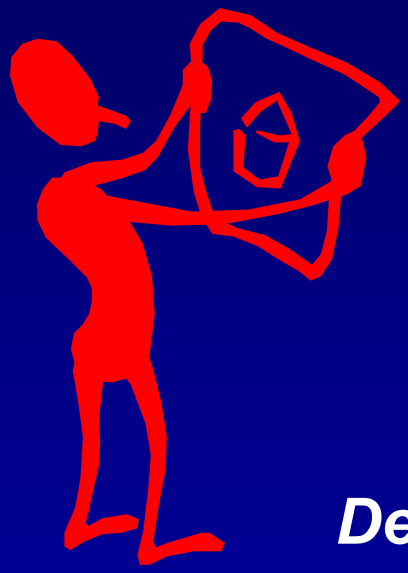
Utilizing Performance Data for Livestock Selection



Developed by:

Celina Johnson

University of Florida

General Definitions

- **Performance testing** - The systematic collection of comparative production information
- **EPD** - expected progeny difference
- **Contemporary group** - group of animals that are of same breed, age, sex and have been raised in the same management group.

Johnson, 1997

What is Performance Data?

- Two General Categories

- Animal's Individual Performance
- Genetic Predictors - EPD's

Johnson, 1997

Individual Performance

- Adjusted Weights
  - Adjusted for environmental factors.
  - Age of animal, age of dam, sex

Examples:

Adj. 21 day litter weight - swine

Adj. Fleece weight - sheep

Adj. 205 day weight - cattle

Johnson, 1997

Individual Performance

- **Ratios**
  - **The percent above or below the average of the contemporary group.**

Example:

Weaning Wt. 114 vs. 98

Johnson, 1997

Expected Progeny Differences

- Not cure all - but most accurate genetic predictor available
- Estimates of genetic value that combine pedigree information, individual performance and progeny information into one numerical value.
- Can only be used to compare animal's within a breed or flock (now have across breed EPDs in cattle)

Johnson, 1997

Most Common EPDs - Cattle

- Birth Weight
  - measured in pounds
  - dystocia or calving problems
- Weaning Weight
  - measured in pounds
  - growth trait
- Yearling Weight
  - measured in pounds
  - growth trait

Johnson, 1997

Most Common EPDs - Cattle

- Milk
  - measured in pounds of calf weaning weight
  - milk production
- Total maternal
  - calculated by taking half of the weaning and all of the milk EPDs
  - measure of females productivity

Johnson, 1997

Examples

Use the same two bulls throughout the cattle examples.

EPD:	BW	WW	YW	M	TM
Buford	-1.0	+20.0	+30.0	+15.0	+25.0
Cletus	+5.0	+35.0	+60.0	+ 5.0	+22.5

Johnson, 1997

EPD:	BW	WW	YW	M	TM
Buford	-1.0	+20.0	+30.0	+15.0	+25.0
Cletus	+5.0	+35.0	+60.0	+ 5.0	+22.5

Scenario:

Select these bulls for use on first calf heifers with limited labor available.

Buford should sire calves that weigh six pounds less *on the average*, when compared to Cletus.

Johnson, 1997

EPD:	BW	WW	YW	M	TM
Buford	-1.0	+20.0	+30.0	+15.0	+25.0
Cletus	+5.0	+35.0	+60.0	+ 5.0	+22.5

Scenario:

Select these bulls for producing calves that will be fed in a feedyard through retained ownership.

Cletus should sire calves that weigh 30 pounds more *on the average*, when compared to Buford.

Johnson, 1997

EPD:	BW	WW	YW	M	TM
Buford	-1.0	+20.0	+30.0	+15.0	+25.0
Cletus	+5.0	+35.0	+60.0	+ 5.0	+22.5

Scenario:

Select these bulls for producing replacement heifers under abundant feed conditions.

Buford should sire daughters that wean calves weighing 10 pounds more *on the average*, when compared to Buford, due to their milking ability.

Johnson, 1997

Polled Hereford Bulls

The selected bull will be used on a set of mature Angus cows. Limited labor is available during calving. The male offspring will be fed out in a commercial feedyard, heifers kept as replacements.

	BEPD	WEPD	YEPD	MEPD	TMAT
1	7.8	38.5	68.7	-3.5	15.8
2	1.0	24.1	41.9	4.0	16.1
3	4.7	38.3	46.0	8.0	27.1
4	10.4	37.9	75.5	-0.7	18.3
Ave.	3.7	25.0	40.0	5.0	17.5

Johnson, 1997

Most Common EPDs - Hogs

- 21 day litter weight (LWT)
  - measured in pounds
  - similar to weaning weight
- Number Born Alive (NBA)
  - measured in number of piglets
  - reproductive performance

Johnson, 1997

Most Common EPDs - Hogs

- Backfat (BF)
  - measured in inches
  - leaness and efficiency
- Days to 230 (DAYS)
  - measured in days
  - growth and efficiency

Johnson, 1997

Other Predictors in Swine

- Indices
  - Terminal Sire Index (TSI)
    - Combines DAYS and BF
    - Indicates value on a terminal basis
  - Sow Productivity Index (SPI)
    - Factors include maternal traits and parity
    - Generally of the dam of the animal you are evaluating
  - Maternal Line Index (MLI)
  - Maternal Sire Index (MSI)

Johnson, 1997

Examples

Use the same two boars throughout the swine examples.

	SPI	TSI	NBA	LWT	Days	BF
Hams	115	98	+0.9	+8.4	+1.0	+0.05
Bacon	99	117	-0.5	+2.0	-3.5	-0.08

Johnson, 1997

	SPI	TSI	NBA	LWT	Days	BF
Hams	115	98	+0.9	+8.4	+1.0	+0.05
Bacon	99	117	-0.5	+2.0	-3.5	-0.08

Scenario:

Select these boars for producing maternally oriented replacement gilts.

Hams should produce more maternally oriented gilts due to advantages in SPI, NBA and LWT

Johnson, 1997

	SPI	TSI	NBA	LWT	Days	BF
Hams	115	98	+0.9	+8.4	+1.0	+0.05
Bacon	99	117	-0.5	+2.0	-3.5	-0.08

Scenario:

Select these boars for producing terminal offspring in a farrow to finish operation.

Bacon is stronger in the terminal sire categories, TSI, Days and BF.

Johnson, 1997

Yorkshire Boars

These Yorkshire boars will be mated to elite Yorkshire gilts to produce foundation females.

	NBA EPD	LWT EPD	MLI	Dam's SPI
1	0.91	8.4	132.8	119.8
2	0.12	0.3	92.2	97.8
3	0.25	-3.2	94.7	99.8
4	0.30	6.3	124.2	110.4

Johnson, 1997

Sheep Performance Data

- Actual Performance
  - Birth/Rearing
    - S/S - born single, raised single
    - Tw/S - born twin, raised single
  - Actual weights
    - Adjusted for 60, 90, 120 days

Johnson, 1997

Sheep Performance Data

- Flock EPDs (FEPD)
  - Can only be applied to an individual flock - not across flocks
  - Suffolk breed is the only one to have breed wide EPDs
- Maternal traits
  - No. Lambs Born
    - Units of lamb per lambing
  - Lbs. Lamb Weaned
    - Units of pounds of lambs weaned

Johnson, 1997

Sheep Performance Data

- Growth Traits
  - 60 day weight
    - similar to weaning weights
  - 90 day weight
  - 120 day weight
    - similar to yearling weights
- Wool Traits
  - Grease Weight
    - Pounds of grease fleece weight

Johnson, 1997

Examples

EPD:	Lambs Born	Lbs. Wean	60d Wt.	120d Wt.
Dumb	-0.15	-2.0	-0.15	-0.95
Dumber	+0.20	+3.5	+1.00	+1.50

Dumber should producer more pounds of lamb that weigh more through all phases of growth.

Johnson, 1997

Dorset Rams

Rank these rams as potential stud rams for a purebred Dorset flock. Progeny will be marketed for both purebred and commercial uses.

	Birth Type	Lbs. Wean	60 day Wt.	120 day Wt.
1	2	2	.95	1.2
2	2	2	1.05	1.15
3	2	1.1	-0.05	0.90
4	2	3.5	1.25	1.5

Johnson, 1997