

MOUNTAIN RANGELANDS:

Large-scale, Open-range, Small Ruminant Production on Reclaimed Surface Mines in Appalachia

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‘PROOF-OF-CONCEPT’ DEMONSTRATION STUDY – PERRY COUNTY, KY

- **Historical Perspectives**
- **Study Overview**
- **1st Year Results**
- **Future Work**

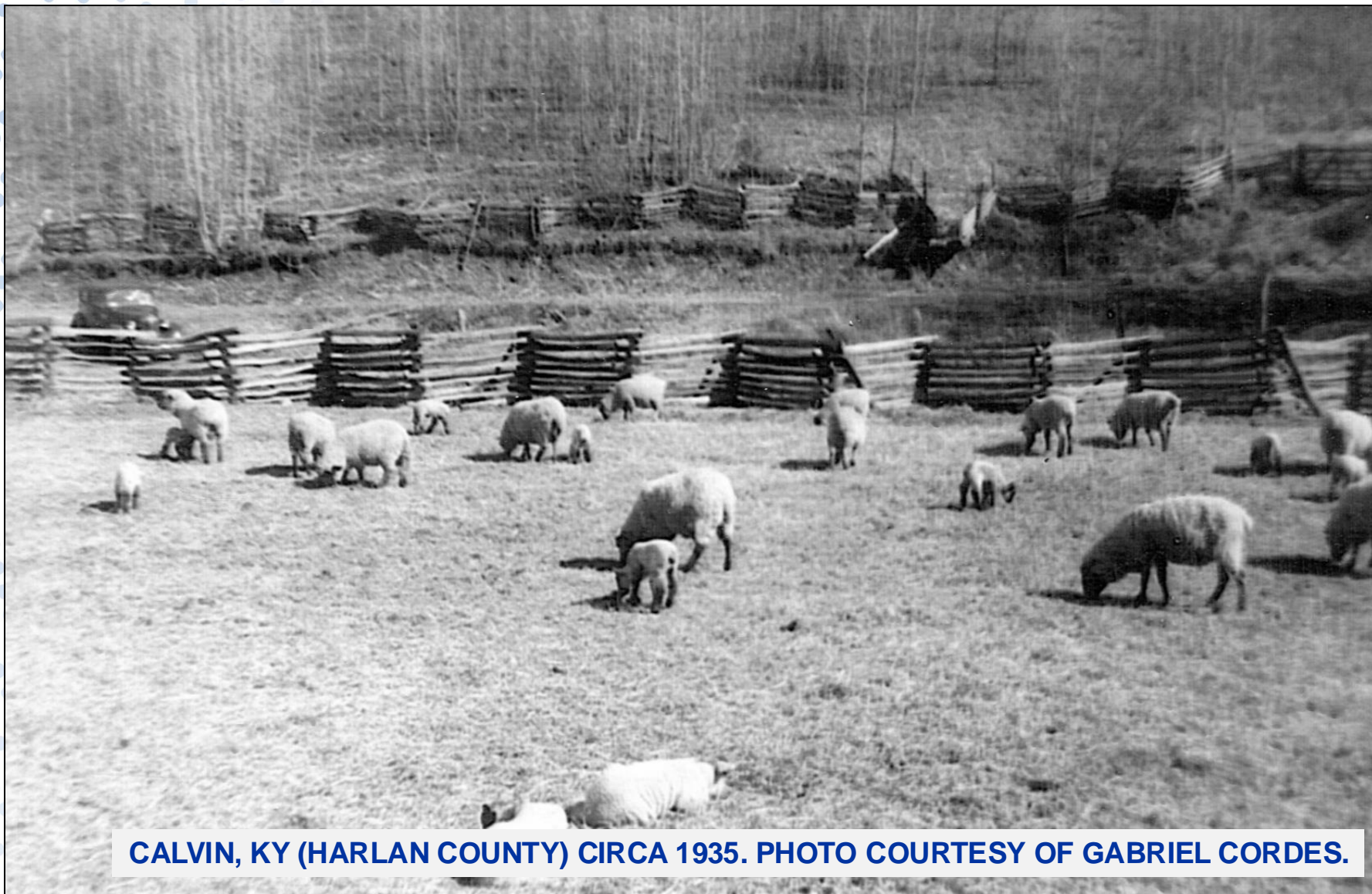


KENTUCKY WAS THE 2ND LARGEST SHEEP PRODUCING STATE



CIRCA 1935. PHOTO COURTESY OF GABRIEL CORDES.

SHEEP GRAZING IN APPALACHIA



Waldorf Astoria Luncheon Menu

**Roast Leg of
Kentucky Spring Lamb
Mint Jelly
Creamed Potatoes
String Beans
\$3.50**



LUNCHEON

Room
Service

Appetizers

Cape Cod Oysters 1 35	Blue Point Oysters 1 25	Salami 1 00
Cherrystone or Little Neck Clams 1 10	Imported Filet of Mackerel in White Wine 2 25	
Antipasto 1 55	Florida Shrimp Cocktail 2 10	Sea Food Cocktail 2 70
Crab Meat Cocktail 2 50	Norway Brisling or Imported French Sardines 1 75	
Fruit Cocktail 1 25	Homogenized Tomato Juice, Clam Juice or V-8 Cocktail 70	

Soups

Cream of White Beans 90	Chicken Gumbo 80	Cold Cream Vichyssoise 1 00
Cream of Tomato 90	Cream of Green Peas 90	Onion au Gratin 1 00
Clam Stew 1 40 with Cream 1 95	Clam Broth 1 00	Chicken Broth 85

Entrées

Stuffed Eggs with Fresh Mushrooms, Mornay	2 00
Baby Flounder Sauté, Tomato, Eggplant	2 75
Maine Lobster Cutlet, Shrimp Sauce, Rice and Creamed Spinach	3 15
Broiled Capon Leg, Kidney, Bacon, Tomato and Allumette Potatoes	2 15
Pig's Knuckle with Sauerkraut and Boiled Potato	2 25
Old Fashioned Baked Chicken Pot Pie with Vegetables	2 75
Escalope of Michigan Veal Vienneise with Noodles	3 10
Roast Leg of Kentucky Spring Lamb, Mint Jelly, Creamed Potatoes, String Beans	3 50

from the Grill

Filet Mignon 6 35	Loin Lamb Chop 3 10	"Blue Ribbon" Minute Steak 6 25
Lamb Chop (1) 2 75	Hamburger Steak 2 80	Broiled Spring Chicken (half) 2 95
Chicken Livers Brochette 2 10		Broiled Lobster, Colbert Butter 6 10

Vegetables

Bouquetière of Fresh Vegetables 1 80	Cèpes Bordelaise 1 40
Endive Meunière 1 20 Braised Celery 1 20	Imported Leeks 1 40 Corn on the Cob 90
Fresh Artichoke, Broccoli, Cauliflower, Creamed Spinach or Stewed Fresh Tomatoes 95	
Asparagus, Carrots, String Beans, Lima Beans, Green Peas, Corn Sauté or Spinach 95	

POTATOES: Boiled, "Jackets On" or French Fried 70
Baked, Au Gratin, Lyonnaise or Hashed in Cream 80

Salads

Maine Lobster 4 75	Maryland Crab Meat 3 25	Florida Shrimp 3 25
Crab Meat Louis 3 25	Chicken 2 80	Avocado Pear (half) 1 10
Waldorf Salad 1 20	Mixed Greens 1 00	Green Asparagus 1 50
Garden Vegetable 1 35	Potato 75	Escarole, Lettuce, Tomato or Cucumber 95

Desserts

Strawberry Layer Cake 85	Blueberry Pie 85	Macaroon Custard Pie 85
Mocha Pudding 85	Cherry Fruit Jell-O 75	Hudson Valley Apple Pie 85
Compôte of Assorted Fruits 1 25	Coffee, Vanilla or Chocolate Pot de Crème 95	
Nesselrode Pie 1 00	Danish Pastry 75	Strawberry Shortcake 1 00
Baked Apple 85 with Cream 95	WALDORF SPECIAL: Praliné Ice Cream 1 10	
ICES: Orange, Mint, Lemon or Raspberry 1 00		
ICE CREAMS: Mango, Rum Raisin, Banana, Vanilla, Strawberry, Chocolate, Coffee 1 00		

Fruits

Hawaiian Pineapple 95	Fresh Strawberries 1 35	Melon in Season 1 20
Pear 70	Tokay or Ribier Grapes 90	Banana 65
		Orange 65

Cheeses

FROM FRANCE & OTHER COUNTRIES: Brie, Camembert, Port du Salut, St. Paulin, Roquefort, Edam, Bel Paese, Swiss, Gorgonzola or Gruyère 95
DOMESTIC: American, Leiderkranz, Golden Rich, Blue, Cottage or Cream 85

Beverages

Coffee 60	Tea 55	Chocolate 55	Certified Milk 45	Buttermilk 40	Yogurt 70
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Bread and Butter 50

MARCEL, Your Headwaiter

ROOM SERVICE LUNCHEON

Room Service Charge 50c. p.p.

Tuesday, November 24, 1959

BRASHEAR HERITAGE FARM PERRY COUNTY, KY



RESTORING THE REGION'S SHEEP LEGACY

- > 50% of domestic consumption is from imported lamb
- Access to grazeable acres is a barrier to grow the sheep industry
- The current demand and market price for sheep production is strong



Source: Kentucky Sheep and Goat
Development Office

Department of Forestry and Natural Resources



~750,000 ACRES OF GRASS/SHRUB LAND IN CENTRAL APPALACHIA



GRAZING ON MINED LANDS



SMALL-RUMINANTS ON MINED LANDS

- Compatibility of small-ruminant on mine sites:
 - Steep/rocky site conditions
 - Tolerance of tannins (e.g., sericea lespedeza)
- Field demonstration study, May-July 2023



THE PROJECT PARTNERS

- **The Southeast Kentucky Sheep Producers Association (SEKSPA)**

Network of 640+ flocks across eastern & southeastern KY

- **University partners**

Assisted with site evaluation and sheep production data



PROPOSED PRODUCTION SYSTEM

- ACCESS TO LAND
- ON-SITE HERDER
- ACQUIRING THE SHEEP
- ACCESS TO WATER
- PREDATOR CONTROL



SITE LOCATION & PRE-EXISTING CONDITIONS

- **Location:** 3,500-ac in Perry County, Kentucky
- **Reclamation history:** MTR mining, 15-year-old reclaimed site
- **Available forages:**
A mix of native and nonnative trees/shrubs & grasses
- **Soil test for nutrient deficiencies/toxicities**



THE GRAZING OPERATION

- 159 Katahdin sheep introduced to the site from 7 local producers
- On-site herder and guardian dogs, and a night corral area
- Water was collected through an on-site rainwater catchment



ANIMAL HEALTH

3 MONTHS OF GRAZING

HOOF CONDITIONS

Assessed Pre & Post Project
Rating of 1 to 5

77% stayed the same or improved



BODY WEIGHT

Measured Pre & Post Project

Lambs average weight gain of 16.0 lbs.

Ewes average weight gain of 10.9 lbs.

BODY CONDITION SCORE

Assessed Pre & Post Project

Rating of 1 to 5

(emaciated, thin, average, fat, obese)

92% improved or stayed the same

FAMACHA SCORE (FS)

Assessed Pre & Post Project
Rating of 5 to 1

91% improved by one point or
stayed the same

(33 gained one point, 102 unchanged)



SUMMARY OF PRELIMINARY FINDINGS

- 1. Sufficient water for sheep production can be achieved using conservation practice for rainwater collection**
- 2. Forage stocks were sufficient to sustain the flock**
- 3. Guardian dogs are an effective means to prevent predation and protect the flock**
- 4. Flock health can be maintained**
- 5. Biosecurity protocols were successful**
- 6. Invasive plant populations were notably reduced on the grazing land**

LOOKING FORWARD...

- **Continued efforts** for small-ruminant grazing operations in Perry, Martin, and Whitley, County KY this summer (2024)
- Long-term goal: Expand grazing land base on reclaimed sites to result in **profitable small-ruminant production**
- **Ecosystem recovery** of reclaimed mined lands:
 - Restoring native forests
 - Rebuilding soil organic matter
 - Invasive species control

THANK YOU! QUESTIONS?

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