

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

igENDEC – Beef Improvement F

iGenDec

igendec.beefimprovement.org

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igENDEC

Home

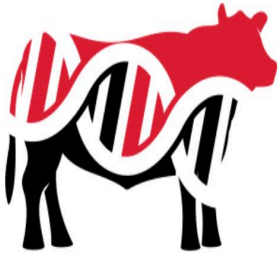
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Beef on Dairy

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BIF iGENDEC IMPLEMENTATION

iGENDEC

This release of iGENDEC is an enhanced version of the original open source iGENDEC project released under the MIT open source license. Sponsored and operated by the Beef Improvement Federation, this BIF iGENDEC implementation is supported by fees collected from subscribers to this service. While virtually all of the people involved in supporting the BIF iGENDEC are volunteers there are still costs involved to provide this service. These nominal fees are primarily used to support the costs of the co-located computer system and system maintenance. For further information about this service please contact mspangler2@unl.edu

To apply to use BIF iGENDEC please click on **Register** in the upper right.

vi1.0.0

Create

Input parameters and run an iGENDEC simulation to build an index

Jobs

View past index construction simulation results

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BIF iGENDEC BEEF ON DAIRY

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vi1.0.0

Create

Input parameters and run an iGENDEC simulation to build an index

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BREEDING OBJECTIVE

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Create A New Index Job

Sale Endpoint:

weaning

Specifies the sale point for calves. This will define what default values you get and how the job is executed.

Index Type:

Creates own replacements

Specifies the type of index to be constructed.

Target Database:

None

Will provide suitable defaults for the chosen database. Leave set as none for general defaults.

Build

Edit An Existing Index Job

Select Job:

03252021_test_output_2

Choose a job to re-run. You can change everything except the sale endpoint of a previous job. To change the sale endpoint a new job must be created.

Job Comment:

Test with targeted databse

Edit

Run

Edit the job's details and then re-run under a different name.

Run this job again without modifying. The result will overwrite the current job. May take a couple of minutes.

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Create A New Index Job

Index Type: Beef on dairy (Carcass)

Target Database:

None

Will provide suitable defaults for the chosen database. Leave set as none for general defaults.

Build

Edit An Existing Index Job

Select Job:

AGA_Example

Choose a job to re-run. You can change everything except the sale endpoint of a previous job. To change the sale endpoint a new job must be created.

Job Comment:

Edit

Run

Edit the job's details and then re-run under a different name.

Run this job again without modifying. The result will overwrite the current job. May take a couple of minutes.

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Got it!

INDEX

iGenDec

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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	?
<input type="checkbox"/>	USREA,D	?
<input type="checkbox"/>	USIMF,D	?
<input type="checkbox"/>	USFAT,D	?
<input type="checkbox"/>	HCW,D	?
<input type="checkbox"/>	REA,D	?
<input type="checkbox"/>	FAT,D	?
<input type="checkbox"/>	MS,D	?
<input type="checkbox"/>	BW,D	?
<input checked="" type="checkbox"/>	WW,D	?
<input checked="" type="checkbox"/>	WW,M	?
<input type="checkbox"/>	YW,D	?
<input type="checkbox"/>	FI,D	?
<input checked="" type="checkbox"/>	MW,D	?
<input type="checkbox"/>	STAY,D	?

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Index Component Selection ?

Use	Component	?
<input type="checkbox"/>	USREA,D	?
<input type="checkbox"/>	USIMF,D	?
<input type="checkbox"/>	USFAT,D	?
<input checked="" type="checkbox"/>	HCW,D	?
<input checked="" type="checkbox"/>	REA,D	?
<input checked="" type="checkbox"/>	FAT,D	?
<input checked="" type="checkbox"/>	MS,D	?
<input type="checkbox"/>	BW,D	?
<input type="checkbox"/>	WW,D	?
<input type="checkbox"/>	WW,M	?
<input type="checkbox"/>	YW,D	?
<input checked="" type="checkbox"/>	FI,D	?
<input type="checkbox"/>	MW,D	?
<input type="checkbox"/>	STAY,D	?
<input type="checkbox"/>	HPD	?
<input checked="" type="checkbox"/>	CE,D	?
<input type="checkbox"/>	CE,M	?

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PHENOTYPIC MEANS

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Cattle Herds

Herd Name	Breeding Start Date	Season Length (days)	Conception Rate ?	Calving Loss Rate ?
Spring	Jun 29	60	.80	.01

Save & Next

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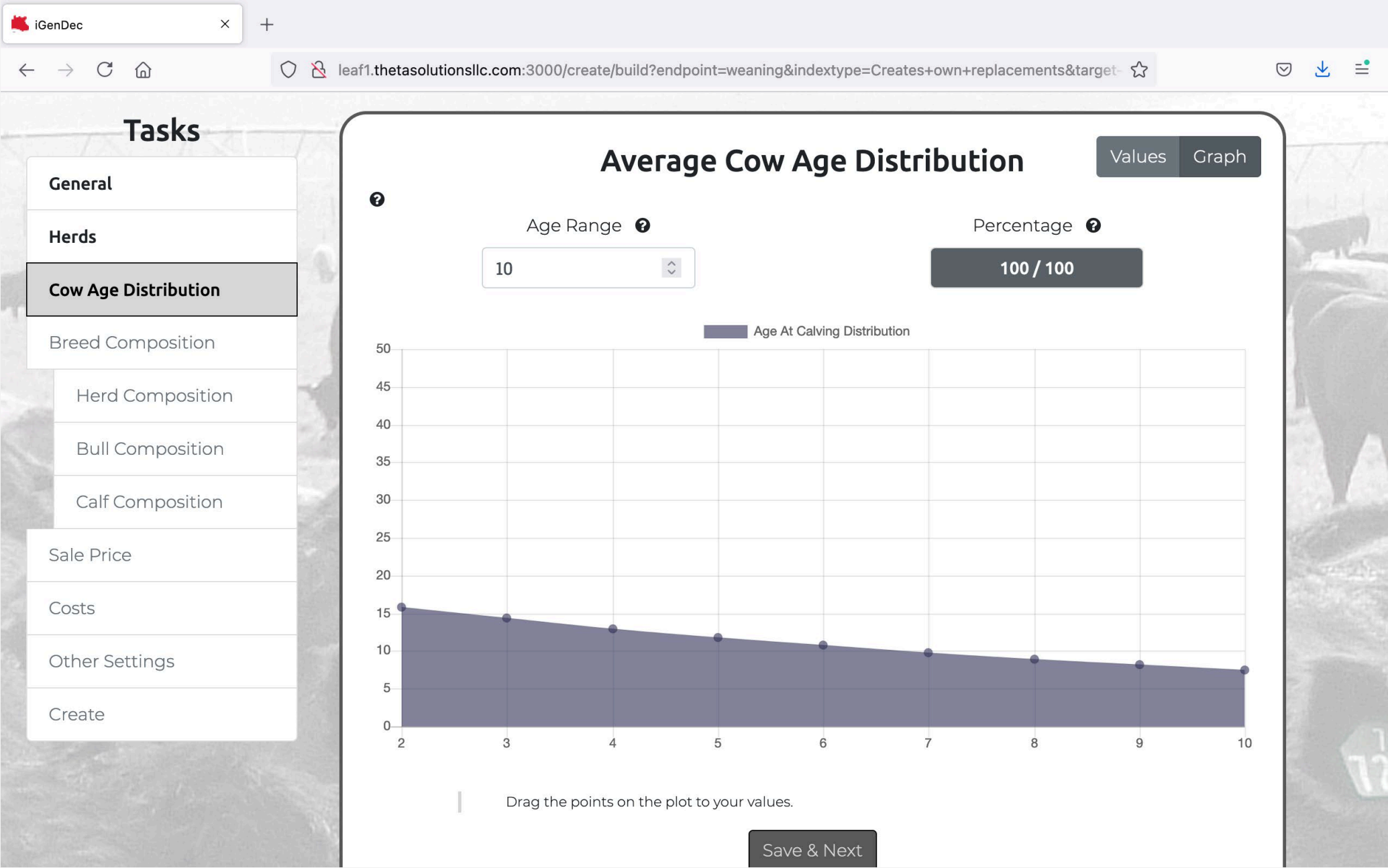
Cattle Herds

NOTE: Conception Rate is conception rate durring the breeding season. For Beef on Dairy it is the conception rate for cows before a culling decision is made.

Herd Name	Breeding Start Date	Season Length (days) ?	Conception Rate ?	Calving Loss Rate ?
Spring	Jan 1	360	.90	.01

Save & Next

COW AGE DISTRIBUTION



BREEDS

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Breed Compositions

Hereford

HerefordxAngus

HerefordxAngus

Breed	Breed Percentage	
Hereford	50	—
✓ Angus	50	—
Beefmaster		
Brahman		
Brangus		+
Charolais		
Gelbvieh		
Hereford		
Limousin		
RedAngus		
Salers		
SantaGertrudis		
Shorthorn		
Simmental		
SouthDevon		

Composition

Save & 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.

4. Go to the Calf Composition page to describe your current year's calves.

BULL BREEDS

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Breed Composition Of Bulls Being Considered

Percent 100 / 100

Percent	Breed	
100	Hereford	-
+		

Save & Next

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COWHERD BREEDS

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Breed Composition of Cows

Percent ?

100 / 100

Percent ?	Breed ?	
100	HerefordxAngus	-
+		

Save & Next

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CURRENT CALF CROP BREEDS

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Breed Composition Of Current Calves

Percent

100

Breed

HerefordxAngus

100 / 100

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PRICING WEANING

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?

Sale Price per cwt

ValuesGraph

Steer				Heifer				Cow			
Weight Range (lbs)		Price/cwt		Weight Range (lbs)		Price/cwt		Weight Range (lbs)		Price/cwt	
0 -	400	\$	185	0 -	400	\$	178	0 +		\$	60
400 -	500	\$	185	400 -	500	\$	178	+			
500 -	600	\$	188	500 -	600	\$	165				
600 -	700	\$	168	600 -	700	\$	135				
700 -	800	\$	160	700 +		\$	135				
800 +		\$	160	+							
+											

Save & Next

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PRICING FED CATTLE

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?

Sale Price per cwt

Steer				Heifer				Cow			
Weight Range (lbs)		Price/cwt		Weight Range (lbs)		Price/cwt		Weight Range (lbs)		Price/cwt	
0 -	600	\$	187	0 -	600	\$	187	0 +	\$	0	
600 -	1050	\$	207	600 -	1050	\$	207	+			
1050 +		\$	187	1050 +		\$	187				
+				+							

Grid Premiums

Grid premiums and discounts. Quality grades down, yield grades 1-5 across

Proportion in Program:

.50

Proportion of calves that phenotypically may qualify for a program (e.g., CHB)

	1	2	3	4	5
Prime	\$ 8.00	\$ 7.00	\$ 6.00	\$ -9.00	\$ -14.00
Program	\$ 3.00	\$ 2.00	\$ 1.00	\$ 0.0	\$ 0.0
Choice	\$ 2.00	\$ 1.00	\$ 0.00	\$ -15.00	\$ -20.00

COSTS

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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
November	\$ 24

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Total calf ranch cost for a calf born in the Month

Per Animal

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

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PHENOTYPIC MEANS

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Other Settings

Background Days:

150

Days on feed:

140

Number of days the animals are on feed before sale

Feedlot feed cost:

.08

Cost per pound of feed on a dry-matter basis (\$/lb) in the feedlot

Trait	Value ?
HCW	791.91
REA	12.6254
FAT	0.57
MS	5.06
BW	85
WW	545.32
YW	850
FI	25
MW	1300

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Phenotypes

Days on feed:

385

Number of days the animals are on feed before sale

Feedlot feed cost:

0.08

Cost per pound of feed on a dry-matter basis (\$/lb) in the feedlot

Trait	Value ?
HCW	791.91
REA	12.6254
FAT	0.57
MS	5.06
FI	25

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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

AAA_Dyst_2

AAA_HCW

AAA_HCW_2

AAA_HCW_3

AHA_MWT

AHA_MWT_2

AHA_MWT_3

Results

ValuesGraph

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.

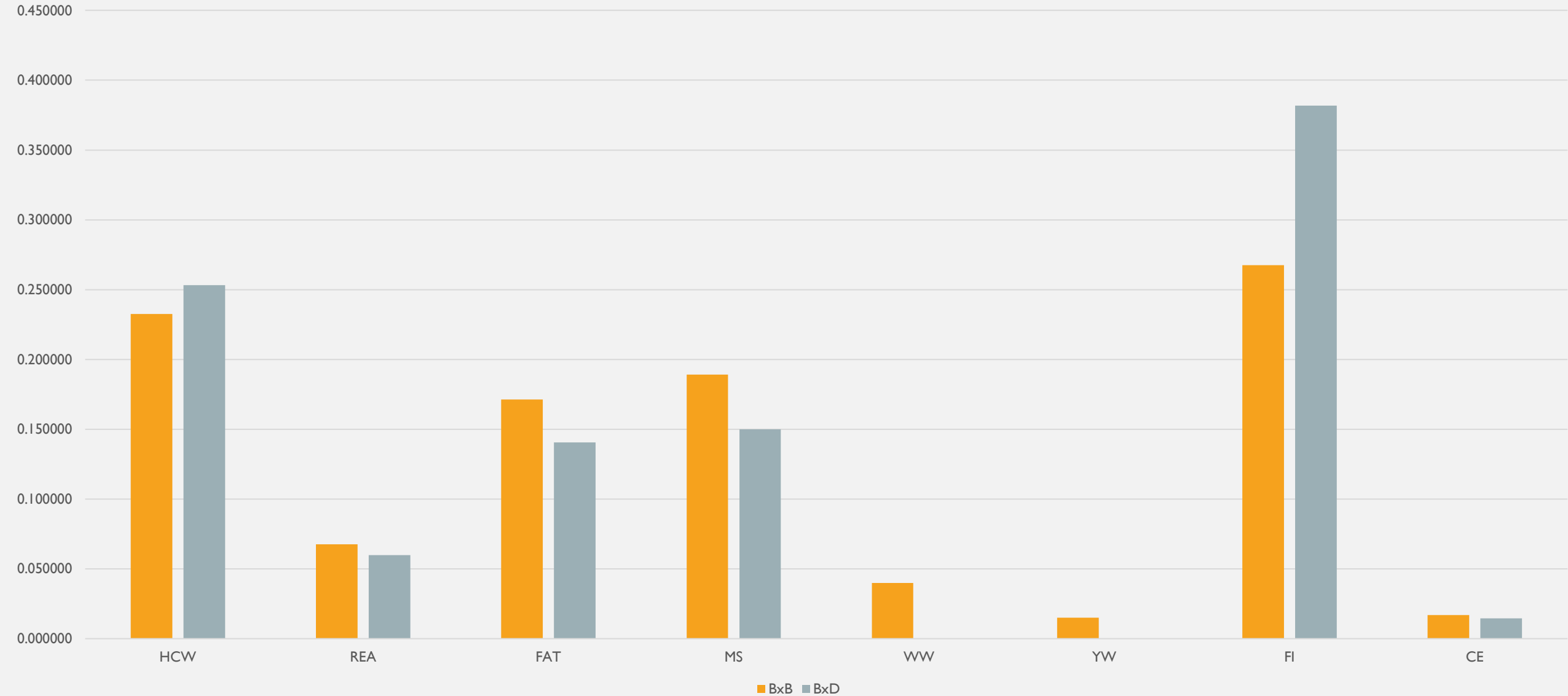
Download

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

AVG BxB vs AVG BxD (1000)

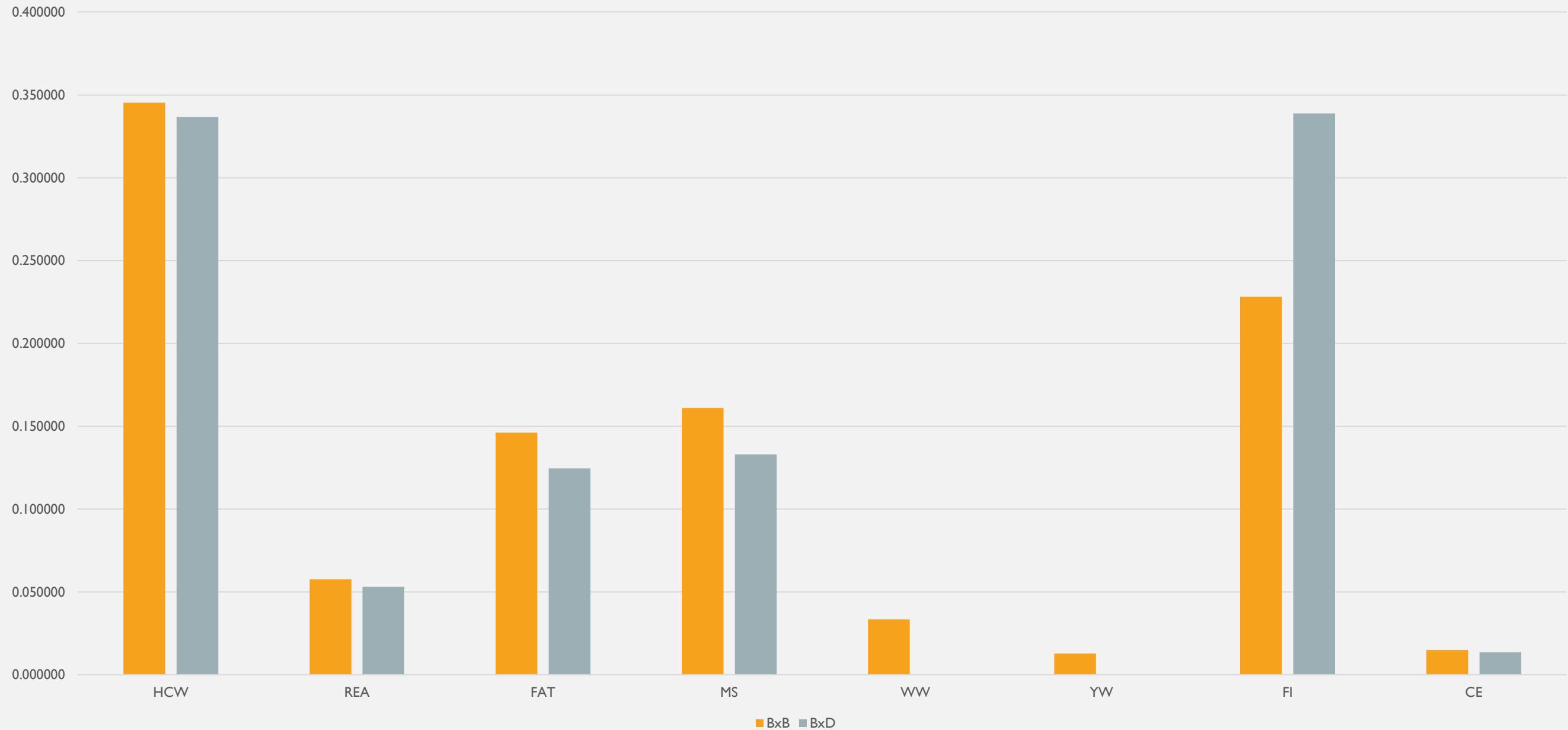


MEV—NOT THE SAME AS RELATIVE
EMPHASIS!

	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

BxB vs BxD (1000 ND)



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