



Case study: Lessons learned from combining genetics and blockchain in the beef industry



From Farm to Fork

How it all ties together



Food Safety

NEOGEN reaches all segments of the food, beverage and feed industries with solutions that include: rapid diagnostics for the detection of unintended substances, sanitation verification tools, innovative pathogen tests, next generation genome sequencing and more.

Corporate and Food Safety Headquarters:
Lansing, Michigan



Animal Safety

NEOGEN develops solutions for the animal protein market, as well as the performance and companion animal segments. We offer veterinary instruments and supplies, cleaners and disinfectants for farm and veterinary settings, insecticides and rodenticides to limit the spread of disease and more.

Headquarters:
Lexington, Kentucky



Genomics

NEOGEN offers genomics solutions that allow animal protein producers to make educated breeding decisions that improve the efficiencies of their herds, breed associations to verify parentage, and for food safety professionals to identify bacterial strains associated with particular disease outbreaks.

Headquarters:
Lincoln, Nebraska

Ripe's work with the Meat & Livestock Australia



Through our work and association with the SparkLabsCultiv8 accelerator program in early 2018, we started a multi-year project with the MLA.



The project was established to utilize blockchain to improve the transparency, quality and competitiveness of the supply chain.



Scope tackled challenges with data quality, consistency and availability across the supply chain.



A public report was submitted on 2/2020 to the MLA and industry stakeholders. A phase 2 of the project has been initiated with the task of including animal genomics as well as the digitization of export documentation to support trade with Asia.



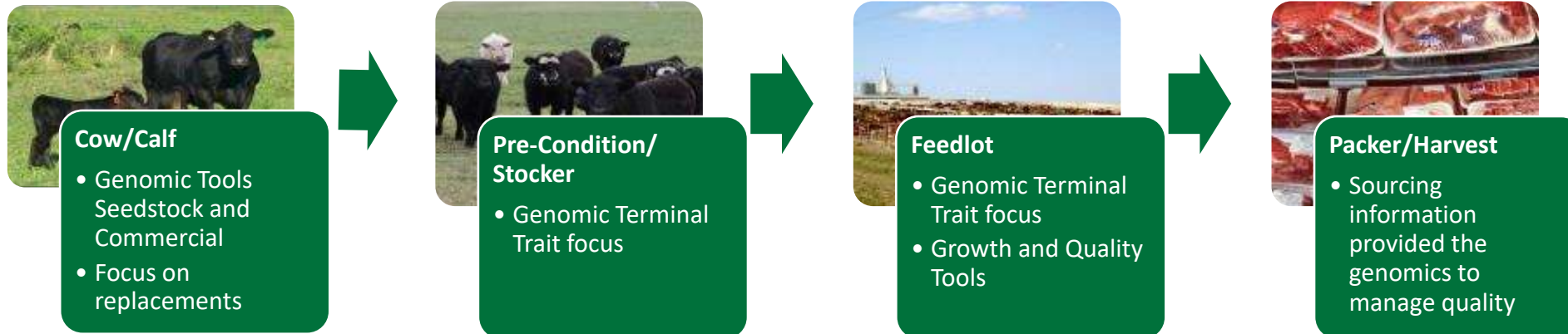
Neogen industry connections influences genetics across the entire supply chain

Example of United States



Neogen Genomics – Beginning with DNA

Capabilities – Beef Supply Chain as an example, Dairy Tools are similar in representation



Cow-Calf

Products Offering

- Igenity Beef
- SeekSire
- Envigor
- Angus GS & GGP

Production Decision Drivers

- Reproduction & Heterosis
- Marketing Decisions
 - Replacement
 - Maternal
 - Terminal

Pre-Condition/Stocker

Products Offering

- Igenity Feeder
- Igenity Beef
- SeekSire

Production Decision Drivers

- Terminal Traits
- Disease Control
- Health/Immunity

Feedlot

Products Offering

- Igenity Feeder
- SeekSire

Production Decision Drivers

- Growth
- Finish/Grade
- Carcass Quality

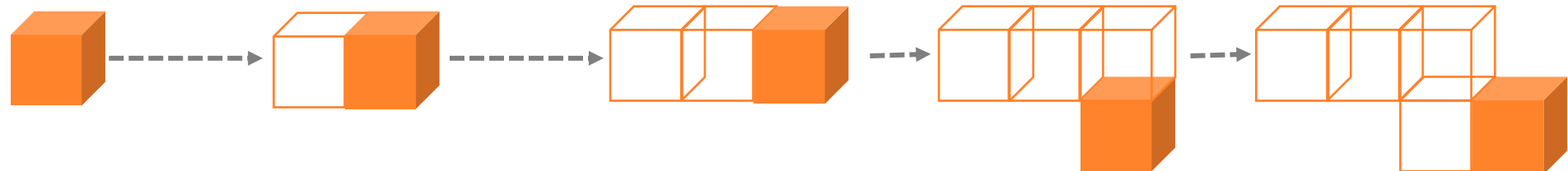
Packer

Production Decision Drivers

- Carcass Quality & Composition
- Sourcing SOP/Tools

Other Drivers

- Food Safety



Digitization of Beef Supply Chain

Genotype

Phenotype

Medical Record

Sustainability

Feed

Quality

Traceability

Certifications

Animal Welfare



Sourcing of Animals

Via EID

Via Genetic Background

+ Certifications

+ Medical Records

+ Environment

= Days on Feed

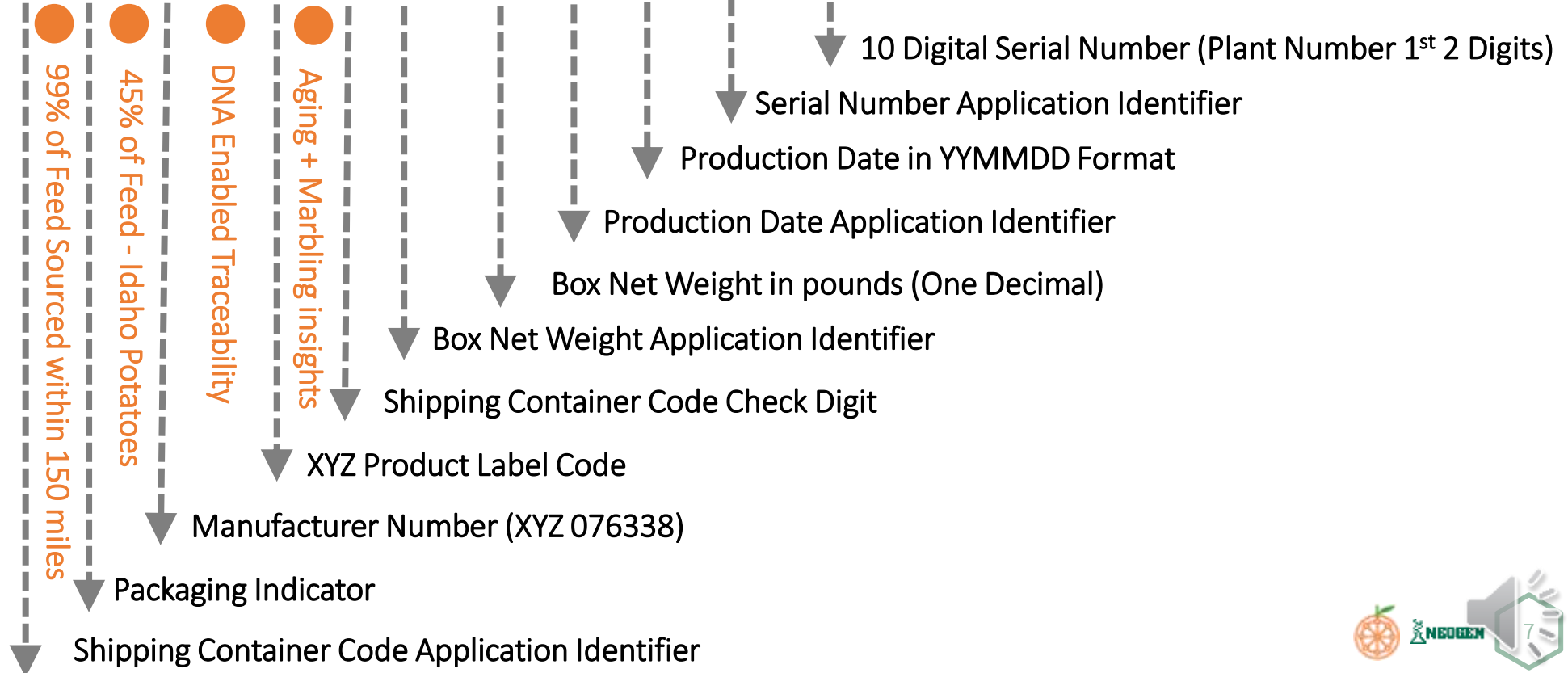
= Program Allocation

= End-to-End Traceability

Traceability - Tomorrow



01 9 076338 42080 6 3201 00459 11 16021 21 7102000002



Consumer Expectations are Changing





982 123714714170

Breeding & Backgrounding Feedlot **Processing**

^ ANIMAL INFO

EID	BODY NUMBER	CATEGORY	DENTITION
982 123714714170	3349	*Y*	-
CARCASS HOT WEIGHT (KG)	CARCASS HOT WEIGHT LEFT (KG)	CARCASS HOT WEIGHT RIGHT (KG)	
290.2	145.8	144.4	
FAT DEPTH	RIB FAT	BI PERCENTAGE	TESTER
31	5	-	Y
CARCASS TYPE	HGP	FAT OPERATOR	OSSIFICATION
882EYG	N	927	180
US MARBLING	HANGTYPE	EU STATUS	MSA GRADE
300	AT	-	99
GRADE DATE & TIME	LOT REFERENCE	MOB	
2019-11-14	C05	C05	
NLIS PROCESS DATE	NLIS RFID	NLIS TAG	NLIS PRO DATE & TIME
2019-11-14	982 123714714170	NK264348XBP50166	2019-11-14T21:00:00
OPERATOR	PROCESSING DATE	PROCESSING NUMBER	SERIAL NUMBER
882	2019-11-14	1	3349





^ TREATMENTS

Applied Product ↕	Session Name ↕	Date Created ↕
Websters 5 In 1 Vaccine 500ml	Bovillus/5 in1 H1 Heifers	2019-04-24
Bovilis MH + IBR 250ml	Bovillus/5 in1 H1 Heifers	2019-04-24
Flukazole C 15L	ARRIVAL SAN27010180 Heifers Tea Gardens	2019-03-01
Websters 5 In 1 LV 500ml	ARRIVAL SAN27010180 Heifers Tea Gardens	2019-03-01
Dectomax Pour-On 2.5L	ARRIVAL SAN27010180 Heifers Tea Gardens	2019-03-01
Bovilis MH + IBR 250ml	ARRIVAL SAN27010180 Heifers Tea Gardens	2019-03-01

∨ MOVEMENTS

2019-03-01		To PIC : NG331216 From : NK264348 NVD : D00348246	
2019-07-09		To PIC : ND501769 From : NG331216	





Property



Property	PIC	Headcount
DECEASED	DECEASED	1
Northern Meat Co-op	NA995011	2
Northern Meat Co-op	NB995013	1
Killara Feedlot	ND501769	447
Urawilkie	NF170967	171
Northern Meat Co-op	NF991212	135
Newstead EU	NG331216	173
Burindi (EU)	NG501537	102
Tea Gardens	NK264348	172
Northern Meat Co-op	NK991211	79





SEX

F

SHIFT

1

SPECIES

Bovine

TAG OR TATTOO

ND501769

UNIT ID

1

PLANT

239



^ **LEFT CARCASS**

^ **RIGHT CARCASS**

BARCODE_TCS46

01932776402001003101001458111911142103349L

BARCODE_TCS46

01932776402001003101001444111911142103349R

SIDE

L

CONDEMNED

-

SIDE

R

CONDEMNED

-

BRUISING

-

DESTINATION

-

BRUISING

-

DESTINATION

-

DATE & TIME

2019-11-14T11:16:47

ITEM NUMBER

OPR882

DATE & TIME

2019-11-14T11:16:33

ITEM NUMBER

OPR882

HOT WEIGHT

145.8

BONING GROUP

882

HOT WEIGHT

144.4

BONING GROUP

882

BONING LOT

882

BONING RUN

882

BONING LOT

882

BONING RUN

882

PROCESSED

1

POST TRIM WEIGHT

0

PROCESSED

1

POST TRIM WEIGHT

0



NSOEM





Welcome



Property



Cattle List



Movement



Analytics



Breeder Genetics



Feeder Genetics



Profile Directory



Cattle Upload

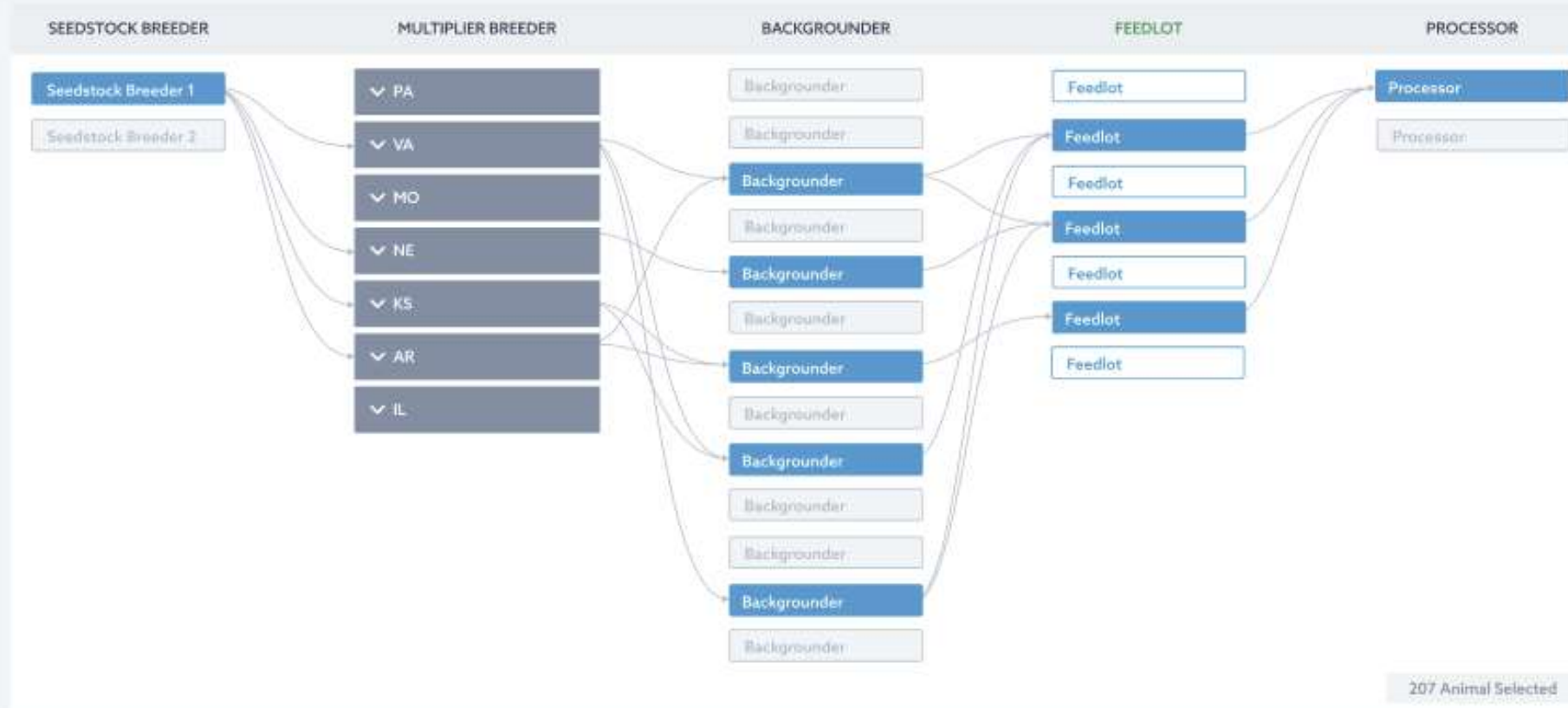




Movement

Export

Refresh



Avg. # of Days - Feedlot

245

Avg. Induction Weight

552lbs

Avg. Exit Weight

1200lbs

Group ADG

1.2lbs/day

Feedlot Cattle List

Induction Date

Select



To

Select



NSURE





EID 982 123532280991

ANIMAL INFO

EID 982 123532280991	LC Animal ID 3404949392	Visual Tag ABC	
Breed Angus	DOB 01-01-2018		
Igenity Order ID 0001	Myostatin Yes	BVDV Yes	Seeksire Parentage Identified Yes

^ TESTS

Sample ID	Barcode/EID	Sample Type	BVDV	Myostatin Gene Count	SeekSire Cattle Parentage
22340705	98200042953732	AllFlex Tags	Yes	0	102931012091

^ MYOSTATIN ALLELE RESULTS

Success Count	C313Y	S105C	NT149	D182N	Q204X	E226X	E2312
9	0	0	0	0	0	0	0



^ PARENTAGE RESULTS



^ BULL PERFORMANCE DETAILS

Average Birthdate

Average Backgrounder Exit Weight,

Average Days at Feedlot,

Group ADG at Feedlot



Our work with the NPB





Vendor 123456

Current Certified Open Pen %

85%

[View Current Certs](#)

[View Old Certs](#)

Print



Purchasing Document

4500203334

4500199828

4500199830

4500207968

4500199848

4500207942

4500207907

4500207905

4500207739

4500207737

4500207736

4500207735

4500207769

Har

07

07

07

07

07

07

07

07

07

07

07-02-2020

07-02-2020

07-03-2020

163

151

159

159

Hatfield

Hatfield

Hatfield

R81065-RFD

R81065

R81065

Batch

201016

201017

201018

201019

201020

201021

201022

201023

201024

201025

201026

201027

201028

You



Sustainability Dashboard

American Pork Board

View Community Giving

Aggregation Level	Total Sites	Reporting Sites	Cross-Pillar Average	Delta from National
All Sites >	170	170	75	8 _{pp}

Animal Well-Being

73%
Group

78%
National

Environment

74%
Group

53%
National

Food Safety

67%
Group

93%
National

Public Health

82%
Group

78%
National

People

79%
Group

32%
National

Animal Well-Being: Current Performance

Sub Pillar	Group vs. National	Performance Delta (vs. National)
CSIA	68% vs 28%	40pp
Abuse SOP	87% vs 97%	-10pp
Welfare SOP	79% vs 95%	-16pp
PQA + Site SOP	59% vs 90%	-31pp





Thank You

Every day, we protect the people
and animals we care about

