



Raising sheep the EASY way!

Barbados Blackbelly Sheep Association International

Blackbelly Banner

New Member-Only Tools: Online Registration and Coefficient of Inbreeding Calculations

By Carol Elkins

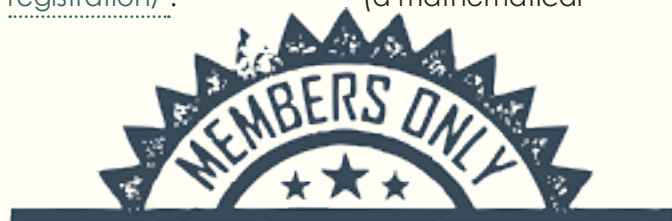
We've been busy since the January newsletter and are pleased to announce that we've added TWO new member-only services on our Web site. Members can now register their sheep online and pay via PayPal if they wish. Plus, you now can calculate coefficient of inbreeding (COI) for a sheep or a bred pair of sheep. This useful service can help you determine the relatedness between two sheep to either prevent too much inbreeding or to help make strategic decisions when linebreeding.

Online Registration

The online registration feature won't feel very different; only that you now can enter the data for each sheep into an online form and submit it electronically to BBSAI's registrar. That helps her workload tremendously because she doesn't need to retype the information or try to decipher handwritten text from an application. In addition, the online system helps ensure that a sheep's

photo is correctly sized for printing on the registration certificate. You will need to crop and resize each photo prior to uploading it. Instructions for cropping and resizing photos are available on the Registration Web page at <http://www.blackbellysheep.org/registration/>.

for a dark brown coat and a ram will contribute a gene for a light hair coat and the interaction of those two genes will determine the hair coat of their lamb. If the ewe and ram share a common ancestor (for example the same grandfather), there is a chance (a mathematical



One thing to remember: to register a sheep online you must be the sheep's breeder. If you are not, then you'll need to download the appropriate forms and mail them and the fees to the registrar.

COI Calculations

Before we discuss COI, let's review how genes work. A gene is a strand of DNA that exists in every cell of a living organism. When two sheep breed, each sheep contributes equally to the genetic makeup of its offspring. For example, a ewe will contribute a gene

probability) that the ewe and ram will each be passing to their offspring the identical hair color gene that they got from their common grandfather.

Inbreeding coefficient, COI, is a percentage of probability that the ram and ewe share a common ancestor that contributed a common gene. 0% COI indicates that there is zero probability that the sheep have a common ancestor; 80% indicates that the two sheep are very closely related and that genes from a common ancestor will

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Calculating COI—Examples

The main page for calculating COI and viewing the details of the calculation is called **Inbreeding Analysis**. You can access it at <http://www.blackbellysheep.org/db/members/analyze.php>

This article describes how to use each of the three sections of the form to analyze either

- an animal from the database
- a hypothetical mating of two animals from the database
- a hypothetical mating of the progeny of two sets of grandparents from the database.

The form expects the animal ID # for each animal.

Example 1: Dam mated to her son (sire ID #0010, dam ID #X0008)

Here's the direct url:

[http://www.blackbellysheep.org/db/members/analyze.php?said=0010&submit\\$DAID=Go&daid=X0008](http://www.blackbellysheep.org/db/members/analyze.php?said=0010&submit$DAID=Go&daid=X0008)

After submitting the form with the sire/dam IDs (or using the direct url above) you should get the summary page for the analysis.

At its simplest, click the **View Report** link next to **Coefficient of Inbreeding** to display the COI for the lamb born by mating a ewe to her son.

This **Inbreeding Loop Analysis** is an interesting report that lists all the "inbreeding loops" found in the pedigree. Inbreeding loops are basically a path from an ancestor on the sire side through the base animal to the same animal on the dam side. In this simple example, there is one inbreeding loop from the dam to the sire's dam. Using Wright's formula for COI yields a COI value of 0.25 for this loop. More complex examples can have many loops, as you will see in Example 3.

Analyze an Animal
Animal Name:

Analyze Hypothetical Mating of two Animals
Sire Name: #0010 EDS0197010P
Dam Name: #X0008 NCSU 9577

Analyze Hypothetical Mating of the Progeny of two sets of Grandparents
Paternal GrandSire:
Paternal GrandDam:
Maternal GrandSire:
Maternal GrandDam:

Hypothetical Mating Inbreeding Analysis:
EDS0197010P ERIC Ram b.1997-01-12
x NCSU 9577 NCSU 9577 Ewe

Analysis Limit:	None
Generations Found:	2
Coefficient of Inbreeding:	0.25 <input type="button" value="View Report"/>
Inbreeding Loops:	1 <input type="button" value="View Report"/>
Total Ancestors Found:	4 <input type="button" value="View Report"/>
Unique Ancestors:	2 <input type="button" value="View Report"/>
Common Ancestors:	1 <input type="button" value="View Report"/>
Duplicate Ancestors:	2 <input type="button" value="View Report"/>

Example 1 Inbreeding Analysis Summary Page

Coefficient of Inbreeding for:
EDS0197010P ERIC Ram b.1997-01-12
x NCSU 9577 NCSU 9577 Ewe
COI Contribution From Each Common Ancestor
1 record found matching your criteria: All Records

Base ID #	COI	Common ID #	Name	Reg #	Sex
	0.25000000	X0008	NCSU 9577	NCSU 9577	E

TotalCOI = 0.25
COI Calculation Details:
COI of #0:

- Portion from #X0008: 0.25000000

COI of #X0008: 0
Total COI of #0 = 0.25

Example 1 Coefficient of Inbreeding Analysis Report

The **Summary Page** also provides links to several detailed reports, grouped together in the second gray box on that page:

Total Ancestors Report is basically the complete pedigree from the database in table form, with one line per ancestor. In this simple

example, there are only 4 ancestors. Click the blue [View Report](#) link to the right of **Total Ancestors Found** to view the list. You can also click the **View Pedigree** link below the table to bring up a pedigree for this

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COI Examples

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hypothetical mating in a new browser tab. Take a look at that pedigree; it is easier to visualize than the list. You might find the full list to be useful for complex cases where you want to see farther back than the 5-generation pedigree.

In the **Total Ancestors** report, the **Gen** column shows how many generations back each animal is from the root animal. And the **Label** column indicates the exact position of the animal in the pedigree. For example "S" is the sire, "SS" is the sire's sire, "SD" is the sire's dam, etc.

In this example, you can see from the pedigree that the animal's dam (D) is the same ewe as the animal's sire's dam (SD) (dam mated to her son).

Note: When looking at any of the detailed reports you can use the **Back to Inbreeding Analysis** link at the upper right to return to the main page.

The **Unique Ancestors**, **Common Ancestors**, and **Duplicate Ancestors** reports provide subsets of the **Total Ancestors** list and might be useful in more complex cases. For example, the **Common Ancestors** report shows all animals that appear more than once in the pedigree and the count of how many times they appear.

Example 2: Mating of full siblings (sire ID #0364, dam ID #0485)

[http://www.blackbellysheep.org/db/members/analyze.php?said=0364&submit\\$DAID=Go&daid=0485](http://www.blackbellysheep.org/db/members/analyze.php?said=0364&submit$DAID=Go&daid=0485)

This example is a little more interesting. The reports reveal two inbreeding loops: one from sire's dam to dam's dam, the other from sire's sire to dam's sire. The COI values for the two loops are simply summed together to get the total COI of 0.25.

Example 3: Mating of half siblings (sire ID #0364, dam ID #0376)

[http://www.blackbellysheep.org/db/members/analyze.php?said=0364&submit\\$DAID=Go&daid=0376](http://www.blackbellysheep.org/db/members/analyze.php?said=0364&submit$DAID=Go&daid=0376)

This example has just one loop from sire's sire to dam's sire, yielding a total COI of 0.125.

Example 4: Complex example of a single animal (ID # 4397)

<http://www.blackbellysheep.org/db/members/analyze.php?aid=4397>

The various reports for this case reveal how complex this process can be. This animal has 11 generations of ancestors (448 total) in the system, and there are a whopping 809 inbreeding loops in the pedigree. These loops condense down to 25 different COI component parts (one for each common ancestor from the inbreeding loops). The COI report shows how they are summed to obtain a total COI value of ~0.3438.

To put all of these values into perspective, here is a chart showing the COI for various matings, assuming the parents aren't already inbred:

Relationship	COI
Father/daughter	25%
Mother/son	
Brother/sister	
Grandfather/granddaughter	12.5%
Grandmother/grandson	
Half-brother/half-sister	12.5%
Uncle/niece	12.5%
Aunt/nephew	
Great-grandfather/great-granddaughter	6.25%
Great-grandmother/great-grandson	
Half-uncle/niece	6.25%
Half-aunt/nephew	
First cousins	6.25%
First cousins once removed	3.125%
Half-first cousins	
Second cousins	1.5625%
First cousins twice removed	
Second cousins once removed	0.78125%
Half-second cousins	
Third cousins	0.390625%
Second cousins twice removed	
Third cousins once removed	0.195%
Half-third cousins	

Coefficient of Inbreeding for: TDJ0600364P Rocky Ram b.2000-06-16 x CJE1101485 Louisa Ewe b.2001-11-28

COI Contribution From Each Common Ancestor

Records 1 - 2 of 2 records found matching your criteria: All Records

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Base ID #	COI	Common ID #	Name	Reg #	Sex
0	0.12500000	0105	Yvonne	CJE0298105BB	E
0	0.12500000	0247	ZACHARY	CJE0799247BB	R

TotalCOI = 0.25

COI Calculation Details:

COI of #0:

- Portion from #0105: 0.12500000
COI of #0105: 0
- Portion from #0247: 0.12500000
COI of #0247: 0

Total COI of #0 = 0.25

Example 2 Pedigree Analysis Summary Page

Dehydration Requires Emergency Fluids

By Gwen McPhail, Seneca, SC

If you raise sheep long enough, you most certainly will face emergency dehydration complications. Dehydration often occurs in lambs that scour (diarrhea). Lambs die from dehydration, and it happens from 24 to 36 hours after the onset of scouring.

It's hard to give enough fluids orally to an animal who is on a down-hill run from dehydration. It can be difficult to get a stomach tube in a distressed sheep to administer emergency electrolytes, and you risk overfilling the stomach. The fastest way to help them is subQ fluids.

We keep lactated ringers solution on hand, along with the IV



administration equipment. Ringers solution is not expensive and can be purchased online.

Hitting a vein on a little lamb, especially one who is already dehydrated, is quite a challenge, so we give the

fluids subQ. "SubQ" means "under the skin," in contrast to "IM," which means "intramuscular" or in the muscle. To give a subQ injection, follow these steps:

1. Warm the ringers solution, if possible, to body temp (make sure it is not cold). The bags can be microwaved slowly—a minute or so at a time until warm. Prepare sufficient fluid: 100 cc twice per day have worked for tiny lambs.

2. Connect the tubing to the bag of solution, making sure the cut-off valve is off.

3. Place a 16 gauge, 3/4 inch needle on the other end of the tubing.

4. Pull up a "tent" of skin along/to the side of the spine or above the shoulder as if you were checking for dehydration.

5. Insert the needle into the tent of skin where the "door" of the tent should be (parallel to the spine, not from the side).

For a newborn lamb, you optionally can fill the syringe with solution rather than using the bag and then inject the solution as shown in the drawing. But it's better to give 200 cc once with the IV bag technique than to use the syringe and poke two holes in a small lamb.

The bag and attached tubing can be stored in the fridge for several months in a resealable plastic bag if you don't use it all at once.



From FAO, "A manual for primary animal health care worker," <http://www.fao.org/docrep/T0690E/t0690e0d.htm>

6. Turn on the fluids, allowing it to flow under the skin, forming a bulging pocket. You can allow as much fluid as will move freely into the pocket—it should be a pretty steady flow or series of drops.

7. If the flow slows to just a few drops per minute, move to a new place. Always check to make sure you are under only skin—no membranes or muscle. And remember, the more often you try a new place, the more needle holes you create from which fluid can run back out.

The liquid is absorbed from the pocket into the animal's system very quickly.

I learned this technique from a vet—it's standard procedure for puppies/kittens who come into his office and need fluids quickly. This method really helps to keep an animal hydrated until it can nurse enough to get going. ❀

New BBSAI Members

Greg & Shari Nelson	Poetry, TX
Jeffrey Pitts	Fairview Heights, IL
David Sandberg	Port Lavaca, TX
Luke Smith	Zebulon, NC
Gage Williams	Wallisville, TX

Product Review: EasyWean® Noserings

By Pam Hand, Free Union, VA

Last summer I decided to purchase a few of the EasyWean noserings from the Australian company that manufactures them. (See <http://easywean.com.au/>) I had been looking for an alternative to the common practice of weaning a lamb by separating it from its mother. The nosering idea intrigued me—the lamb can eat and drink normally but cannot nurse. Using noserings would allow me to keep the lamb with its mother and avoid the trauma caused by separating them for weaning.

When inserted, the nosering acts as a barrier between the lamb's mouth and the teat. Every time the lamb tries to grab a teat, the nosering pushes it out of reach. Very frustrating. The spikes are there as a back-up. As the lamb moves its head backwards and forwards trying to catch the teat, the spikes rub the ewe's udder and she moves away.

Inserting the noserings on my five lambs was quick and seemingly painless for them. They could graze, pick out hay from a feeder, eat pellets, and take treats from my hand. The plan was to keep the noserings in for about 2 weeks to allow the ewes to dry up.

Things didn't work out quite as planned. I put the noserings in too loosely at first and they all fell out within 12 hours. I put them in again more tightly and all but one still fell out, and all the noses were very red and swollen. I did try one more time and tightened the rings yet again, but still they all came out and wow—those nasal septums looked really sore! One was actually bleeding. I really didn't want to bore a hole through the septum by any further tightening, so I abandoned the whole plan.

Although the product was well made and of good design, I think that Barbados Blackbelly lambs



may be too small for the noserings to fit correctly. I really liked how quiet the lambs were, and the ewes didn't seem at all injured. I think several of the rings fell out while the lambs were pulling hay out of my hay nets, but some I found out in the grass. Tony Graf

in Tennessee reported the same results when he tried them on his sheep.

So I ended up separating the lambs with fence-line contact with their dams, and listened to the sad bleating for the next few days. 🌿

Lamb Cuts and What to Do with Them

By American Lamb Board (reprinted with permission), <http://www.americanlamb.com/lamb-cutting-board/>

Shoulder Chop



Traditional lamb chops come from the rib, loin, sirloin and shoulder of the animal. Shoulder chops (also called blade and arm chops) require a shorter amount of cooking time than other cuts, making them an economical and flavorful choice for quick and easy meals. - See more at: <http://www.americanlamb.com/lamb-cutting-board/#shoulder-chop>

Loin Chop



One of the most readily available cuts in the case at the grocery store and butcher shop, loin chops are lean, tender and delicious! With their perfect 3- to 4-ounce serving size and attractive "T" shaped bone that runs through the meat, loin chops (sometimes called T-bone chops) are simple to prepare. Season with a dry rub, or marinate 4 to 6 hours, then grill, broil or panfry the chops for a delicious meal.

Rack



An impressive presentation that is surprisingly easy to prepare at home, the rack offers versatility for entertaining. The rack of lamb is an icon of fine dining menus across the country. Serving a rack of lamb makes it easy to have an effortless, restaurant quality meal at home. There are 8 chops per rack and an American Rack weighs about 2 pounds.

Frenched Rack: a few inches of meat is removed from the end of the bones

Crown Roast: two frenched racks tied together to resemble a crown.

Ribs



One of the most cost-conscious cuts of lamb, the lamb spareribs or Denver ribs are perfect for braising and grilling and are a great substitute for baby back pork ribs in your favorite BBQ recipe.

Ground



Mellow and mildly flavored, ground lamb contains lean meat and trimmings from the leg, loin, rib, shoulder, flank, neck, breast or shanks. Readily available and the perfect substitute for ground beef in many recipes, ground lamb offers a long list of possibilities for quick and easy weeknight dinners: meatballs, burgers and sliders, shepherd's pie, kabobs, and meatloaf. Add aromatic seasonings to impart delicious flavor and variety to any meal made with ground lamb.

Shank



Lamb shanks come in both foreshanks and hindshanks. Lamb shanks practically melt off the bone when they are slow cooked, and are a popular menu item across the country. Lean on fat but big on flavor, the meaty shank is perfect for braising in a slow, simmering broth.

Lamb Cuts

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Boneless Leg



The BRT or boneless leg is the most versatile cuts of lamb from roasting whole to trimming into kabob meat or individual chops or smaller roasts, to butterflying and grilling. Leg is the leanest lamb cut. A whole boneless leg of American Lamb typically weighs 7-8 pounds so there will be plenty of leftovers.

Bone-In Leg



Because of its impressive presentation, the bone-in-leg is perfect for any holiday celebration or special occasion. The bone adds both flavor and richness to the meat.

Kabob/Stew Meat



Trimmed and cubed lamb from the leg or shoulder is readily available at grocery stores for quick and easy stew or kabobs. You can also trim and hand cut stew meat from leg, shoulder or shank roast.

Sirloin Chop



Lamb chops come in many shapes and sizes, depending on the part of the animal they come from. Large and meaty, sirloin chops are cut from the leg and can be identified by the crosscut section of round leg bone within the meat. More value-oriented than the prized rib and loin chops, sirloin chops can be just as tender and tasty. 🍴

New COI Tool

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be paired in the offspring.

Why should you care about COI? Because generally, the more an animal is inbred, the more likely it is that negative genetic characteristics will be expressed. This is known as *inbreeding depression*. In contrast, the less inbred an animal is, the more likely it is that superior genetics will be expressed. This is known as *hybrid vigor*. Inbreeding depression can cause poor performance in your flock, such as infrequent twinning or smaller sheep. Hybrid vigor can result in more robust, healthier sheep.

Usually, breeders want to select sheep for breeding that have a low COI to prevent harmful genes from being expressed. But sometimes, especially in the case of rare breed conservation, breeders may purposely breed related animals, called *linebreeding*, to increase the genetic contribution of the shared bloodline. Another reason for inbreeding is to increase the "sameness" or *homogeneity* of lambs, for example to reduce unwanted color variation.

You can use the new Pedigree Analysis function to predict the COI of lambs that would be produced if you mated two specific sheep. If you want to look deeper, you might examine the various reports for each of your breeding animals to find out which (if any) sheep are most common in their pedigrees. You might want to avoid using descendants of those common animals where feasible in order to broaden the genetics of your flock.

To access the new COI calculator, go to <http://www.blackbellysheep.org/about-the-sheep/col/>. Take a few minutes to work through the examples on page 2. They will help you better understand how you can use this new tool to decide which sheep to breed to each other. 🍴

The Barbados Blackbelly Sheep Association International is a non-profit organization registered in the State of Missouri



Raising sheep the EASY way!

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The Story of Tiny and Hoss

Last year Heidi Fonss's first-time ewe had twin lambs at her Clarksburg, CA, farm. The ewe let the lambs nurse for the first 2 hours and then decided she only wanted one of them. Heidi took the rejected lamb Tiny inside as a bottle baby. She let the lamb sleep on her pit bull Hoss's bed, and the little guy loved it. When Heidi went to her office, Hoss and Tiny went, too. Tiny would just cuddle up to Hoss and feel safe. Tiny and Hoss went everywhere with Heidi so that Tiny could get his scheduled feedings.

Tiny stayed in the house for about 3 months, learned to wear a diaper, and was even crate trained. Heidi put a huge crate in the corner of her family room and when it was time for bed, Tiny would go get a drink of water with Hoss and then head to the crate for bed. What a grand life!

Tiny is doing great and is out with the big boys now. But whenever he sees Hoss, he comes running. They are still the best of friends. 🌿



Results of the 2015 Annual Meeting Election

The 2015 Annual Meeting convened by teleconference on November 11, and ballots were mailed after the meeting to elect the 2015 Board of Directors.

The slate of candidates submitted by the BBSAI Nominating Committee was approved by majority vote.

The following members will make up the 2015 Board of Directors:

- Eileen Breedlove
- Rita Jean Guill
- Sandra Hession
- Nancy Johnson
- Pat Kahn

However, Pat Kahn resigned from the Board of Directors and his office of Treasurer effective January 1, 2016, because of work scheduling. The Board declared the office vacant and appointed Pam Hand to fill the office of Treasurer. The Board voted to retain each Board Member's office for the 2016 term (see left sidebar). 🌿