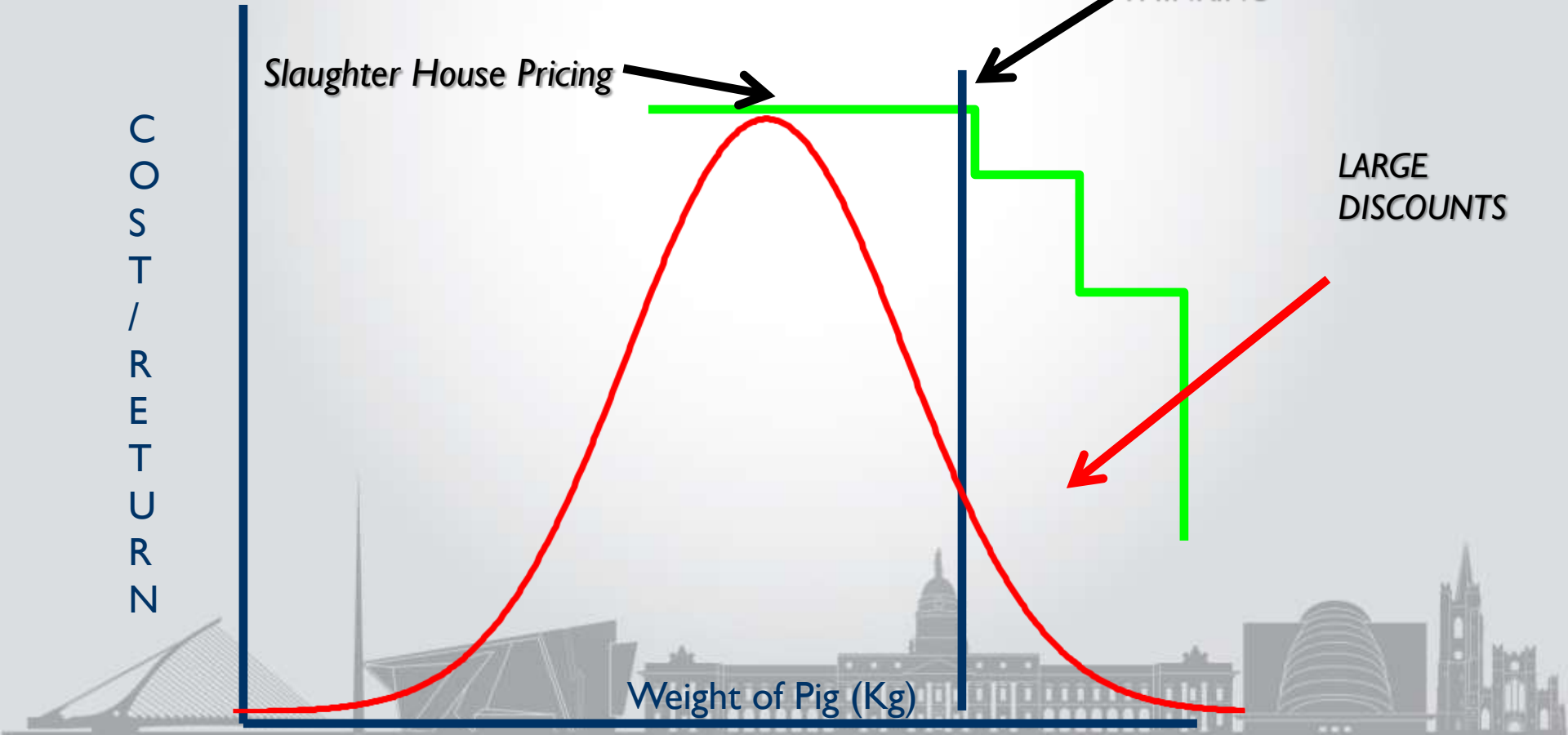
“Use technology to discover

key processes that were previously hidden from the manager”

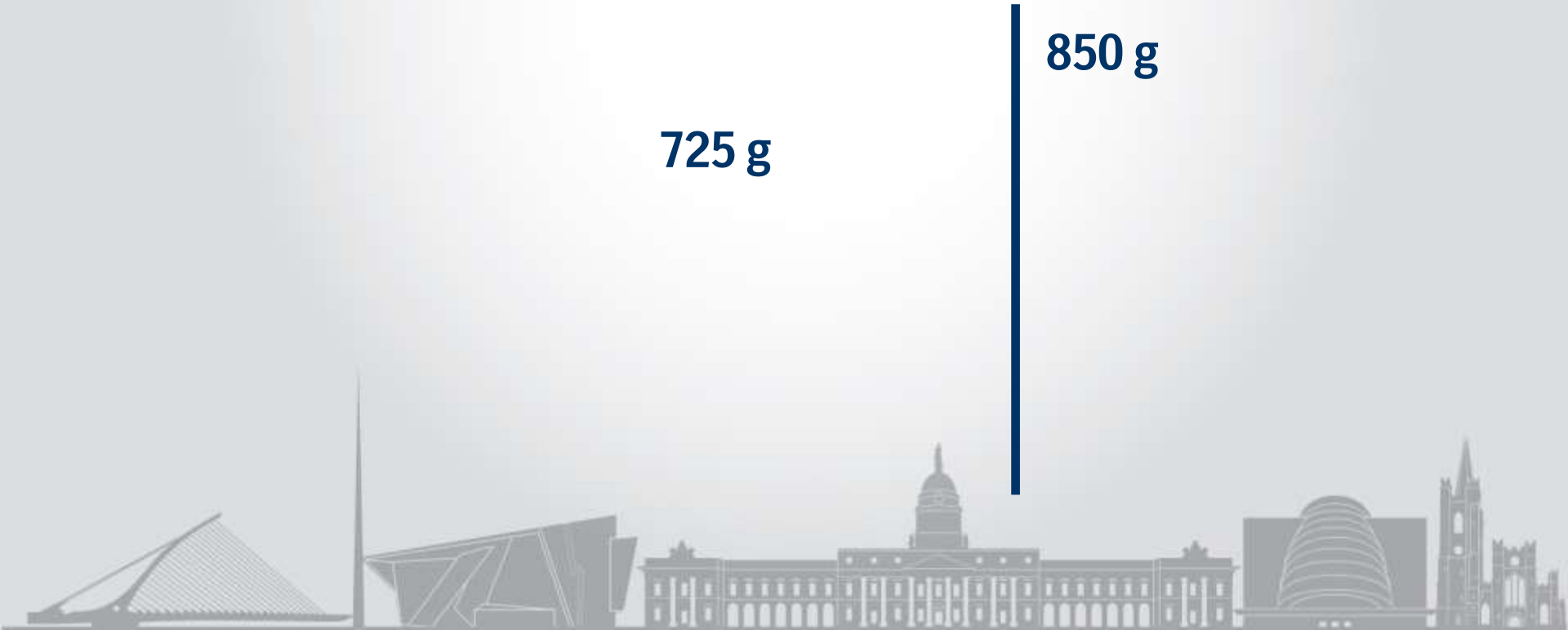
Understanding production as **a distribution of outcomes (rather than “single pig” calculations is changing the way we understand cost, input requirements and optimization points**

The Single Pig Calculation

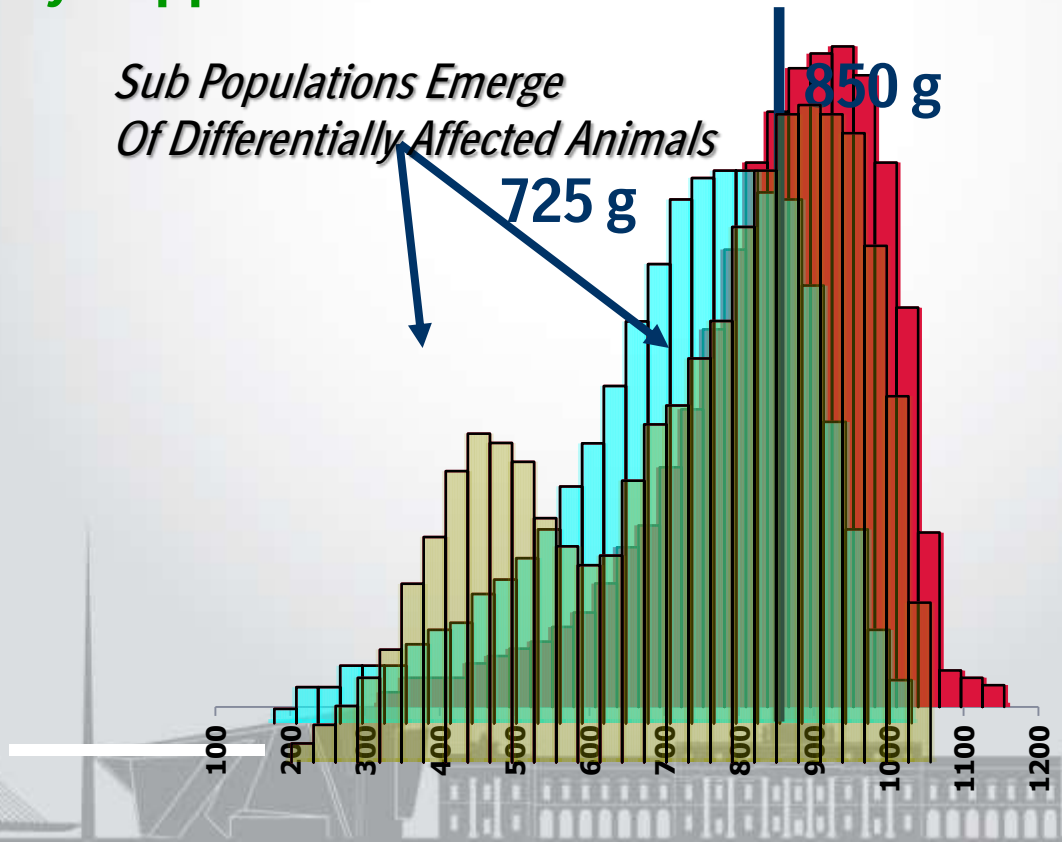
Fails to Predict Optimal Harvest Timing



Change in ADG as Understood by a Production Person

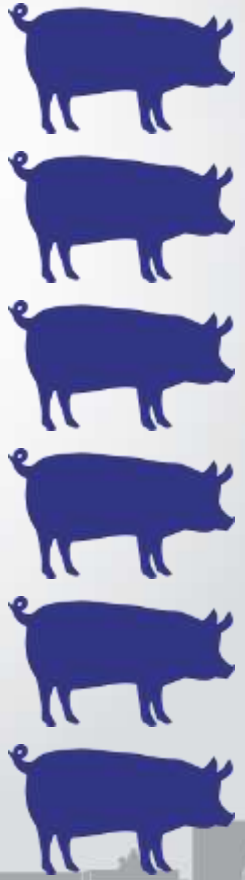


What Actually Happens



PREVENTION WORKS

Shaping the future of swine health



Asset Inefficiency
Less throughput/Year
Lower quality
Increased Maintenance Feed/ damages Feed Conversion

What is Precision Agriculture?

It Came First to Crop Agriculture

To match the input application to current requirements

What is Precision Agriculture?

It Came First to Crop Agriculture

To measure progress of production, detecting variance from plan

“To measure progress of production

detecting variance from plan”

Collection of key real time data **allows critical analytics and simulations to reveal emerging deviations from plan and suggest smarter decisions and interventions**

What is Precision Agriculture?

It Came First to Crop Agriculture

Apply corrections in near real time restoring planned outcome

“Apply corrections

in near real time restoring planned outcome”

Adjusting nutrition more precisely

to match requirements and reduce loss and waste. Recognize and begin treatments before typical methods discover the problem. Reorganize harvest to maximize value

Summary

Precision is the only future