Selection Procedures for Meat Goat Breeding Programs

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Credits and Thanks to
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Show!

Hobby!

Seedstock!

Meat Production!

Brush Control!

Goat breeders have different goals. What are yours?

One Size Does Not Fit All!

Animal Selection

Visual Appraisal (Conformation)

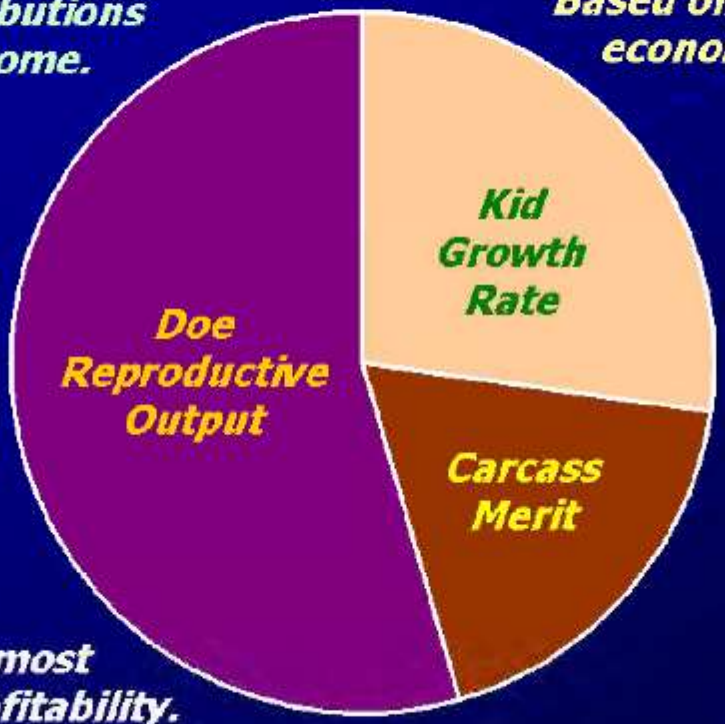
Pedigree (Honors)

Performance (Data)

Relative Economic Value of Traits in a Commercial Meat Goat Herd

Estimated contributions to enterprise income.

Based on beef industry economic estimates.



Reproduction is most influential to profitability.

The buck is the most important individual in the meat goat breeding herd.

One year's sire selection = 50% genetics after one generation.

Sire choices = 87.5% of herd genetics after 3 generations.

Central Buck Performance Test Station

- ☑ Genetic Evaluation of Sire Prospects
- ☑ Central Location
  - ☑ Langston University at Langston, Ok.
  - ☑ Maryland Extension Service
  - ☑ Kerr Foundation at Poteau, Ok.
- ☑ Common Environment
- ☑ Who Is the winner?

Buck Performance Tests

+ Particularly useful genetic and marketing tool for small breeders (value-added).

- May not reflect on-farm production environment (consider lack of stocker/feeder segment).

On-Farm Performance Testing

On-Farm Performance Testing and Genetic Evaluation

Beef Cattle: 205-day Adjusted Weight

Dairy Goats: 305-day Milk Yield

Meat Goats: ???

Standardized 90-day weaning weights & ratios

Facilitates on-farm performance testing for within-herd genetic management.

Added value to breeding stock sales.

90-DAY Standardized Weaning Weight

Standardized Wt =

((Weaning Wt - Birth Wt) / Wean Age) x 90 + Birth Wt

56 lbs – 6 lbs / 100 days =.50

.5 x 90 = 45 lbs add 6 lbs – 51 lbs

WEANING WEIGHT RATIO

(Individual weight / Group weight)
X 100

50 lbs / 40 lbs x 100 = 120

TSU Doeling Weaning Records

KID ID	DAM	SIRE	WWT
5018	427	251	52.3
5044	261	251	48.5
5173	411	251	34.7

TSU Doeling Weaning Records

KID ID	DAM	SIRE	Litter Type	BWT	WWT	AGE	ADG	Dam ADJ	Litter ADJ	90-d WWT	WWT Ratio
5018	427	251	1-1	10.4	52.3	107	0.39	1	1	45.6	108
5044	261	251	3-2	6.0	48.5	105	0.41	1.09	1.23	56.9	135
5173	411	251	2-2	6.5	34.7	82	0.34	1	1.18	44.1	105

Weaning Traits of Kiko Sires (2004-06)

Sire	Kids	90-d Wt	Ratio
447	*39*	*41.3*	*97*
448	*35*	*47.5*	*110*
456	**23**	**42.7**	**101**
459	**29**	**41.4**	**98**
468	**20**	**36.3**	**102**
470	**17**	**43.9**	**108**
471	**15**	**32.1**	**89**

OSU Kid Record Software

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Tag Number	Note	Sex (M/F)	Birth Date	Color	Dam	Sire	Weaning Date	Weaning Group	1st. Lac. (Y/N)	Birth Number	Birth Weight	Wean Wt	*Weaning Age*	Adjusted Weaning Wt.	Index
														#DIV/0!	#DIV/0!

Tag Number	Note	Sex (M/F)	Birth Date	Color	Dam	Sire	Weaning Date	Weaning Group	1st. Lac. (Y/N)	Birth Number	Birth Weight	Wean Wt	*Weaning Age*	Adjusted Weaning Wt.	Index
Z01	NZ	F	1/6/2010	Blk Roan	8480	IH	4/12/2010	1	Y	1	5.7	*32*	96	35.5	90
Z02	NZ	F	1/6/2010	Black	717	IH	4/12/2010	1	N	2	5.2	*29.6*	96	34.9	89
Z03	NZ	M	1/6/2010	Brown	717	IH	4/12/2010	1	N	2	5.7	*32.6*	96	35.5	90
Z04	NZ	F	1/7/2010	Blk & Wht	T32	JF			N	2	3.7		-40185	3.7	#N/A
Z05	NZ	F	1/7/2010	Blk & Brn	T32	JF	4/12/2010	1	N	2	4.1	*26.2*	95	31.3	79
Z06	NZ	M	1/8/2010	Black	R06	IH	4/12/2010	1	N	1	8.8	*45.8*	94	44.2	112
Z07	NZ	M	1/9/2010	Brn	712	IH			N	2			-40187		#N/A
Z08	NZ	F	1/9/2010	Light w/ pts	712	IH	4/12/2010	1	N	2	8.4	*35.6*	93	44.0	112
Z09	NZ	F	1/9/2010	Light spots	753	IH	4/12/2010	1	N	1	8.2	*45.4*	93	47.8	121
Z10	PB	F	1/9/2010	White	484	IH	4/12/2010	1	N	1	8.2	*32.1*	93	33.6	86
Z11	PB	F	1/11/2010	Tan	485	IH	4/12/2010	1	N	2	6.8	*32.8*	91	40.2	102
Z12	PB	M	1/11/2010	Lt. Brn	485	IH	4/12/2010	1	N	2	8.2	*41.8*	91	47.4	120
Z13	NZ	F	1/11/2010	Red & Wht	45	IH	4/12/2010	1	N	2	7.2	38.6	91	47.5	121
Z14	NZ	F	1/11/2010	Gray	45	IH	4/12/2010	1	N	2	7.9	42.4	91	52.2	133
Z15	NZ	M	1/11/2010	Tan	59	IH	4/12/2010	1	N	2	8.4	33.2	91	37.3	95
Z16	NZ	F	1/11/2010	Brn & Wht	59	IH	4/12/2010	1	N	2	8.1	27.8	91	33.4	85
Z17	NZ	F	1/12/2010	Calico	P20	IH	4/12/2010	1	N	1	8.7	35.4	90	38.1	97
Z18	PB	M	1/13/2010	Blk w/ wht	255	JF	4/12/2010	1	Y	1	7.8	41	89	44.7	114
Z19	NZ	F	1/13/2010	Blk WF	109	IH	4/12/2010	1	N	2	5.8	31.2	89	39.1	99
Z20	NZ	F	1/13/2010	Brn WF	109	IH	4/12/2010	1	N	2	5.2	32.4	89	40.9	104
Z21	NZ	M	1/13/2010	Brn w pts	723	IH	4/12/2010	1	N	2	6.4	32.6	89	37.7	96
Z22	NZ	M	1/13/2010	Blk WF	723	IH	4/12/2010	1	N	2	6.2	27.4	89	31.5	80
Z23	NZ	M	1/13/2010	gold & wht	48	IH	4/12/2010	1	N	2	6.9	30.8	89	35.4	90
Z24	NZ	M	1/13/2010	red	48	IH	4/12/2010	1	N	2	7.7	32.4	89	37.2	94

Doe herd reproductive rate is major determinant of income in commercial meat goat operations.

Weaning Traits of Boer Does (3 Matings)

Dam ID	Litter Size, n	Litter Wt, lbs
220	2.33	100.27
217	2.00	90.93
Herd Avg	*1.48*	*58.00*
Boer Avg	*1.19*	*47.57*
247	1.00	35.48
207	1.00	34.20

Sometimes the Cheapest is the Most Expensive!

- Buying replacements from the sale barn is great. You know they all have a problem, but it is fun finding out what that individual's problem is.

- With seedstock the surest way to sell mediocre kids, for mediocre prices, is to start with mediocre breeding stock.

Culling

- Don’t fall in love if you want to show a profit!
- There are a lot of goats out there that you can own.
- Don’t sell your culls as purebred goats unless you are sure you don’t ever want to sell another goat to that breeder or anyone else he/she knows!
- By culling lower producing animals we shift the average to the right!
- If you paid too much for a doe to cull her, you paid too much.

Consider Postweaning Weight Gain

* 6 months (180 days)

* 12 months (365 days)

Consider Fitness Traits

- Internal Parasitism
  - 20% of your goats have 80% of the parasites
- Hoof Condition
- Emphasize reproductive traits!

	A	B	C	D	E	F	G	H	I
1	Doe ID	5/2/2009	6/1/2009	6/18/2009	7/2/2009	7/16/2009	8/1/2009	8/15/2009	9/12/2009
2	NZ								
3	R06	1	1	1	1	3	2	1	1
4	P12				3	4W	3	2	1
5	B15	4 W	2	2	1	1	SOLD		
6	T19	2	2	3	3	3	4W	2	1
7	X19	1	1	1	1	1	1	2	1
8	P20	2	1	1	1	1	2	2	1
9	P21	1	4W	2	2	3	3	2	2
10	22	1	3	1	2	1	2	2	
11	X24	2	1	2	1	2	3	2	1
12	Y27	2	1	1	2	1	1	1	1
13	R032		1	3	2	2	2	3W	2
14	T32	2	1	4W	3	2	3	2	2
15	BH43	2	1	4W	5W	5W	4	4W	3W
16	W45	3	1	2	2	1	1	1	1
17	Y46		2	2	2	2	2	2	1
18	Y47		3	3	2	3	4W	3W	
19	W48					1	2	1	2

Limits on Ratio Use and Benefit

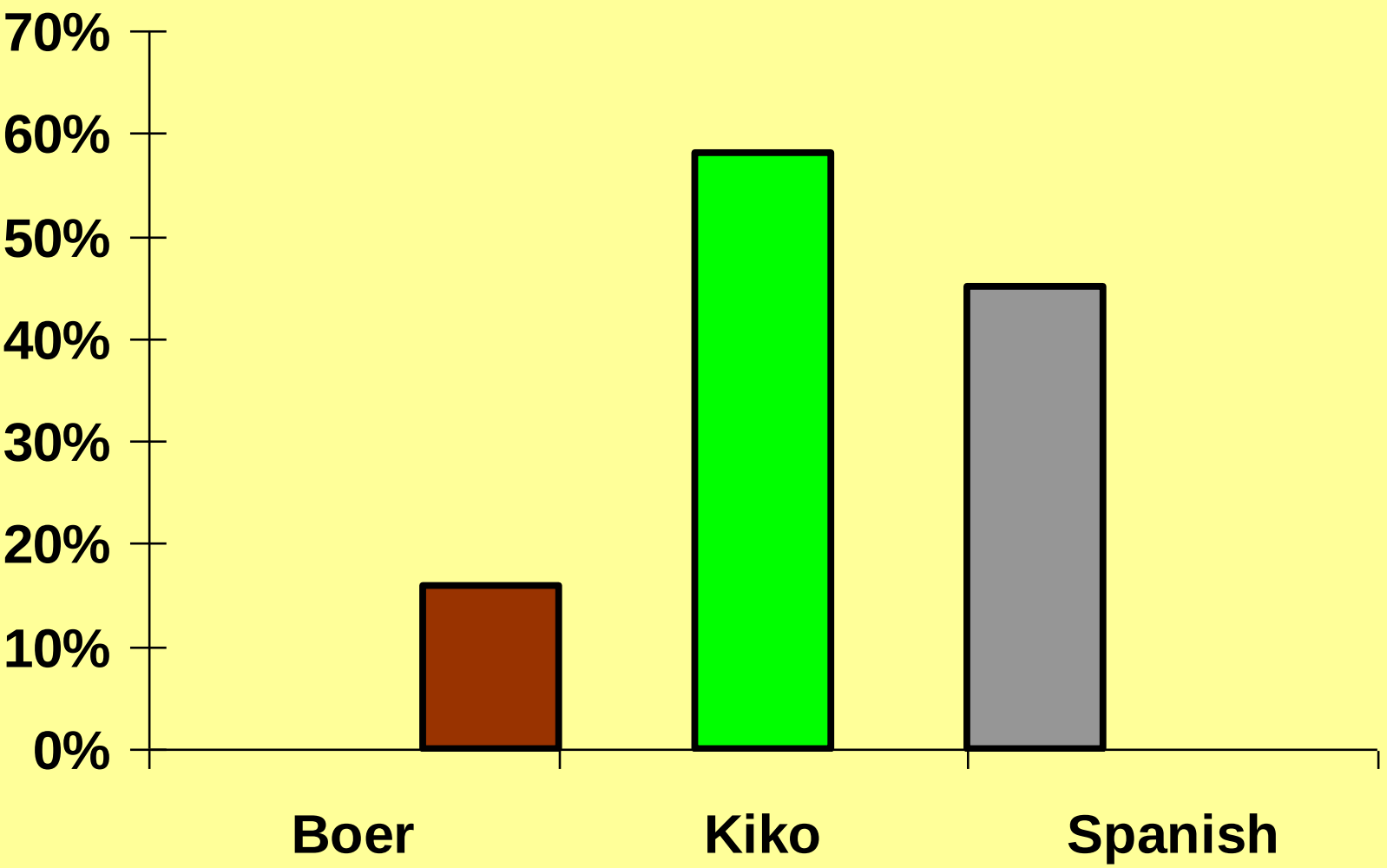
Defined and complete contemporary groups

Not for multi-herd comparisons

Doe herd reproductive rate is the major determinant of income in commercial meat goat enterprises.

It costs a lot more to raise or purchase replacement females, than you will ever see returned in salvage value. Therefore longevity of production is a very valid consideration.

Five-Year Doe Retention Rate



Evaluation of Three Breeds for Doe Fitness and Reproductive Traits

TSU 2006, Browning et. al.

Trait	Breed of doe			s.e.
	Boer	Kiko	Spanish	
Per doe weaning kids				
Litter size, kids/dam	1.51[B]	1.69 [AB]	1.79 [A]	0.07
Litter weight, lb	58.3	66.5	61.6	1.2
Litter weight/unit doe wt,%	53.5 [B]	64.3 [A]	66.7 [A]	2.6
Per doe exposed to bucks				
Litter size, kids/dam	1.03 [B]	1.54 [A]	1.54 [A]	0.09
Litter weight, lb	40.5 [B]	61.82 [A]	53.24 [A]	1.6

[AB] Means with different letters differ significantly.

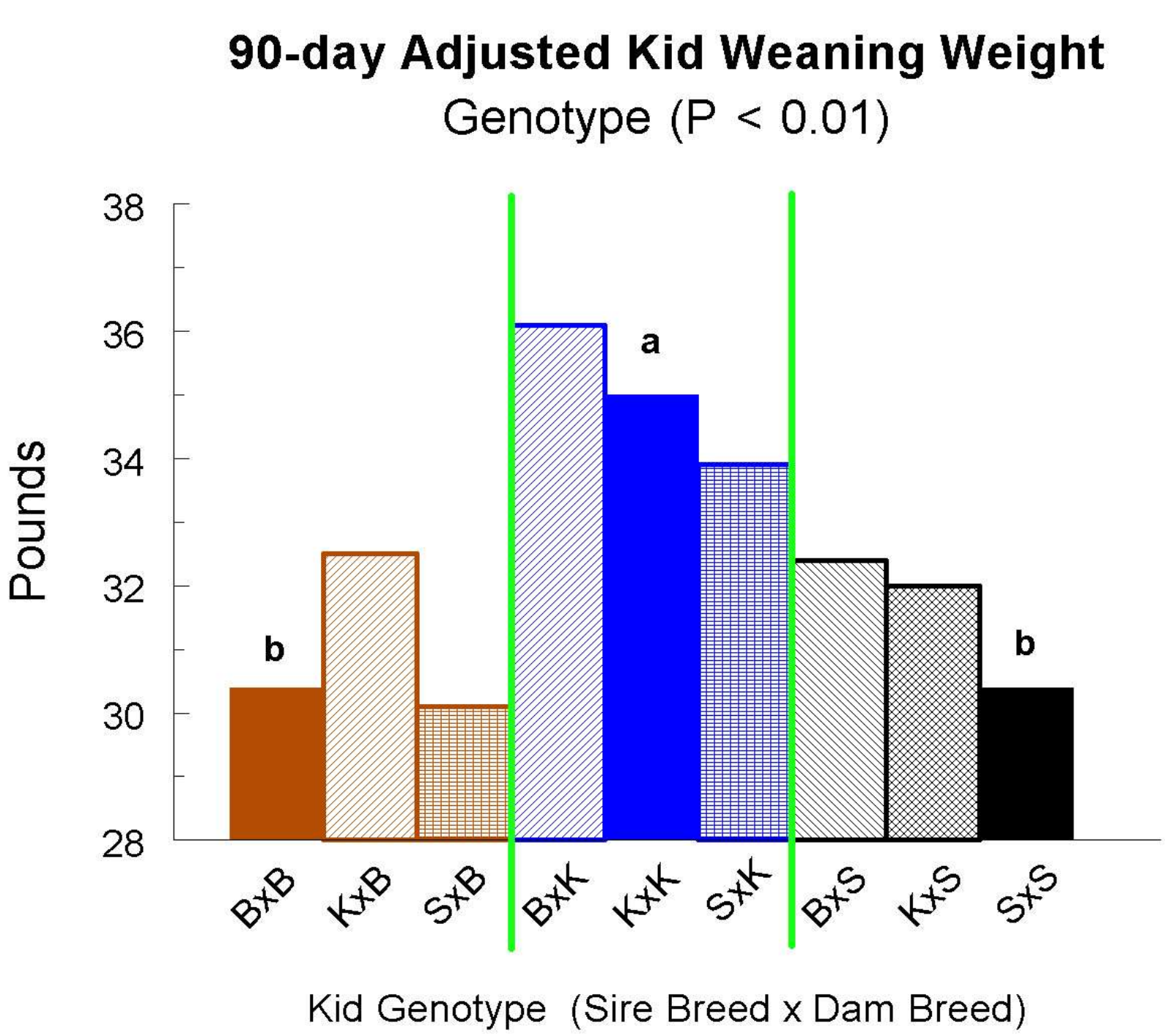
Evaluation of Three Breeds for Doe Fitness and Reproductive Traits

TSU 2006, Browning et. al.

Trait	Breed of doe			s.e.
	Boer	Kiko	Spanish	
Lameness, cases/doe/yr	2.02 [B]	0.58 [A]	0.79 [A]	0.16
Internal parasitism, cases/doe/yr	0.54 [B]	0.10 [A]	0.17 [A]	0.06
Fecal parasite egg counts, eggs/g [C]	2.79 [B]	2.60 [A]	2.45 [A]	0.06
Annual doe survival rate, %	78.5 [B]	99.1 [A]	93. 9 [A]	3. 1

[AB] Means with different letters differ significantly.

[C] Log-transformed means.


90-day Adjusted Kid Weaning Weight
Genotype (P < 0.01)
Pounds
38
36
34
32
30
28
a
b
b
BxB
KxB
SxB
BxK
KxK
SxK
BxS
KxS
SxS
Kid Genotype (Sire Breed x Dam Breed)

Boer and Kiko does as maternal lines for kid performance under humid, subtropical conditions.

	Boer X	Kiko X
Doe wt. at kidding	106.7 lb.	99.1 lb.
Pre weaning growth rate	.27 lb / day	.31 lb /day
Kid attrition	34.8%	9.5%
Litter size at weaning	1.58	1.85
Weaning wt.	58.25 lb	69.8 lb

Selection Decisions

Visual Appraisal (Conformation)

Pedigree (Honors)

Performance (Data)

Performance Evaluation

- Consistent record-keeping
- Objective, unbiased record-keeping
- Well-defined contemporary group
- Accurate, repeatable measures

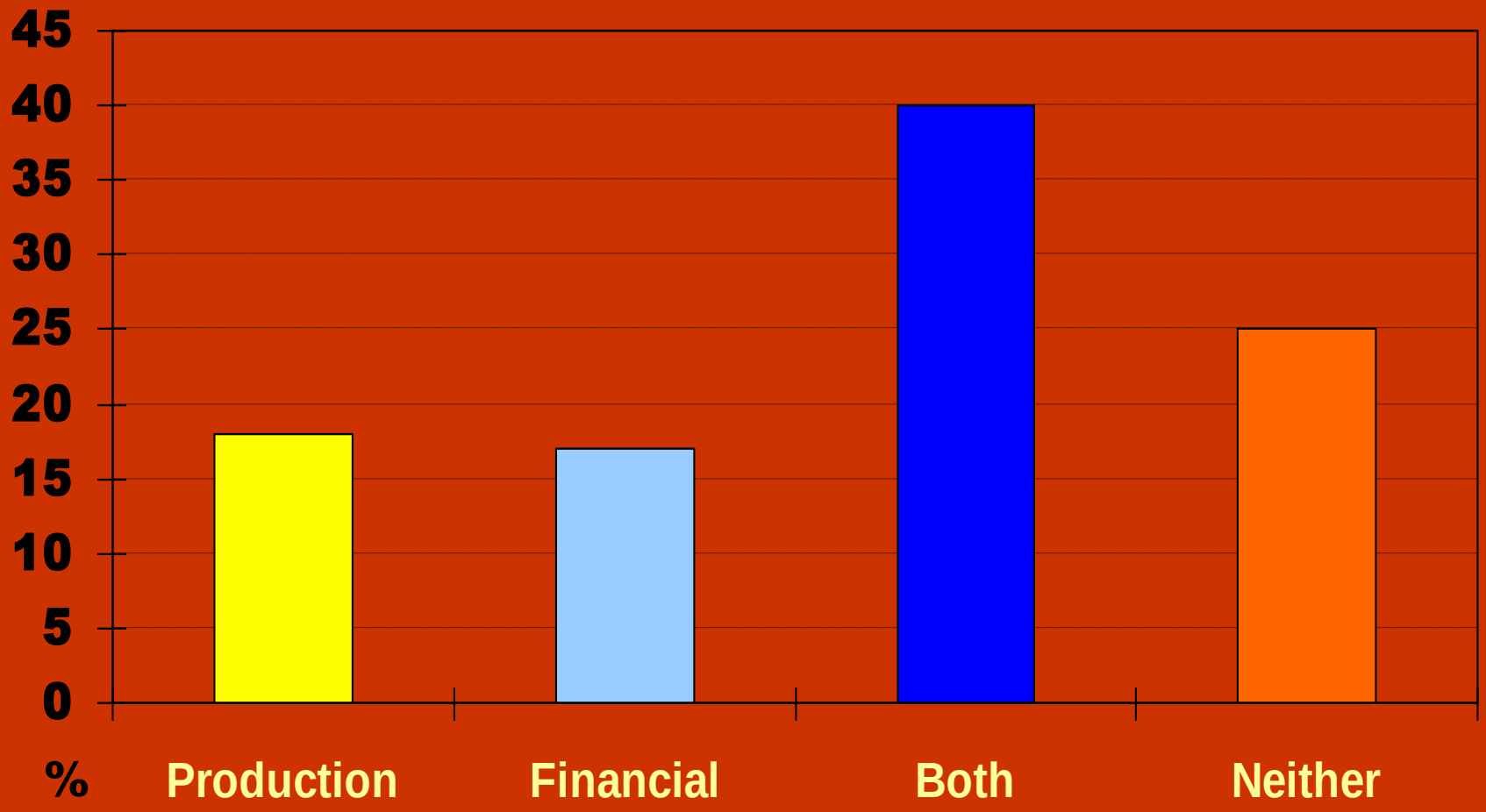
If you know a fisherman and can find a bucket, you can weigh your newborns!

Economical weighing for mid-sized goats

Performance Evaluation

- Consider the production environment when collecting and analyzing data.
- Beware of single trait selection !!!
- The key is proper record keeping.

Record-keeping in TN Goat Herds



(M.L. Leite-Browning et al., 2002)

What About Your Future?

- In equilibrium the top producers are making money, the average producers are hanging in there, and the lower producers are losing money and leaving the industry.
  - How many of you have friends, neighbors, or customers who are no longer in the business?
- Genetic improvement is a long range investment.
- If you intend to stay in the business you need to get in that top portion of producers and stay there!

Questions?