



Improving Competitiveness of Endangered Breeds

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Why Are Breeds Endangered?

- Large scale agriculture favors the use of a few highly uniform breeds
- Breeds that don't "fit the mold" are being lost
- Loss of Breeds = Loss of Genetic Diversity
- The Livestock Conservancy seeks to conserve genetic diversity by conserving breeds

One breed



Out of many

What is an Endangered Breed



San Clemente goats

Science based definition:

- US population
- Global population
- Foundation and history

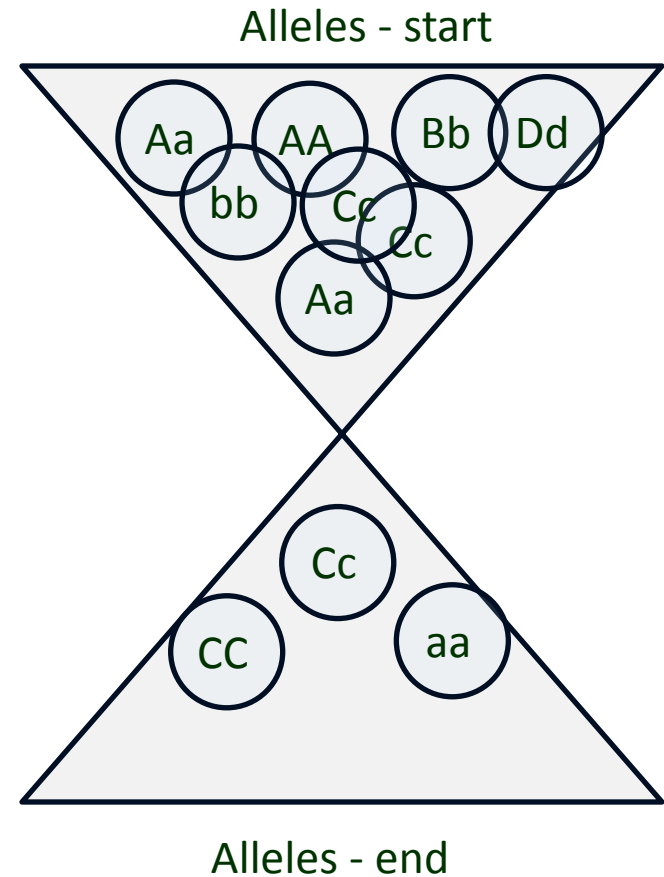
Conservation Priority List

	Critical	Threatened	Watch	Recovering
Annual registrations (US)	<200	<1000	<2500	>2500
Est'd global population	<2000	<5000	<10000	>10000

- Work with breed associations and registries to determine the number of purebred breeding animals
- Breeds that are of genetic interest but lack definition or genetic or historical documentation are placed in the “study” category

Bottlenecks and Drift

- Loss of diversity
- Increased homozygosity
- Slower response to selection



Lack of Selection

- Inadequate attention to realistic and optimum breeding goals
- Adaptive traits very important for use in low input production systems
- Inadequate attention to production traits is detrimental to the survival of the very farms that use these breeds

Selection Potential



Trait	1998	2013
Live Lambs/ Ewe Mated	< .7	1.45-1.65
Birth Weight (lbs)	4-5	7.5
Fleece length (in)	1.5	4.5

- Culled open ewes
- Selected for twinning
- Selected for faster growth, -> larger birth weights
- Now exerting downward pressure on birth weights
- Selected for fleece length and softness

NSIP

- Participating endangered breeds:
 - Black Welsh Mountain
 - Clun Forest
 - Shropshire
 - Southdown
- Not many breeders yet participating
- Early days for goats



Balanced Selection

- Balance production with adaptive traits
 - Hardiness, longevity, maternal traits, parasite resistance, heat/cold tolerance, fertility
- Cull on adaptive traits, select among remaining
- Index selection



$$I = .4P + .3BW + .2HT + .1F$$

Ensuring Diversity



Myotonic Goats

- Caution – don't narrow the population even more
- Selection plans must ensure that diversity is maintained
- Use more males
- Parallel herds, spiral breeding, contributions of females

Challenges for Small Producers

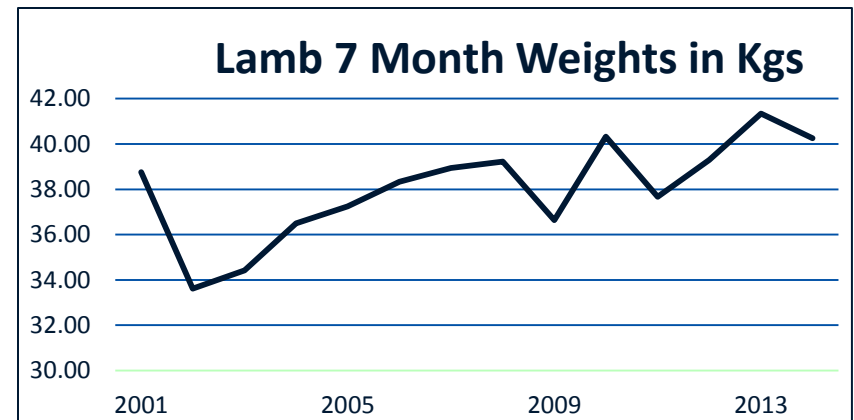
- Small Flocks
- Finances
- Geography
- Record Keeping
- Breeding plans



Breed associations and other organizations can make the difference

Sheep Selection

- 5-flock breeding rotation
- Independent Culling Level Selection
 - 10% retained
 - Twinning
 - Breed standard conformation
 - NSIP Breeding values



Data courtesy of Touchstone Farm

Improving Competitiveness

Changing the Playing Field

- Endangered breeds will struggle to compete head to head with mainstream breeds
- **That's okay!**
 - Fewer inputs
 - Niche marketing
 - Diversified products
 - Farm services
- A few breeds will make the leap



Fewer Inputs

Spanish Goats

Trait	Diet	BxBS	S	Diff
BW	Hay	22.8	19.3	ND
	Concentrate	44.5	34.1	P<.01
ADG	Hay	23	14	ND
	Concentrate	222	147	P<.01
FC (G:F)	Hay	35	28	ND
	Concentrate	136	136	ND

- GxE well established for Spanish Goats
- Use breeds in the rearing system where they are best adapted
- For low input (low \$) rearing, Spanish goats perform similarly to Boer and offer competitive advantages in parasite resistance and kidding

Market Potential

Smoke Ridge Farms: Mortgage Buster

- Purebred Spanish, terminal crosses
- Income from meat goats, grazing projects, breeding stock
- Low inputs & longevity keep costs low, profits positive
 - 1994: 30 goats, no land
 - 1999: 220 acres, \$265K debt
 - 2014: 200 goats, \$20K debt



Niche Marketing

Examples from Successful
Heritage Breeders

- Restaurants
- Cooperatives
- Distributors
 - many now online
- Retail
- Farmers markets
- Direct from farm



The Niche Pork Phenomenon

Don't be Blah™

“Pork that has certain attributes which are not found in traditional commodity pork, and which some groups of customers prefer or see value in and are willing to pay a premium”

- National Pork Board/Checkoff embraced the niche market in the 1990s
- Research, marketing & promotion
- Distinct clientele, price premium
- Awareness of safety, quality, biosecurity

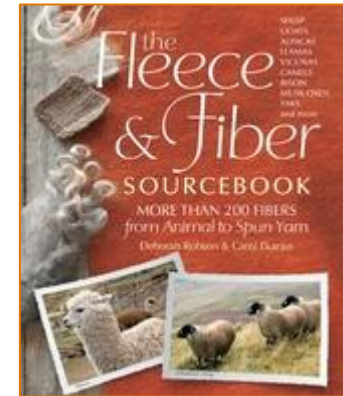


Diversified Income

Heritage Wool is Hot!



Etsy



Cashmere too...

The Livestock Conservancy's Role

- Extensive national network of small farmers
- Annual census
- Breeds Research
- Breeder education
- Technical support
- Promotion
- Rescues of threatened populations



Summary

- Challenges
 - Small populations
 - Little selection pressure applied for decades
- Opportunities
 - Improvement through selection
 - Use in the right environment, for the right market
- Further Steps
 - Document the abilities that are already there



Thank You

www.livestockconservancy.org

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- Smoke Ridge Farms
- Touchstone Farm
- Checkmate Farms
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