IGENDEC: A TOOL FOR BOTH BEEF x BEEF AND BEEF x DAIRY INDEX CONSTRUCTION

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GOAL

- Create a web-based decision support platform (iGENDEC) to enable economic index construction conditioned on the user's unique circumstances, including
  - Breeding objective
  - Breeding system
  - Planning horizon
  - Economic parameters
  - Current herd performance

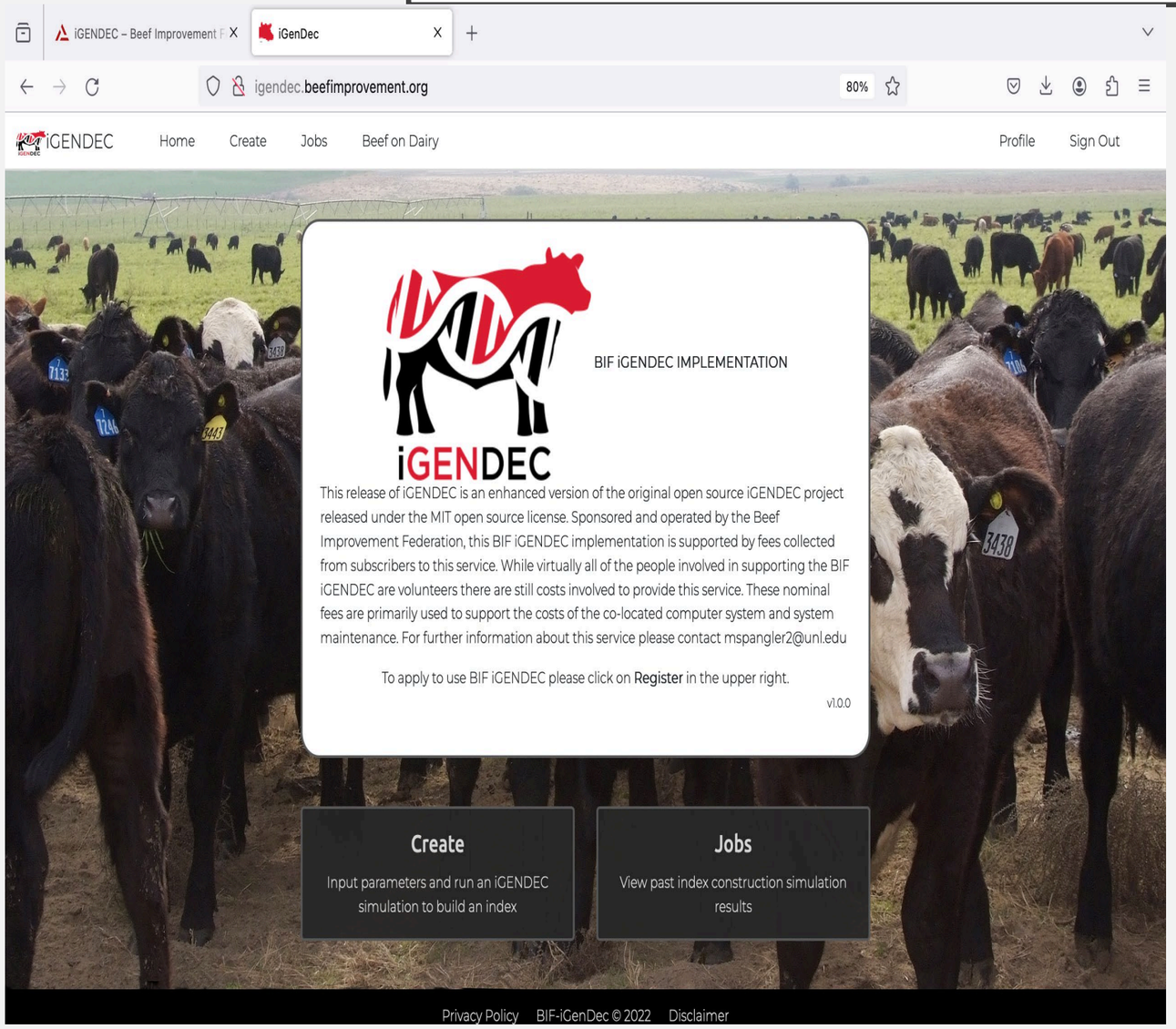
HIGH-LEVEL PROCESS

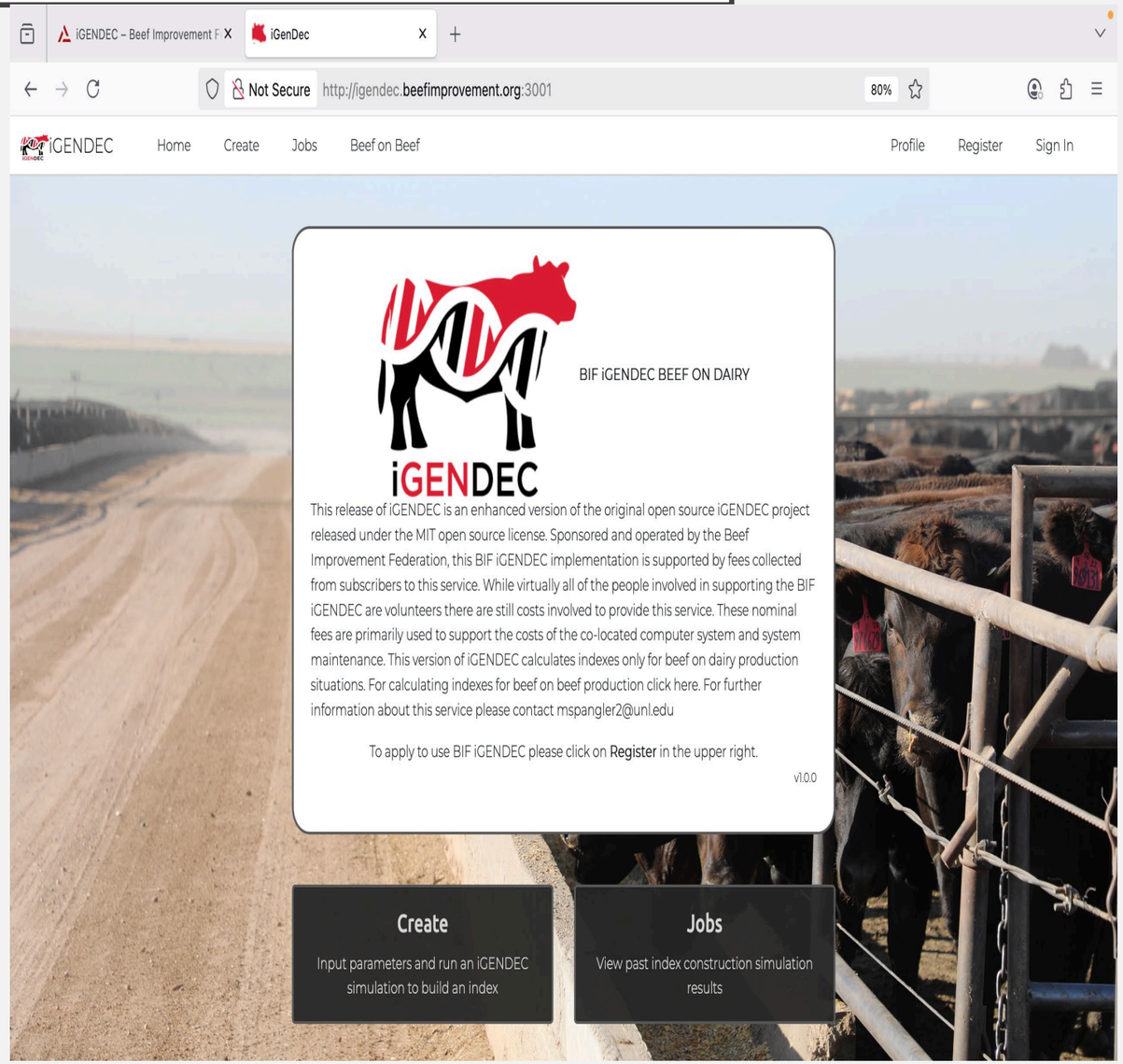
- User defined parameters
- Simulation of beef cattle population
- Genetic values of sires perturbed, one at a time, to result in one unit change of offspring phenotype
  - Discounted gene flow
- After burn-in, run for specified length of planning horizon
- Accounting based on simulated phenotypes
- Marginal economic values and index weights calculated
- Apply to selection candidates

BEEF X BEEF AND BEEF X DAIRY PRODUCTION SYSTEMS

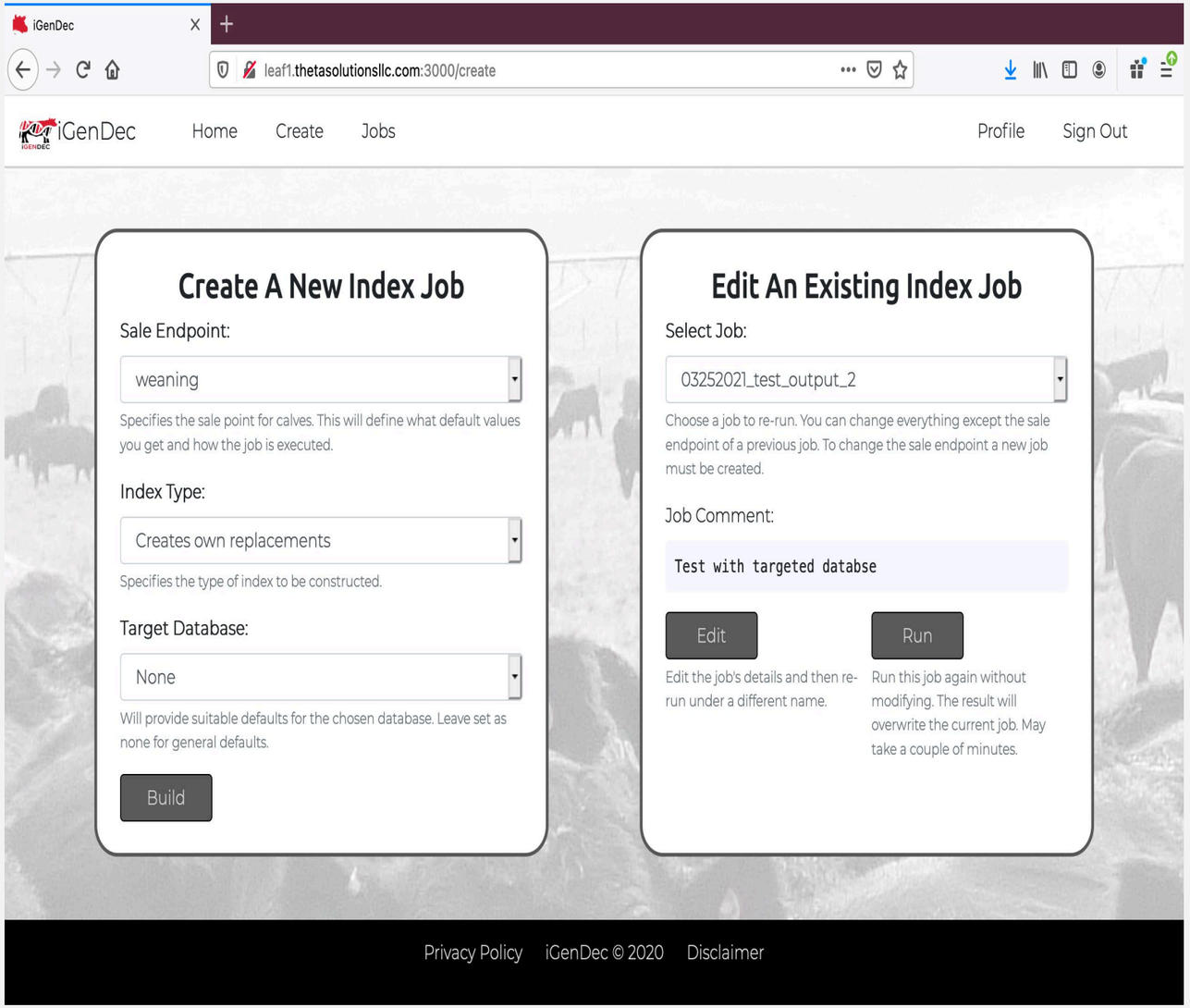
- MAKE SURE YOU HAVE TOGGLED TO THE CORRECT PRODUCTION SYSTEM
- Beef x Dairy is terminal only (cattle sold on a grid)
- Can include Holstein, Jersey, or crosses of the two dairy breeds
- Breed effects from literature (postweaning and carcass traits)
- Assumes calves born on a dairy move to a calf ranch prior to moving to a feedlot

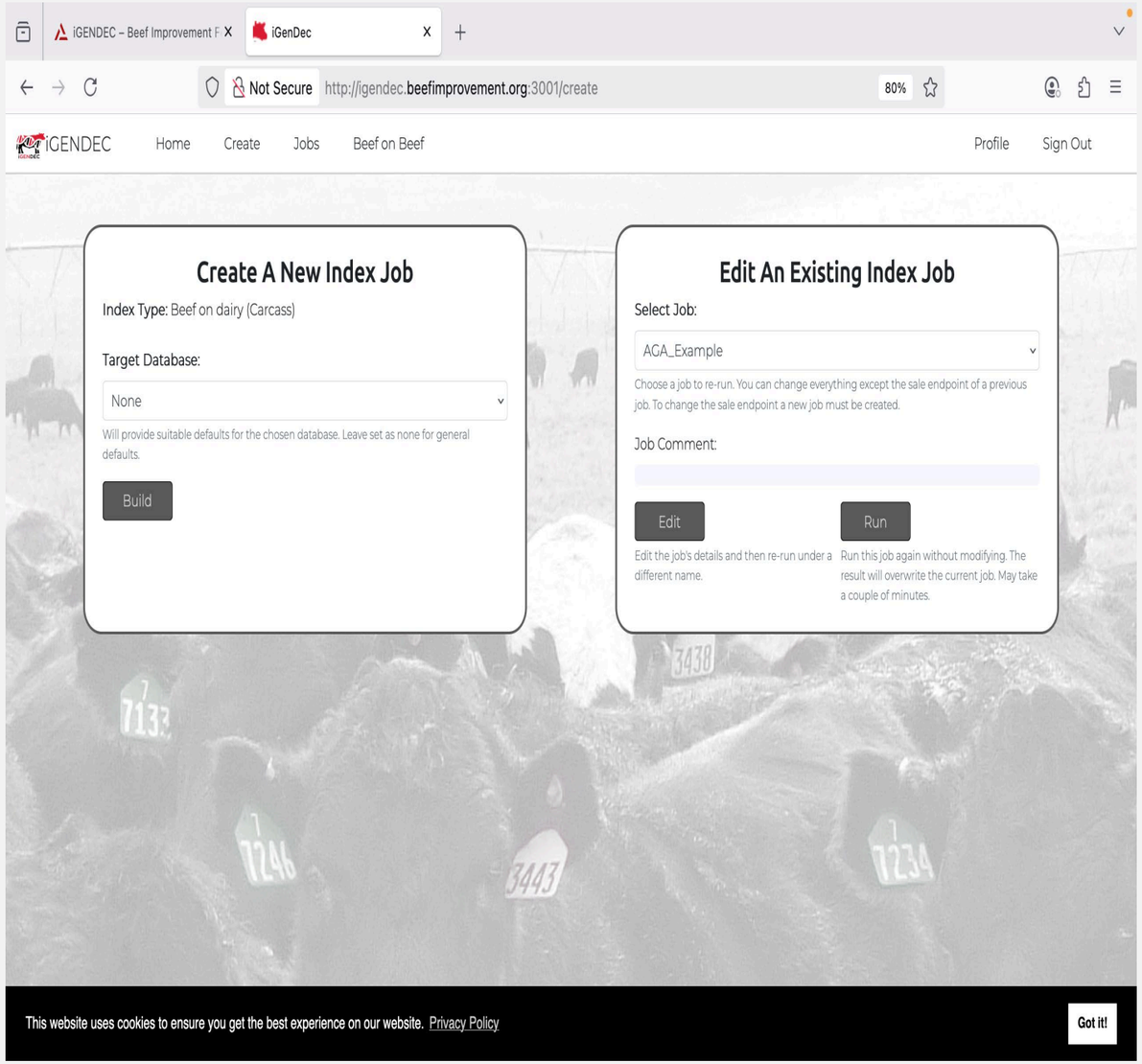
SOFTWARE INTERFACE



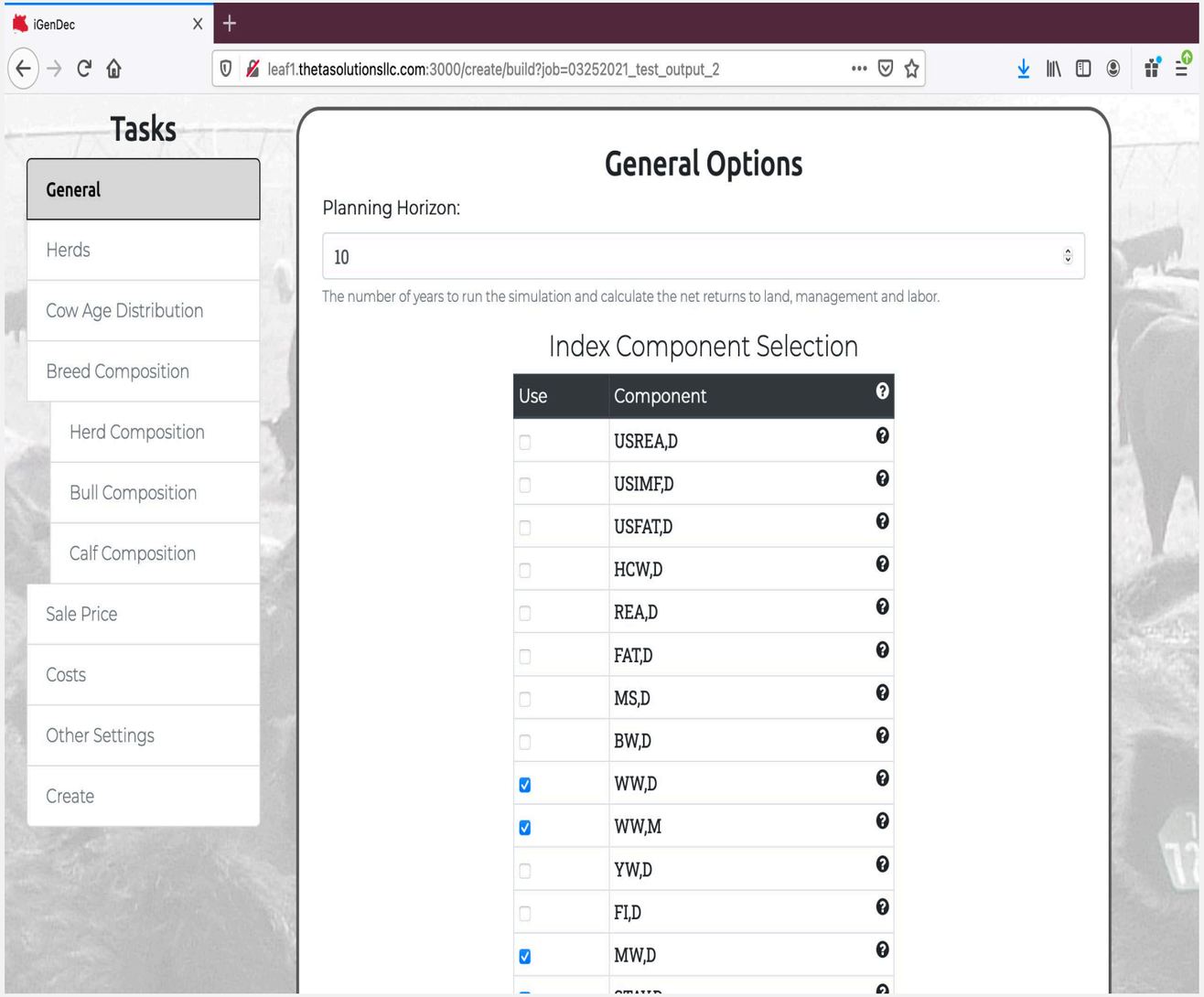


BREEDING OBJECTIVE





INDEX


iGenDec
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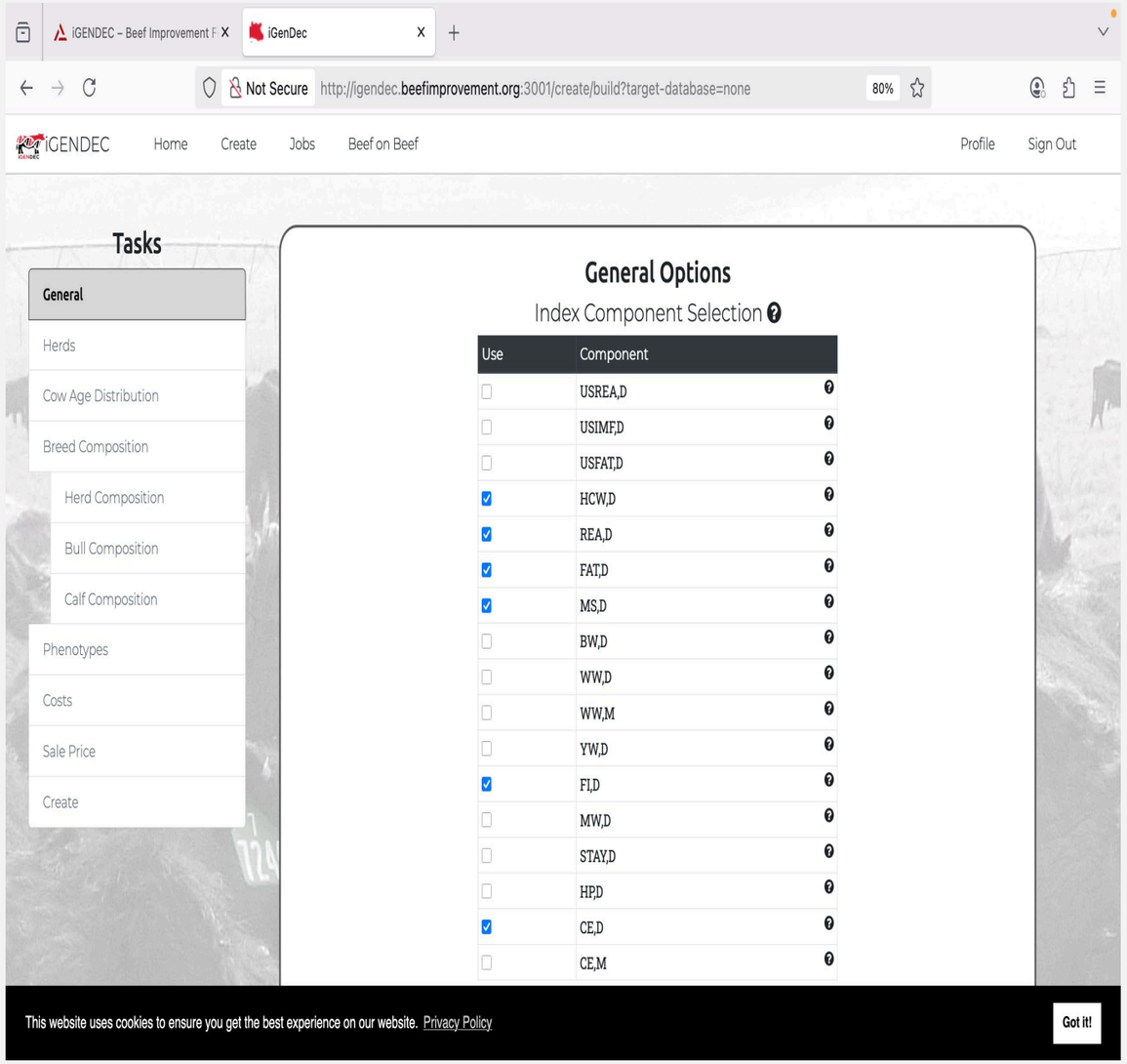
Tasks
General
Herds
Cow Age Distribution
Breed Composition
Herd Composition
Bull Composition
Calf Composition
Sale Price
Costs
Other Settings
Create
General Options
Planning Horizon:
10
The number of years to run the simulation and calculate the net returns to land, management and labor.
Index Component Selection
Use
Component
USREA,D
USIMF,D
USFAT,D
HCW,D
REA,D
FAT,D
MS,D
BW,D
WW,D
WW,M
YW,D
FI,D
MW,D


iGENDEC – Beef Improvement F
iGenDec
Not Secure
http://igendec.beefimprovement.org:3001/create/build?target-database=none
80%
iGENDEC
Home
Create
Jobs
Beef on Beef
Profile
Sign Out
Tasks
General
Herds
Cow Age Distribution
Breed Composition
Herd Composition
Bull Composition
Calf Composition
Phenotypes
Costs
Sale Price
Create
General Options
Index Component Selection
Use
Component
USREA,D
USIMF,D
USFAT,D
HCW,D
REA,D
FAT,D
MS,D
BW,D
WW,D
WW,M
YW,D
FI,D
MW,D
STAY,D
HP,D
CE,D
CE,M
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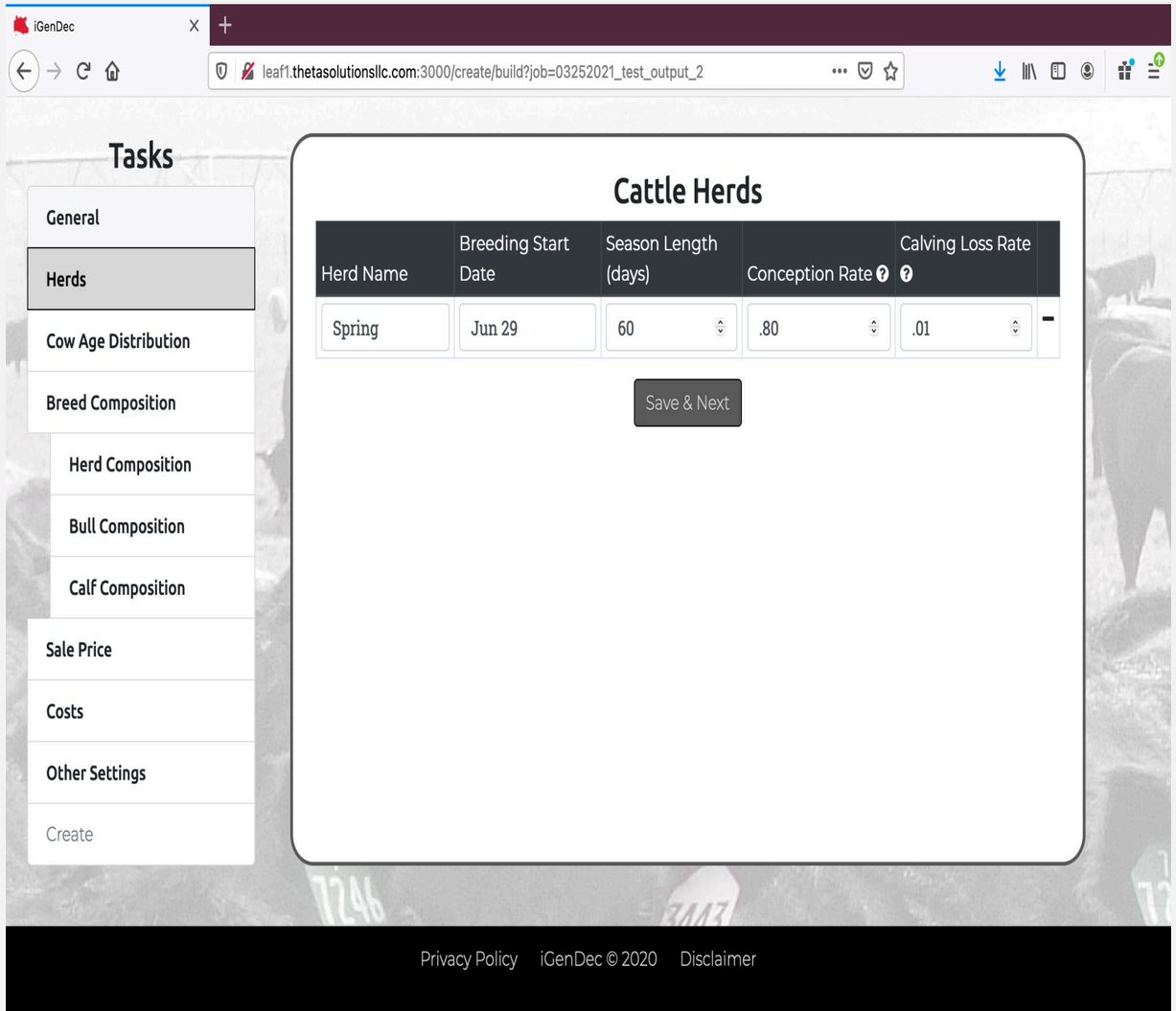
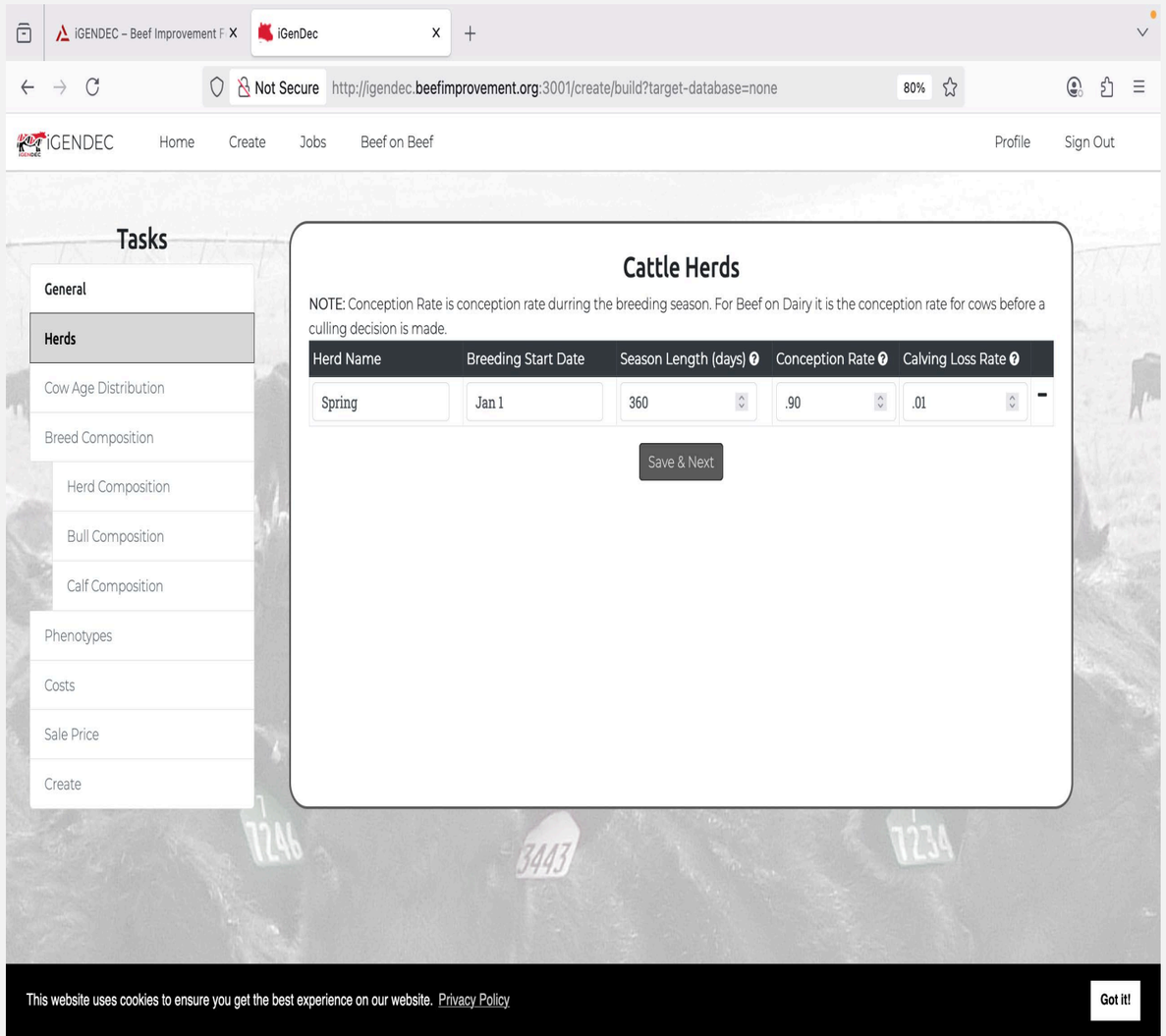
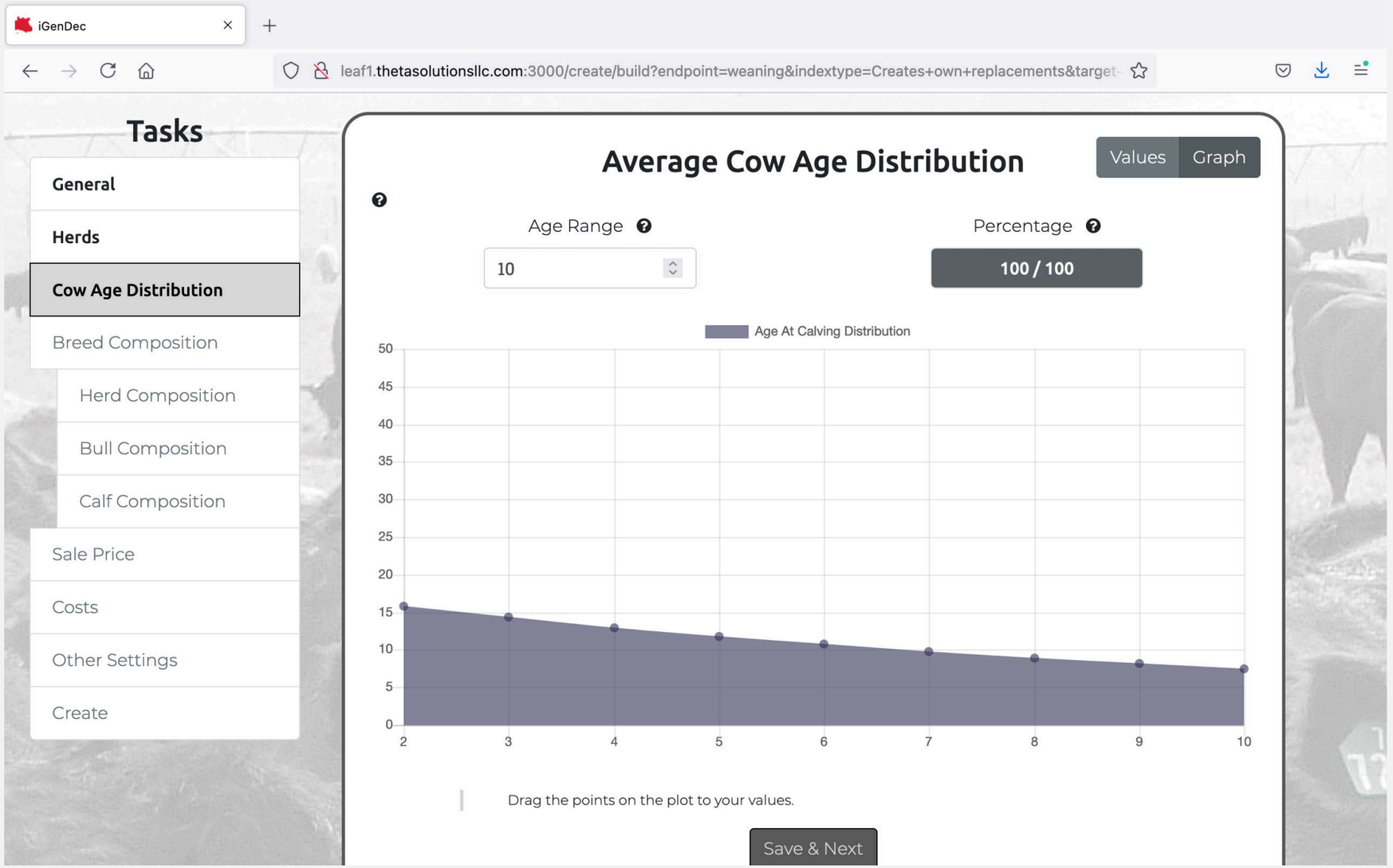
PHENOTYPIC MEANS

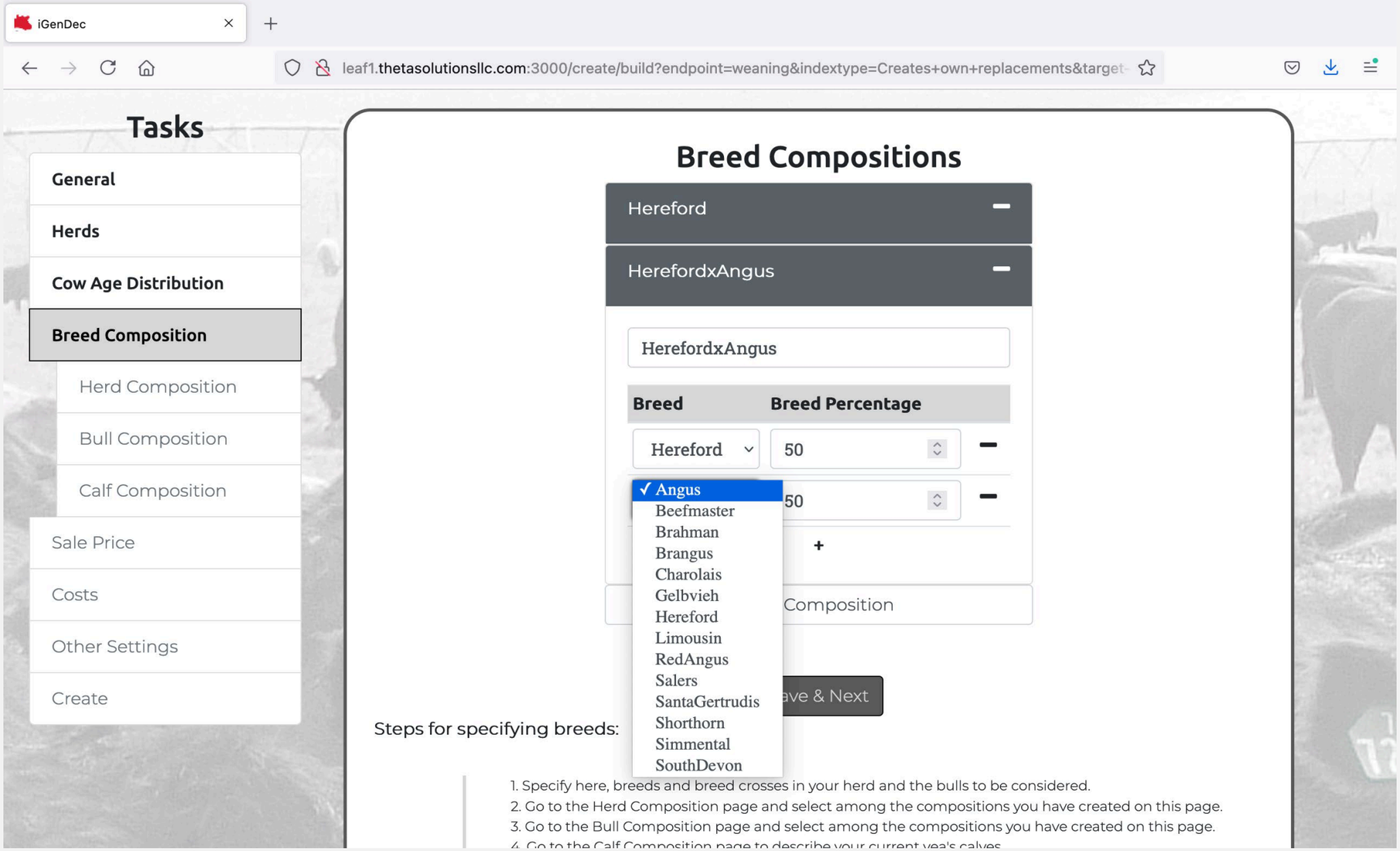




COW AGE DISTRIBUTION



BREEDS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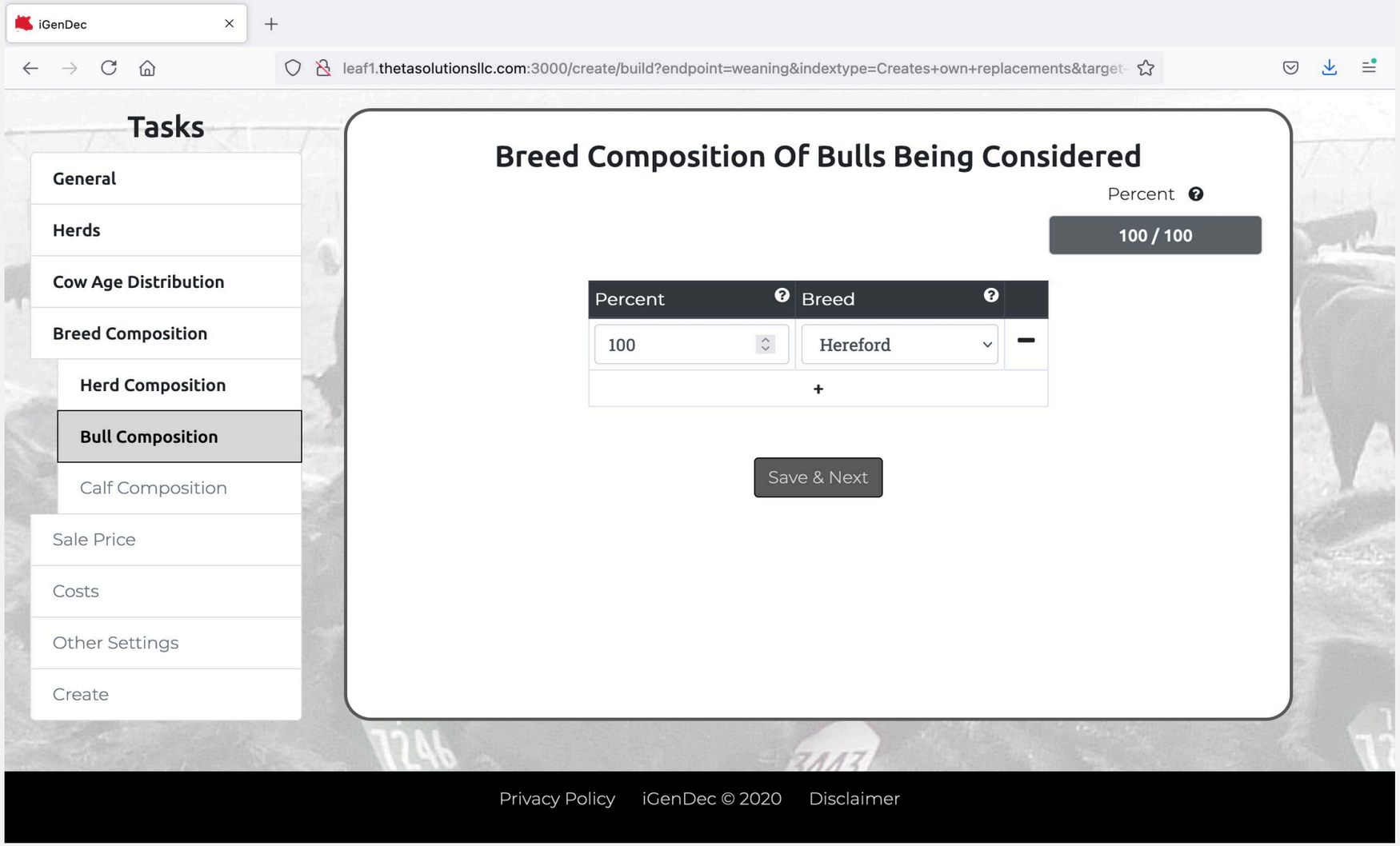
Tasks
General
Herds
Cow Age Distribution
Breed Composition
Herd Composition
Bull Composition
Calf Composition
Sale Price
Costs
Other Settings
Create
Breed Compositions
Hereford
HerefordxAngus
HerefordxAngus
Breed
Breed Percentage
Hereford
50
Angus
Beefmaster
Brahman
Brangus
Charolais
Gelbvieh
Hereford
Limousin
RedAngus
Salers
SantaGertrudis
Shorthorn
Simmental
SouthDevon
50
Composition
ave & Next
Steps for specifying breeds:
1. Specify here, breeds and breed crosses in your herd and the bulls to be considered.
2. Go to the Herd Composition page and select among the compositions you have created on this page.
3. Go to the Bull Composition page and select among the compositions you have created on this page.

BULL BREEDS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Tasks
General
Herds
Cow Age Distribution
Breed Composition
Herd Composition
Bull Composition
Calf Composition
Sale Price
Costs
Other Settings
Create
Breed Composition Of Bulls Being Considered
Percent
100 / 100
Percent
Breed
100
Hereford
+
Save & Next
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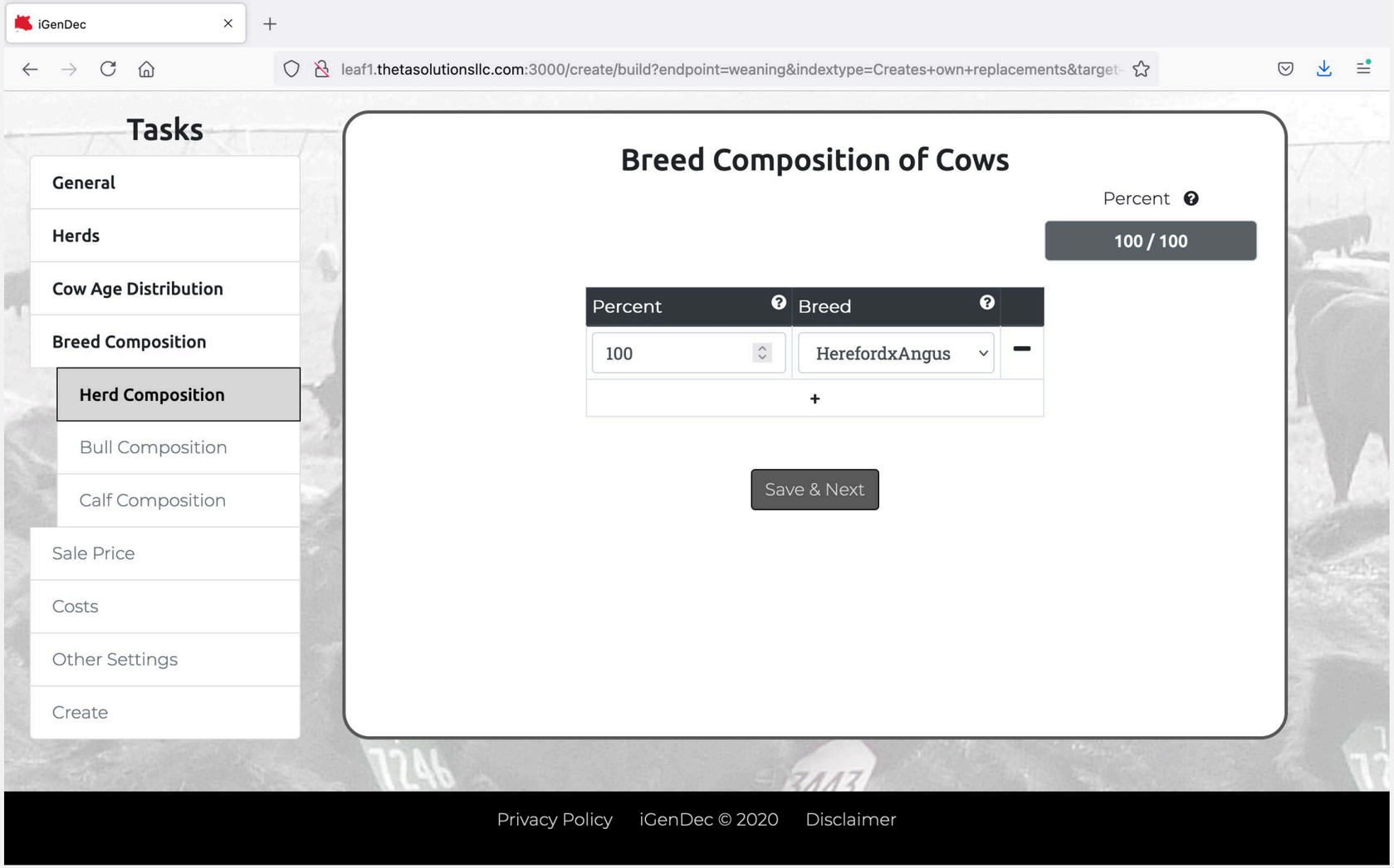
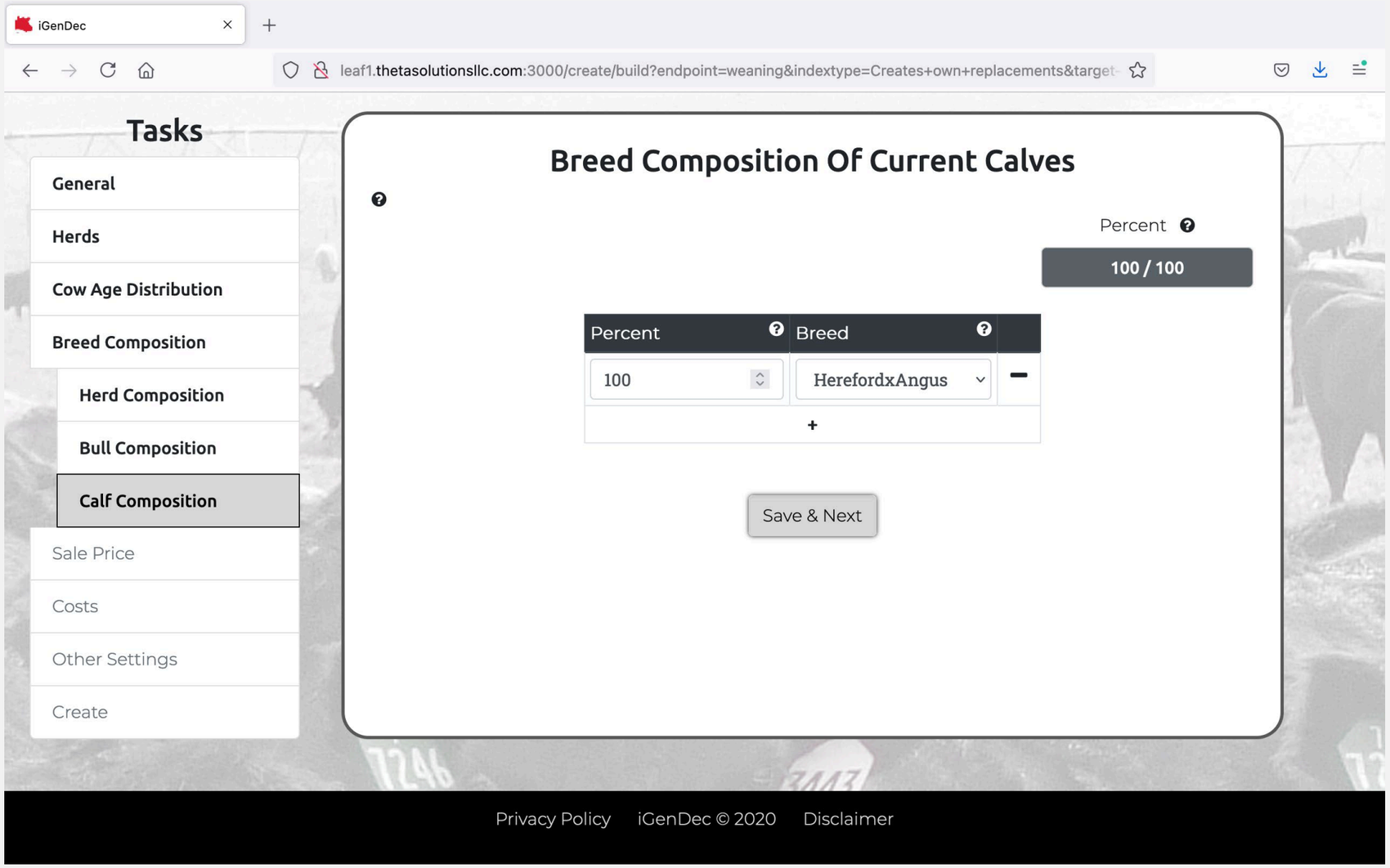
Disclaimer

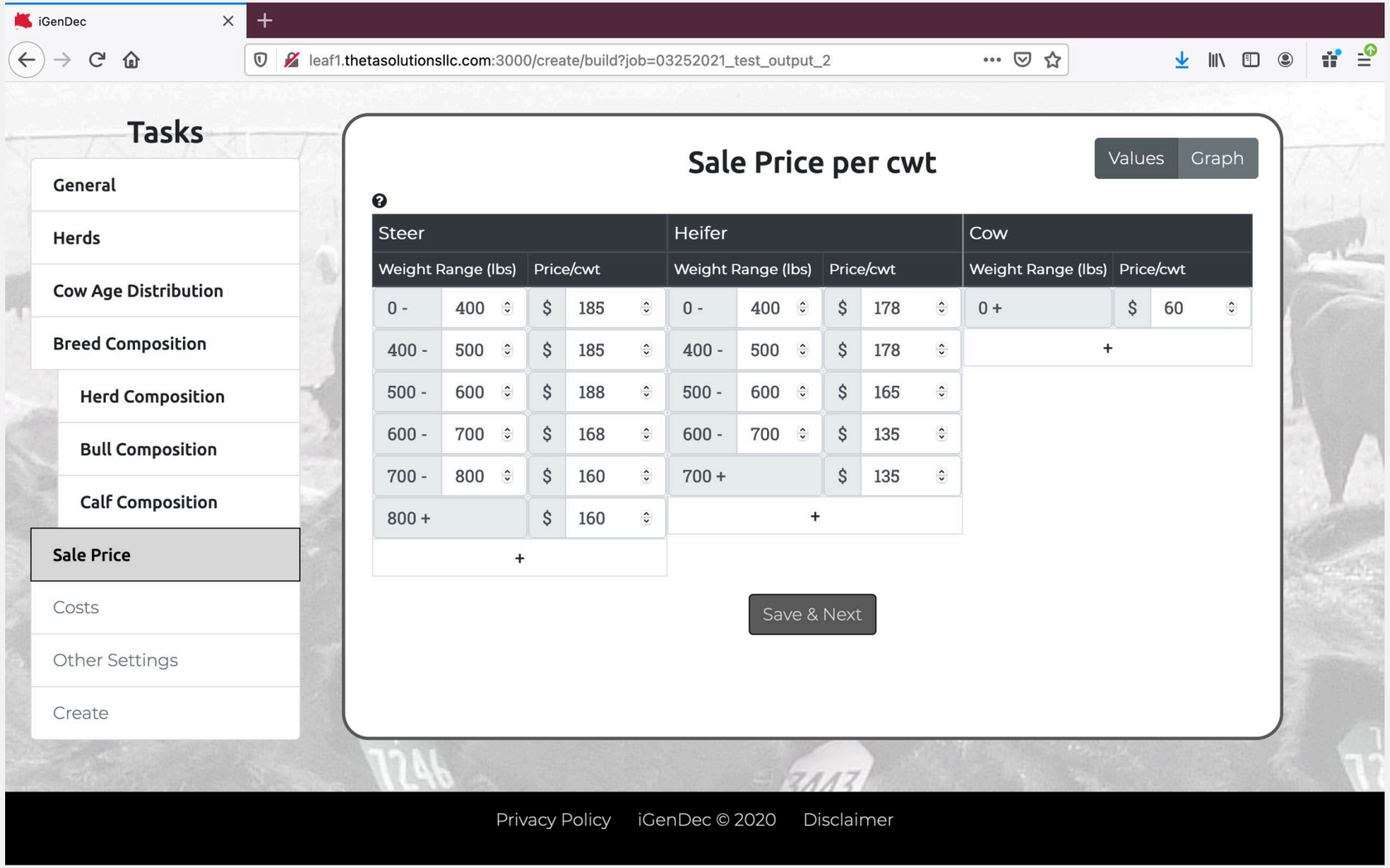
COWHERD BREEDS



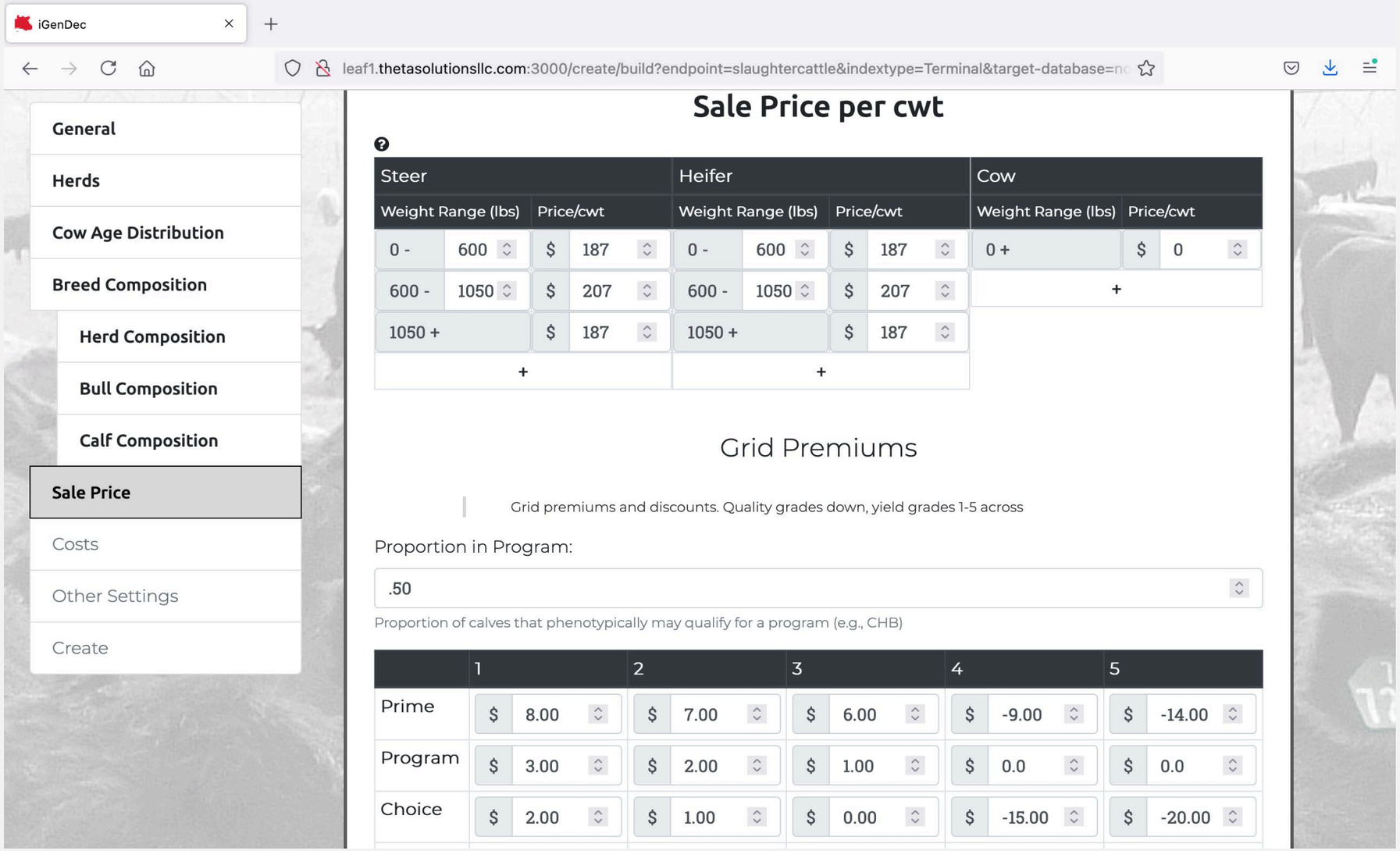
CURRENT CALF CROP BREEDS



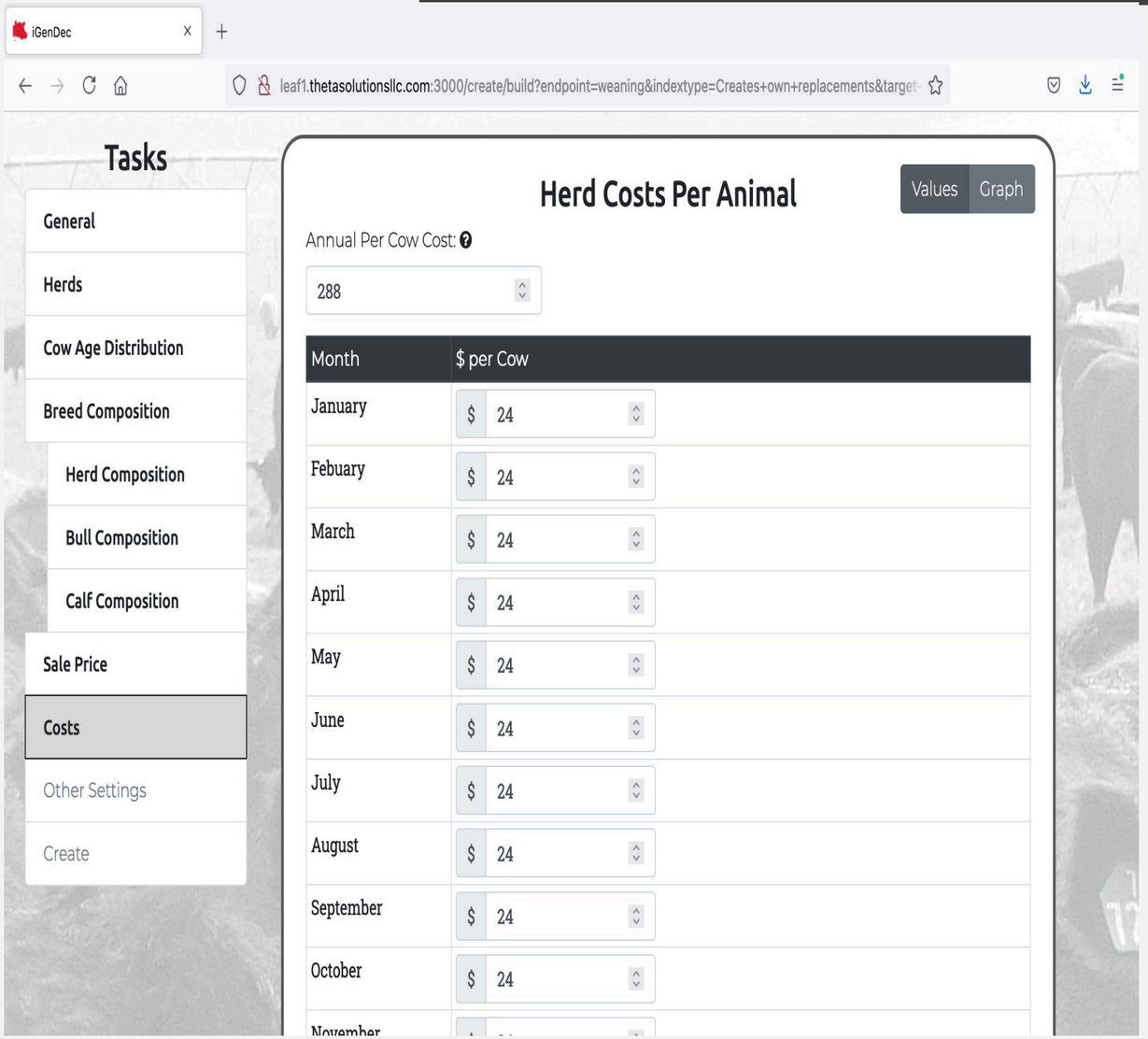
PRICING
WEANING



PRICING
FED CATTLE



COSTS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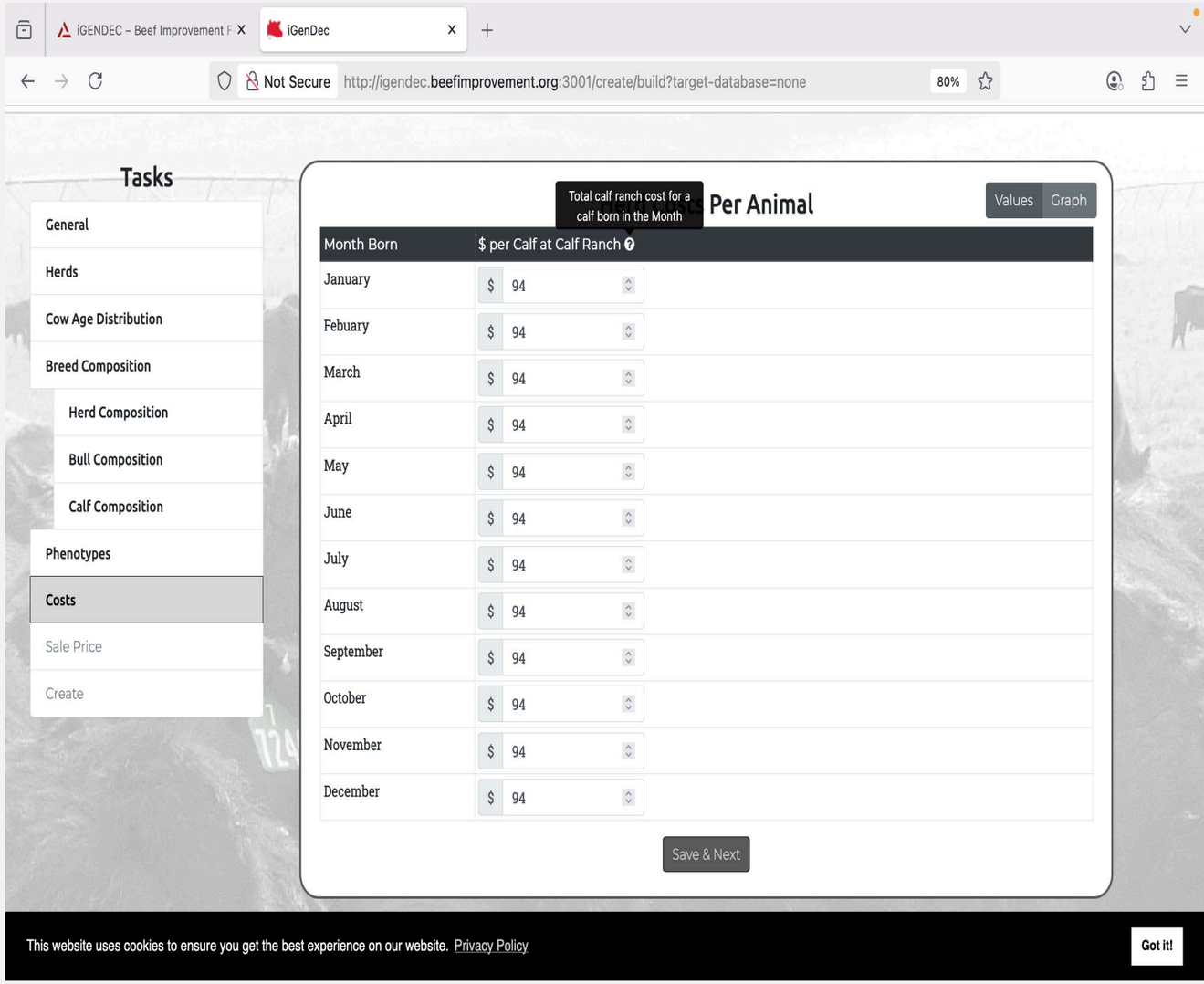
Tasks
General
Herds
Cow Age Distribution
Breed Composition
Herd Composition
Bull Composition
Calf Composition
Sale Price
Costs
Other Settings
Create
Herd Costs Per Animal
Values
Graph
Annual Per Cow Cost:
288
Month
$ per Cow
January $ 24
Febuary $ 24
March $ 24
April $ 24
May $ 24
June $ 24
July $ 24
August $ 24
September $ 24
October $ 24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Tasks
General
Herds
Cow Age Distribution
Breed Composition
Herd Composition
Bull Composition
Calf Composition
Phenotypes
Costs
Sale Price
Create
Total calf ranch cost for a calf born in the Month
Per Animal
Values
Graph
Month Born
$ per Calf at Calf Ranch
January $ 94
Febuary $ 94
March $ 94
April $ 94
May $ 94
June $ 94
July $ 94
August $ 94
September $ 94
October $ 94
November $ 94
December $ 94
Save & Next
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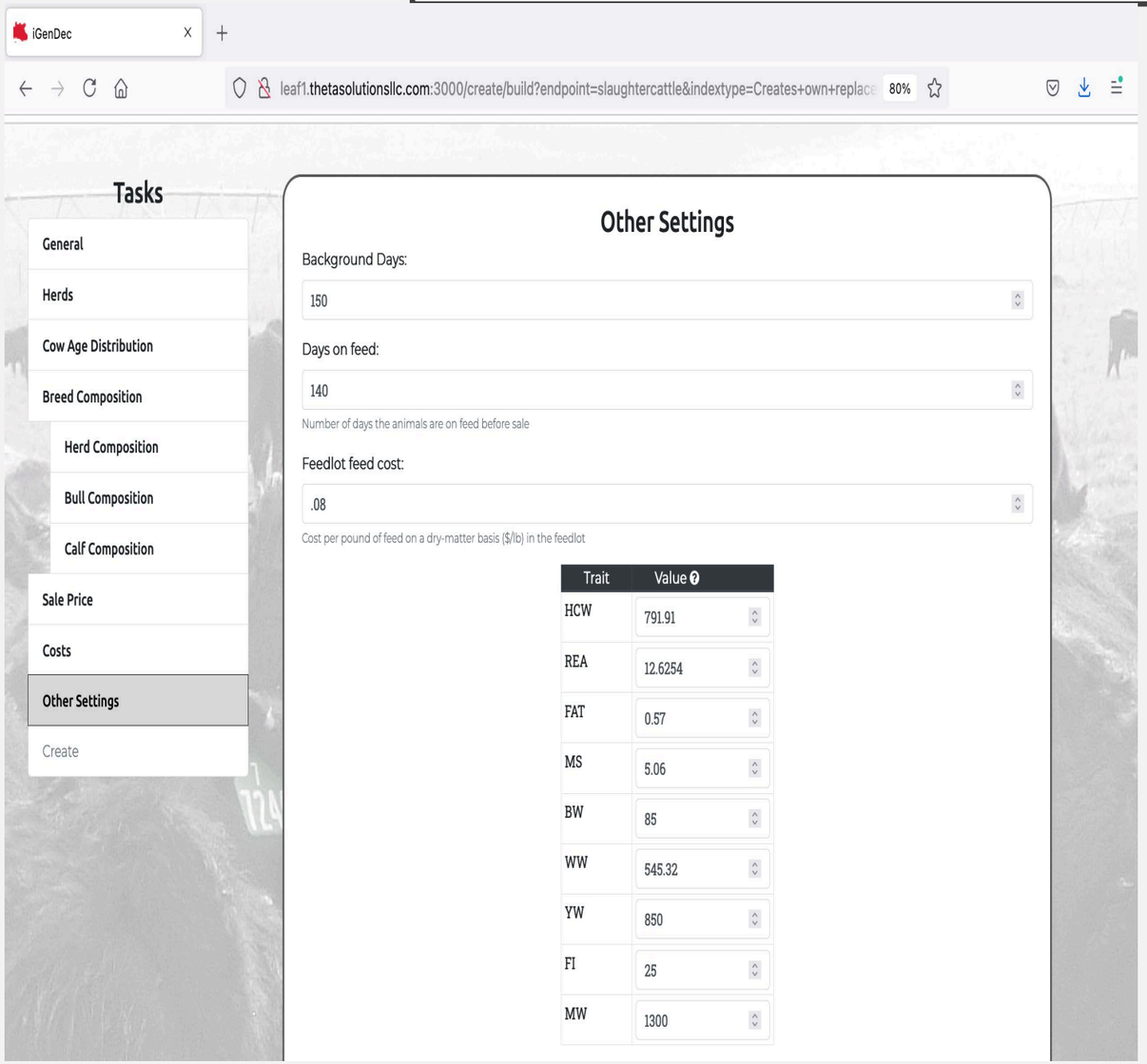
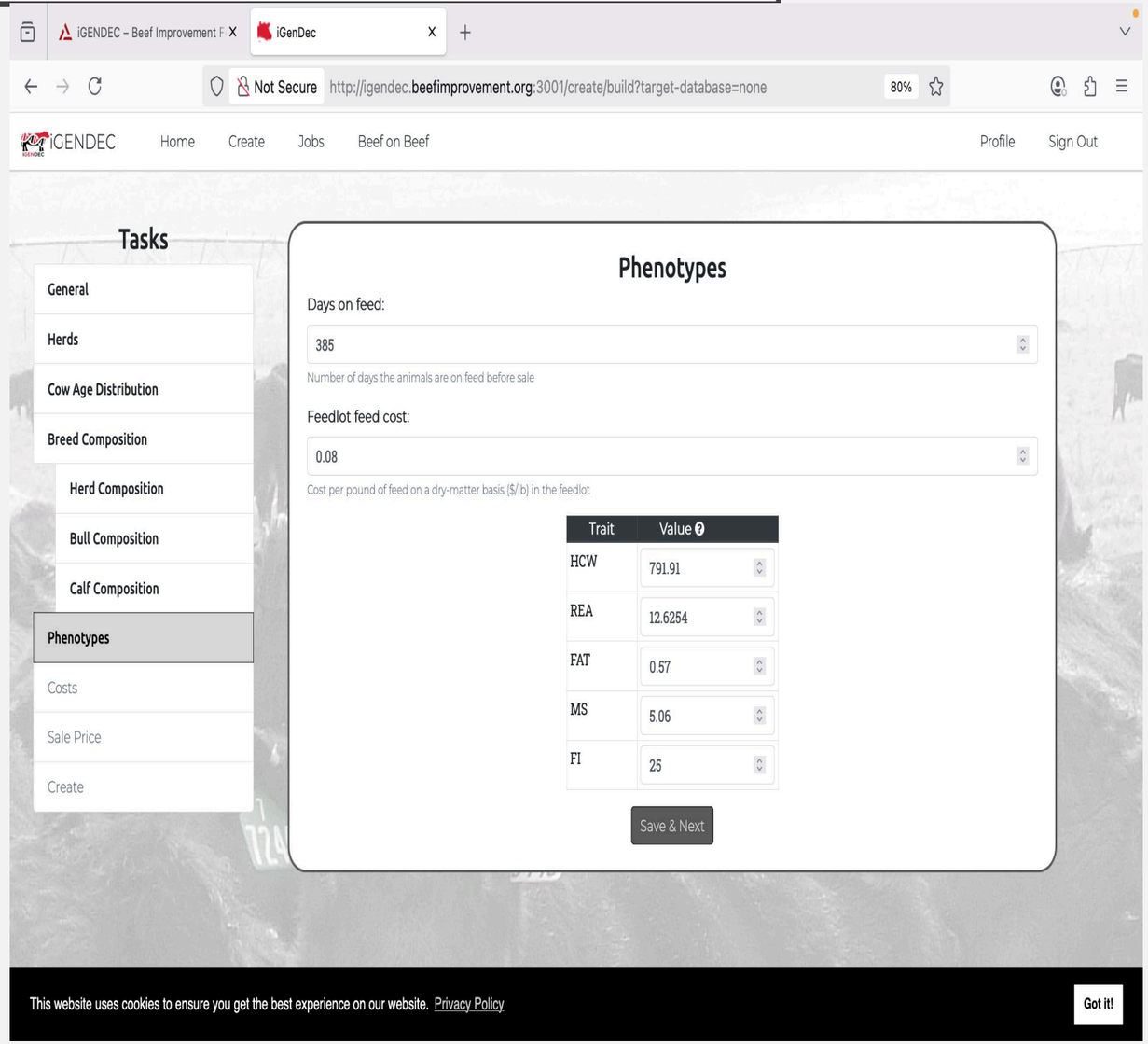
PHENOTYPIC MEANS

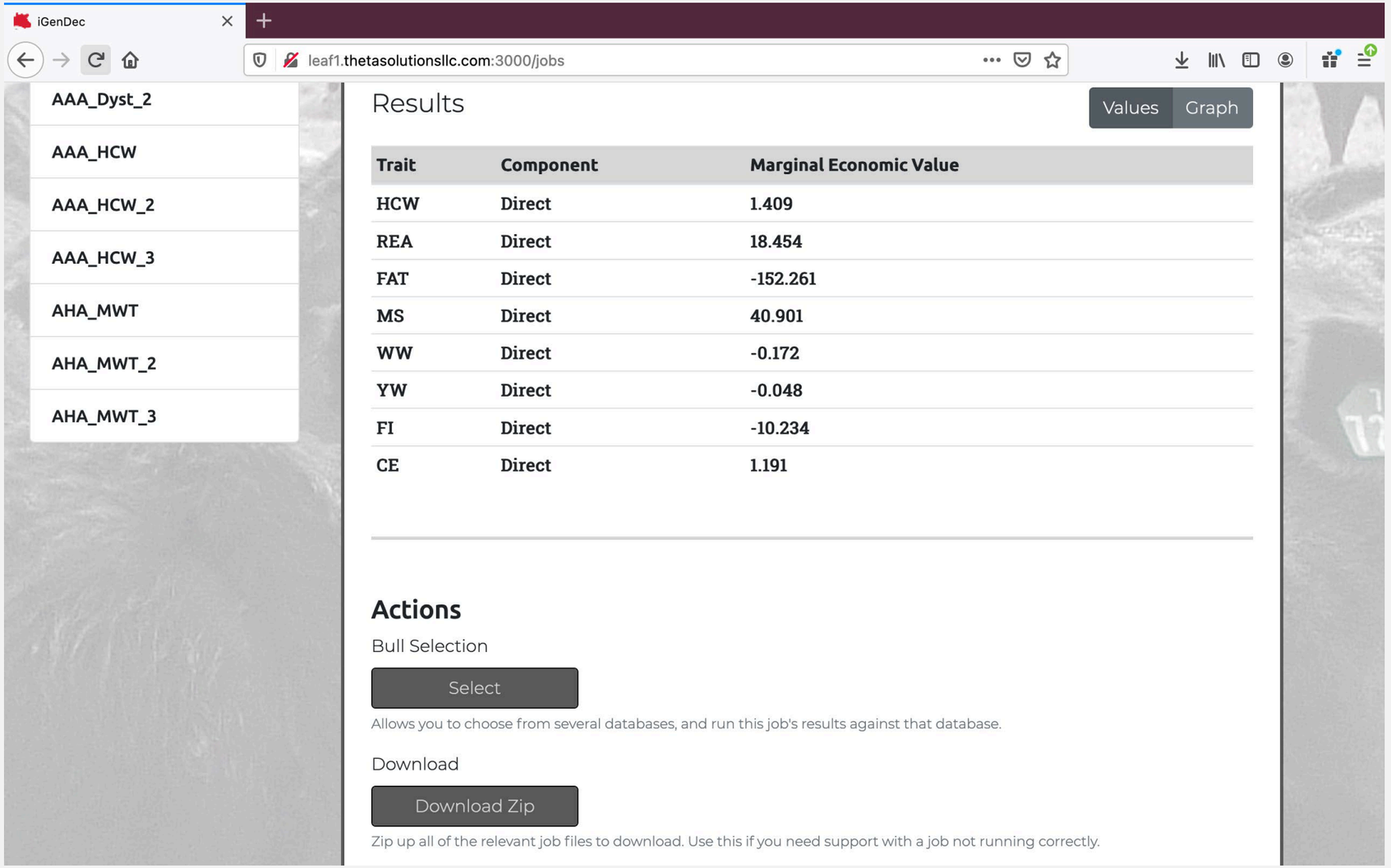




CHOICE OF PARAMETERS

- What economic parameters to use?
  - Future—If you're that good sell the cows and day trade!
  - Current—already outdated when calves are fed and sold
  - Historic– cost/return relationships most important. 5-10 yr averages capture this.
- What phenotypic means to use?
  - Current—This is where you are starting from.

RESULTS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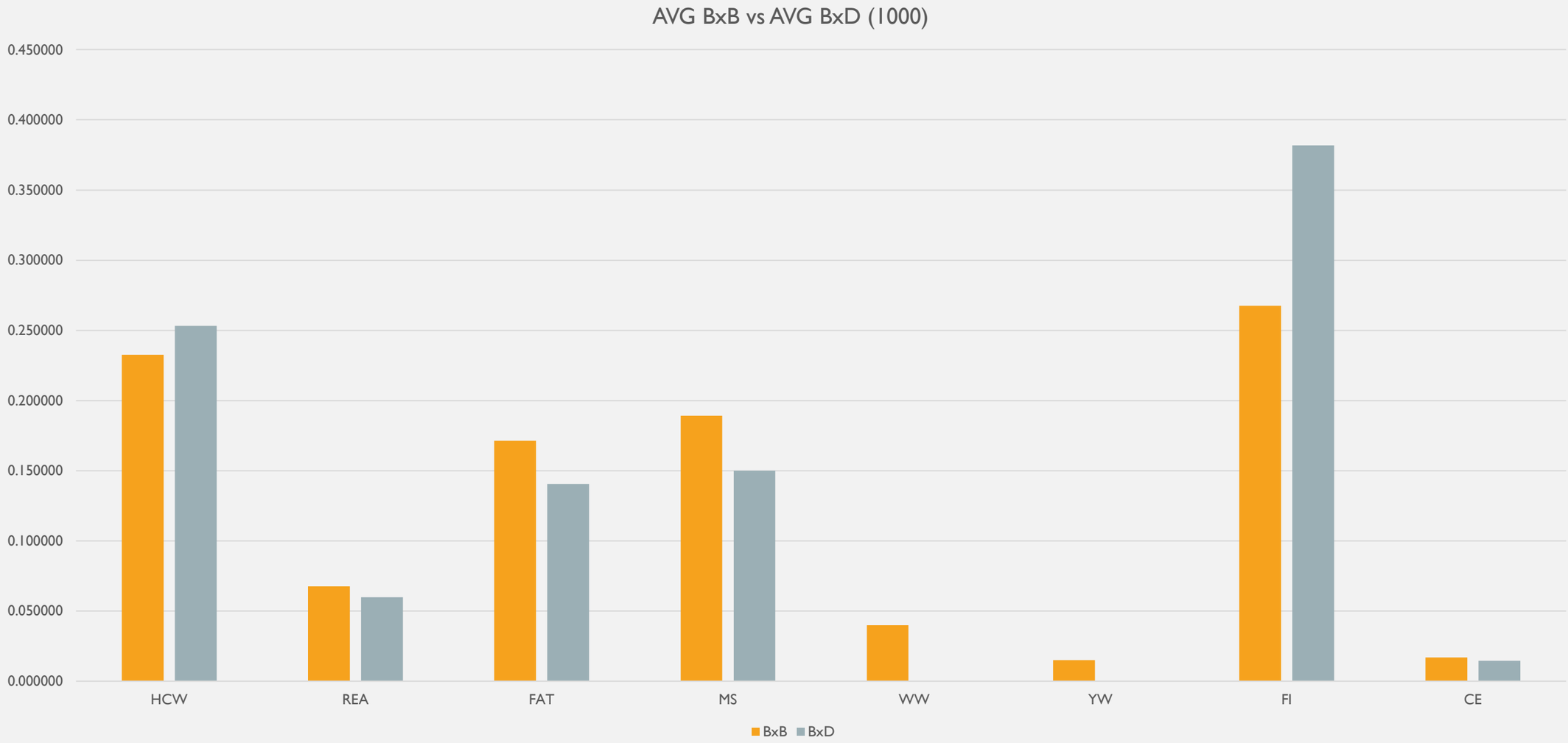
AAA_Dyst_2
AAA_HCW
AAA_HCW_2
AAA_HCW_3
AHA_MWT
AHA_MWT_2
AHA_MWT_3
Results
Values
Graph
Trait
Component
Marginal Economic Value
HCW
Direct
1.409
REA
Direct
18.454
FAT
Direct
-152.261
MS
Direct
40.901
WW
Direct
-0.172
YW
Direct
-0.048
FI
Direct
-10.234
CE
Direct
1.191
Actions
Bull Selection
Select
Allows you to choose from several databases, and run this job's results against that database.
Download
Download Zip
Zip up all of the relevant job files to download. Use this if you need support with a job not running correctly.

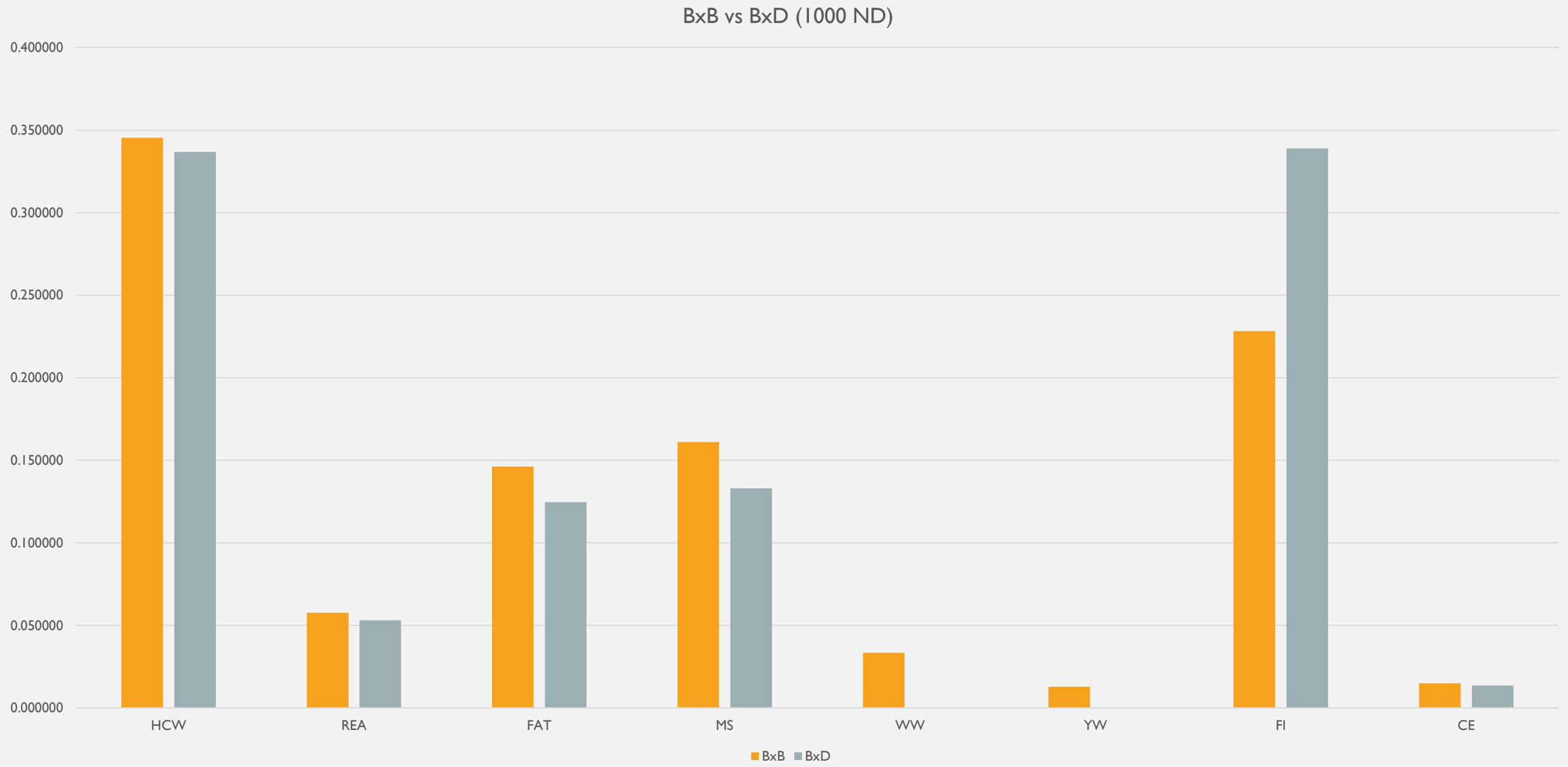
RELATIVE EMPHASIS COMPARISON



MEV—NOT THE SAME AS RELATIVE EMPHASIS!

	BxB	BxD
HCW	0.8959	1.225
REA	22.070	24.600
FAT	-165.016	-169.147
MS	56.939	55.983
WW	-0.295	
YW	-0.058	
FI	-23.577	-42.398
CE	1.673	1.809

NO CARCASS WEIGHT DISCOUNT



MEV

	BxB	BxD
HCW	1.561	1.836
REA	22.074	24.600
FAT	-165.016	-169.147
MS	56.939	55.983
WW	-0.291	
YW	-0.058	
FI	-23.568	-42.398
CE	1.723	1.903

ACCESS

- https://beefimprovement.org/resource-center/igendec/
- Free for extension and teaching
- Fees if used to produce commercially used indexes
  - Producers or other organizations building indexes to use to rank bulls

TEAM

Team Members: Bruce Golden, Larry Kuehn, Warren Snelling, Mark Thallman, Bob Weaber, Scott Newman

USDA-AFRI-CARE Beef Cattle Production System Decision Support Tools to Enable Improved Genetic, Environmental, and Economic Resource Management Survey of Industry Stakeholders; Award Number: 2018-68008-27888