

## **Pasture-based Beef Systems for Appalachia**



### **Risk Perception and Risk Management among Appalachian Cattle Producers: a Focus Group Study<sup>1</sup>**

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#### **I. Introduction**

Farm management involves decision making and action under all sorts of uncertainties, and is therefore "risky." Key business decisions involve the choice of concrete practices, each with a set of perceived costs, benefits and risks, which together form the farm system. This paper reports an investigation of "farmer knowledge" upon which such key decisions are based among Appalachian cattle producers.

A series of five farmer meetings were held in 2004 with a total of 31 cattle producers in Virginia and West Virginia. The announced topic for the meetings was "Cattle Risk Management Round-Table Discussions." Groups were recruited and scheduled by local county extension agents, and conducted by an outside facilitator following a "focus group" method.

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## II. Theoretical background

Risks in agricultural enterprises have been classified by Hardaker et. al. (1997:6-7) as *business risk* and *financial risk*. Risk management means identifying a risk and a range of options, then evaluating, selecting and implementing an action (Hardaker et. al. 1997:15).

Business risk management means "knowing the business," and conducting it in a skillful manner. Classes of business risk include *production risk*; *price or market risk*; *institutional risk*; and *human or personal risk*.

*Production risk* in agriculture arises from uncertainty about weather, pests, diseases, and many other unpredictable factors.

*Price or market risk* arises from uncertainty about future returns, given uncertain prices for both inputs and outputs.

*Institutional risk* arises from uncertainty about government policies or changes in the rules which farmers must follow.

*Human or personal risk* covers possibilities such as personal injury, prolonged illness, divorce, and death; the business aspect of such risk involves the disability of key personnel required for management actions.

In contrast to business risk, "financial risk results from the method of financing the firm" (Hardaker 6). At issue are equity, use of borrowed funds, leverage, insurance, and liability.

Focus groups were not instructed on this classification, but it is useful to organize our analysis of the content of our discussion meetings.

## III. Methodology

Our focus group methodology followed the work of Morgan and Krueger (1998), involving three steps: design, implementation, and analysis.

**Design.** The purposes of this research are 1) to identify a range of real and perceived risks in cattle production; and 2) to identify some risk management attitudes, actions, and strategies of cattle producers. An outline or protocol for discussion was tested and revised in collaboration with county extension agents.

The protocol begins with an opening question ("Are you a gambler?") and a transitional question ("Describe your cattle operations?") which serve as icebreakers. We then establish an understanding of definitions by asking "What does it mean to be risky?" and "How is cost different from risk?"

Next come several key questions. The first asks "What are the risks involved in cattle production?" Subsequent key questions for discussion were elicited with a paper-and-pencil exercise; participants were asked to write down a practice that they do NOT currently follow. Responses were listed on a flip chart or blackboard under three headings: animal production, forage production, and marketing. The group then selected one topic under each heading for detailed discussion. Ending questions were "What information would help you decide what to do?" and "What management practices do you use on your farm, to reduce risk?" and "Have we missed anything?"

We also designed a short questionnaire for participants, providing information on a variety of characteristics including age, education, farm size, off-farm work, other farm enterprises, and ratings of the importance of various production and marketing practices.

Also included in the questionnaire was a "risk management survey" designed as a self-assessment tool for farmers by McConnell (2002).

**Implementation.** Using a recruitment script describing the project, county extension agents arranged for meeting with participants. Upon arrival, each participant was asked to complete the questionnaire. Discussion was led by an outside facilitator (Lozier). A meal was provided during a break, after about 1 hour. Local county agents were present but abstained from participating until after farmers had expressed their views. At the end of the meeting, each participant received a West Virginia product as a "thank-you" gift.

**Analysis.** Focus group analysis involves first the transcription and editing of audio recordings, and then the detailed examination of content to provide qualitative answers to research questions.

Questionnaire data analysis provides personal and farm-organizational characteristics of the sample.

#### IV. Characteristics of Focus Group Sample

Thirty-one farmers participated in five focus groups (2 groups of 5, 3 groups of 7). The modal response for age falls in the range between 51 and 65, and about 55% have college education. About half (16/31) claimed that on-farm work effort and on-farm income were greater than off-farm equivalents. Farm representation included 26 men, two husband-wife teams and three women.

Farm size in terms of acres under management (owned or rented) ranged from 75 to 5000, with the lower quartile under 310 acres and the upper quartile above 800. Cattle numbers ranged from 15 to 1060, with the lowest quartile under 40 and the upper quartile above 220.

The majority of farms (17/31) listed no farm enterprises other than cow-calf production. Other farms listed one or more additional farm enterprises including stocker operations, sheep, hay, poultry, and forest products.

Participants were asked to rate (on a scale of 0 to 4) the importance of several considerations, including production and marketing practices, and income requirements from farm operations. The distribution of responses shows diversity among the participants on many points.

Perceived importance of production practices is shown in Table 1. "Health management" is deemed to be important by virtually all producers, as indicated by a score of 2 or higher. By this standard, most producers also give high rating to "rotational grazing" (84%, 26/31) and to "overseeding with legumes" (68%, 21/31). There is less agreement on the importance of "plastic-wrapped hay bales" (58%, 18/31) and "artificial insemination" (48%, 15/31).

	not important			very important	
	0	1	2	3	4
health management	0	0	1	4	26
rotational grazing	4	1	6	7	13
overseeding legumes	4	6	6	9	6
plastic-wrapped hay	7	6	8	3	7
artificial insemination	12	4	4	4	7

Perceived importance of marketing practices is shown in Table 2. Producers tend to fall in the intermediate range (neither very important nor unimportant) regarding "local auction barn" and "state graded sale." These are traditional local marketing strategies.

On the other hand, producers appear more sharply divided on the importance of "marketing pool or alliance." Although viewed with favor in theory, pooling requires a level of cooperation that may be difficult to achieve. The data in Table 2, showing a bimodal distribution, can likely be explained at least in part by the presence or absence of local pool opportunities.

Retained ownership, direct-to-consumers, and direct-to-feedlot practices are considered very important by only a few producers.

	not important			very important	
	0	1	2	3	4
local auction barn	2	9	7	7	6
state graded sale	6	5	6	5	9
pool or alliance	8	4	5	2	12
retained ownership	14	4	7	3	3
direct to consumers	12	6	5	4	4
direct to feedlot	14	5	8	2	2

We did not ask farmers to report actual revenue or income. Instead, we asked them to rate, on the scale of 0-4, the importance of farm income for "mortgage" and "living" and "education" expenses. Results are shown in Table 3.

Greatest importance is assigned to "living expenses," with 75% of participants (21/28) rating 2 or higher. However, this implies that about 25% of participants have other income sources so that farming is relatively unimportant for living expenses. Mortgage and education expenses are very important for a few, and at least somewhat important for many, although for half or more of the participants these are "not important".

	not important			very important	
	0	1	2	3	4
for living expenses	2	5	4	7	10
for mortgage pmt	11	4	2	5	6
for education	14	4	1	5	4

## V. Focus Group Content Analysis

Qualitative analysis involves interpreting and sifting statements to obtain answers to research questions, not a strictly statistical or mathematical process (Krueger vol. 6:4). From transcriptions of audio recordings we reordered and consolidated the narratives from the five groups so that they could be studied side by side to produce a content analysis.

Results are presented here as answers to several key questions. These answers are often found scattered throughout the discussion. The first key question ("What are the risks involved in cattle production?") is standard for all five focus groups. Additional key questions ask, regarding a specific production or marketing practice, "What are the costs, benefits and risks of this practice?" A list of specific practices was elicited from each group, and prioritized for discussion. The five transcribed records reveal considerable consensus in listing and priority, but with some noticeable differences, within and between groups. Our strategy here is to focus on the consensus. We pool results from all groups except where otherwise noted. A final key question asks "How do you manage risk on your farm?"

We first focus on the general key question which identifies key **risks in cattle production**. We then turn to a discussion of key practices in the areas of **animal production, forage production, and marketing**. In each area, we focus on three specific practices picked for further discussion by the group participants. In the area of animal production, the topics picked were **strict culling, calf timing, and artificial insemination**. In the area of forage production, the picks were **rotational/intensive grazing, hay protection, and winter/extended grazing**. In the area of marketing, the picks were **marketing alliance, retained ownership, and individual direct sale**.

**What are the risks involved in cattle production?** Although groups received no instruction regarding classification of risks, we find it useful to classify them for discussion in the terms suggested by Hardaker et. al. (1997). We focus first on business risks (production, market, institutional, and personal), and then financial risks.

In the category of production risks, groups invariably mentioned weather and disease. Weather conditions (normal, hot, dry, cold, wet, freezing, wind, lightning) affect farm activities (e. g. haymaking, feeding, handling, calf mortality, use of equipment).

Weather cannot be controlled, but contingency plans can be made. Disease can be controlled to some degree through health management measures including vaccination. Other specific production risks mentioned include damage from predators; wildlife carrying disease; and shortage of veterinarian services.

Focus groups invariably mention price or market risk, explicitly citing the uncertainty of prices paid or received for inputs (especially feed) and output.

In the category of institutional risks, focus group participants mentioned "politics"; "what the government is doing"; "risk of prosecution," and "government influence." Also, we place in this category other risks mentioned such as "more non-agricultural people in the community"; "inaccurate consumer information"; "urban pressure"; and "public response to things that look bad."

Human or personal risk also arose in all group discussions. Some examples include "wild cows, especially at calving"; "the old cow getting you down and stomping you"; and "getting hurt while working alone." Human risk also extends to "someone else getting hurt"; and includes mental and emotional as well as physical injury; harm in marital, family and community relations; and "just plain failure." Discussions also reflected a widespread appreciation for the possible business consequences of personal injury and inability to carry on with essential activities.

Financial risks depend very much upon individual farmer wealth and equity. Although we did not attempt to measure farmer wealth, focus groups displayed an interest and awareness of financial risks in several remarks. One farmer asks, "how much can I lose and still have everything when I am done?" Another describes farming as "an opportunity to lose money, to make a bad investment." Another cites an old farmer's rule which says "don't assume any more debt than your cows can pay back."

### **Key Animal Production Practices**

Table 4 displays animal production topics elicited from one or more of the five focus groups. Each group chose one or more topics for discussion at length. Pooling the discussions, we find that the most important topics are **strict culling, calf timing, and artificial insemination.**

Table 4: Animal production topics elicited from one or more of five focus groups; number of groups listing the topic; and number of groups that selected the topic for discussion at length.		
	Listed in group exercise	Discussed at length
strict culling	3	3
calf timing	3	2
artificial insemination	4	2
embryo transplant	2	2
growth implants, hormones	2	0
pregnancy checking	2	1
pre-wean shots	1	0

**Strict culling** means removing unproductive cows from the herd, "getting rid of critters that don't pay their way". Another expression of the idea is "keeping the cow herd young." The most obvious culls are "open" cows, those which fail to deliver a calf on schedule. Less obvious criteria for culling can include temperment ("easy keepers"), mothering ability, carcass quality of offspring, and simple sentiment ("she's my buddy!"). Strict culling requires an expenditure of effort in "good record keeping" and timely decision-making. Cash costs involve purchase or rearing of replacement cows. The risk of lax culling is sub-optimal production. The risk of strict culling is that a replacement animal may perform the same or worse than the cull animal.

**Calf timing** means managing breeding so that calving occurs within a selected window of time, starting on a selected date and ending after three weeks or a month. Producers pick their own exact dates, but systems can be generally characterized as either spring calving, or fall calving. The advantages of calf timing include "efficient scheduling of work", producing a "uniform product" for the market, and adjustment of the stocking level to available forage (with the changing seasons). It is practically impossible to achieve 100% calf timing control, but a reasonable high target is 75% or 80% within a 3-week window. To improve calf timing, the basic strategy is to carefully observe cows for heat, provide controlled access to a bull, and strictly cull cows which fail to become pregnant. For additional expense and effort, improved calf timing can be sought with use of superior or proven bulls, artificial insemination, pregnancy testing,

and embryo transplant. The costs and risks of lax or strict calf timing depend upon the farming system including operator goals and resources.

**Artificial insemination (AI)** offers improved control of timing and quality of breeding, but at a substantial cost in dollars and effort. Costs include having "animal handling facilities;" securing the services of a vet or technician; and management in terms of "watching heifers" to see when they are in heat. Although selective breeding can improve prospects for desired characteristics (e. g. "calving ease"), it is risky because actual results cannot be guaranteed. A consensus across focus groups is that AI might be profitable for "seedstock" production (bulls and replacement cows), but probably not for "commercial" (feeder calf) production. A possible exception might be allowed, by two or three participating farmers, for production destined for direct or niche markets, custom-finished on the farm or otherwise.

Other animal production topics listed by the focus groups included embryo transplant (ET), pregnancy checking, growth implants and hormones, and pre-wean shots. Considerable discussion of ET in one group (Jackson) revealed costs, benefits and risks rather like AI, only "more so." Pregnancy checking is a somewhat costly veterinary technique which can help to achieve stricter culling and better calf timing. Growth implants and hormones, and pre-wean shot programs, are used widely but not universally among our focus group farmers.

### **Key Forage Production Practices**

Table 5 displays forage production topics elicited from one or more of the five focus groups. Pooling the discussions, we find that the most important topics are **hay protection, winter/extended grazing, and rotational/intensive grazing.**

**Hay protection** alternatives, ranging from low to high cost, include dry bales (stored in the open or under cover); and wrapped bales (haylage). Our focus group participants mostly agreed that dry bales left in the open were "improperly stored," and would suffer potential loss of one third, whereas barn storage preserves "near 100%". Cost of a barn can be paid from hay savings in as little as three years. However, many people "don't do it," because "they don't know, don't care, don't have time if they are working at a job." Plastic-wrapped bales offer weather protection and also better

preservation of forage quality in the form of silage. Furthermore, because hay to be wrapped need not be fully dried in the field, wrapping eases weather constraints on haymaking. However, costs are high for materials, equipment and labor.

Table 5. Forage production topics elicited from one or more of the five focus groups; number of groups listing the topic, and number of groups that selected the topic for discussion at length.		
	Listed in group exercise	Discussed at length
hay protection (wrapped bales versus barn or storage in the open)	3	3
winter/extended grazing	2	2
rotational/intensive grazing	4	1
alternative forages (no-till corn, brassicas, soybeans, warm-season grasses)	4	1
imported hay	1	1
forage testing	3	0
overseeding	1	0
irrigation	1	0
creep feeding	1	0

In our focus groups, the consensus appears to favor dry bales stored under cover. However, several participants are favorable to wrapped bales. One producer, citing convenience, says "If I couldn't wrap hay, I would quit." Another producer claimed satisfactory results wrapping his own hay, using rented equipment and his own labor. None of our participants defended the practice of storing bales in the open, although, arguably, there are fertility recycling benefits from spoilage that could make the costs acceptable.

**Winter or extended grazing (or stockpiling)** involves producing a forage crop that is not cut, but is left standing in the field, to be harvested later by grazing as the season advances. The benefits are "less labor, fewer resources spent," because "the cow is the cheapest machine." However, it requires "abundant land," and also "the right grass." Late in the growing season, the basic issue is "do I cut it now for hay, or carry it over for winter grazing?" If left standing, it may be damaged (e. g. wildlife, wet weather, flood); also it can be rendered inaccessible by heavy snow or ice accumulation.

**Rotational** or **intensive (RI)** grazing management, variously practiced, is in general contrast with **continuous** grazing. Main costs of RI are fencing, water development, and increased management or labor. Benefits, as perceived by practitioners of RI, include improved forage quality, higher stocking rates, and lower feed costs. However, this is controversial. A few skeptics asserted the view that "conventional methods and corn silage" give a higher stocking capacity and "better-looking calves."

Among other topics that received less attention, an unusual alternative is planned use of imported hay. One participant relies entirely on purchased hay, using only grazing to harvest his own acreage. He thereby saves the cost of haymaking equipment and labor. In sharp contrast, another producer grazes his own small acreage, but also owns equipment and makes hay on neighboring borrowed or rented land. More typically, farmers already own the equipment, and "if you have the equipment, it doesn't make sense not to use it." Mostly unstated, the implication is "if you don't have the equipment, it might not make sense to buy it." A similar rationale might be applied to land ("if you own it, it doesn't make sense not to use it" and "if you don't own it, it might not make sense to buy it.")

Forage testing and creep feeding are techniques that can be used to help achieve better utilization by matching nutritional requirements with the needs of different classes of animals. Alternative forages, warm-season grasses, overseeding, and irrigation are techniques to adjust seasonal availability or simply increase forage production.

### **Key Marketing Practices**

Table 6 displays marketing topics elicited from the focus groups. Pooling the discussions, we find that the most important topics are **marketing alliance or calf pool**, **retained ownership**, and **individual direct sale**.

Table 6. Marketing topics elicited from one or more of five focus groups; number of groups listing the topic; and number of groups that selected the topic for discussion at length.		
	Listed in group exercise	Discussed at length
marketing alliance or calf pool	3	3
retained ownership	2	2
individual direct sale	4	1
advertising, internet	4	1
sale barn, order buyers	1	1
source identification	3	0

**Marketing alliance (MA)** involves a high level of cooperation in production among several farmers. In its full expression, it can involve source identification and brand labeling for discriminating niche consumers. Examples are Certified Angus Beef, Petite Beef, and Laura's Lean. Although several focus group participants express interest, the consensus is that MA may be unachievable for lack of a critical mass of local participants willing to invest the required collective effort. Calf pooling is a step in the direction of MA. In calf pooling, producers reach agreement on timing and treatment so that a group of similar cattle are delivered to the commodity market simultaneously. Buyers "want a uniform bunch."

Alliance or pool members can benefit from joint purchasing as well as sales, but "it is difficult to get agreement" on specifics. For farmers involved, the alliance or pool "allows you to see how sires and cows are doing under similar conditions." Seedstock producers sometimes provide alliance-like marketing opportunities; one seedstock producer stated "we just buy the calves from the people who buy the bulls from us."

In **retained ownership (RO)**, the feeder calf remains the property of the producer while finishing in the feedlot. The owner (the farmer) pays the feedlot operator for costs of feed and housing during finishing. These costs are deducted from the price received for the animal when it is sold on the commodity market. The advantage of this depends on how well the animal performs in finishing. If the animal sickens or dies, or simply does not gain well, the farmer takes the loss. Therefore, when a farmer believes his animals will finish well, then RO is a good risk strategy. On the other hand, when the

farmer expects his animal will perform at or below average, then outright sale is a better risk strategy. One producer explained that whereas cattle were formerly sold "on averages," now increasingly they are priced on "carcass quality" information. There is, he says, a growing and measurable difference between "good" and "bad" fat cattle. In effect, a farmer's willingness to retain ownership is an expression of confidence in the quality of the product.

Farmers are interested in discussion of RO, but cautious about adopting it. Although effects of corn and finished cattle price changes should be neutral with respect to feed conversion efficiency, farmers are concerned that they will lose. Their reluctance involves mistrust of the feedlot operations: "cattle are reported sick or dead, you are 800 miles away, you can't check"; and "you are left waiting several months to get paid."

The risks involved in RO are considered acceptable to the extent that a producer is confident in the feedlot reputation, and in the health and productivity (growth potential) of his animals.

**Individual direct sale** to consumers appears to take two forms. The more conventional form, sometimes called "freezer beef" is done as a neighborly favor, involves relatively small volume for large producers, commands no premium price, and is not considered a profitable prospect. The alternative form involves a direct-marketing effort aimed at obtaining a premium price from niche consumers. There are different and somewhat contradictory viewpoints from large and small producers. Both are represented in our sample, as mentioned in Section IV. Large producers see the direct market to consumers as unable to absorb their volume. Small producers are more interested, but they tend to see a risk in creating a niche which would expand beyond their ability to meet it.

Other marketing topics listed and discussed to some degree include sale barn, source identification, and advertising. The traditional local auction sale barn is inefficient, with animals "singled out" or in small or mixed lots, requiring the stockyard to take a substantial commission. Buyers, including other producers, are looking for bargains, and judging on superficial appearances. Sellers forfeit any premium that might otherwise be due. Presence in the market may signal weakness and lack of confidence.

One producer said "I buy cows, but I don't sell there." Others use the sale barn to dispose of cull animals.

Source identification has been a topic of interest in direct marketing, but is currently becoming a hot topic due to threats of "mad cow" and other threats requiring traceability in the food chain. The government is expected to establish a mandatory system. Our informants tend to see this as a mixed blessing, feeling that blame may fall on farmers although a lot happens "after the animals leave the farm." Other informants see traceability as a possible asset in establishing a reputation for quality.

Advertising is an issue mainly for producers interested in direct sale to consumers.

## **VI. Conclusion: Risk Management on the Farm**

In the course of five focus group discussions, a range of topics emerged, including many concrete aspects of the cattle business, as well as many expressions of management and risk management philosophy.

Risky means uncertain and uncontrollable; "you are not sure how it is going to come out"; "there is a chance that you might lose"; "things I can't control"; and "when the odds are against you." In financial terms, risky means "losing money, income"; "absorbing a loss"; "making a bad investment"; or "borrowing without sufficient equity."

Costs are better known and more controllable than risks: "I know what I spend"; "costs are the inputs (or expenses), including labor and management"; "spending for insurance can reduce risk, but it may not be worth it".

Closing the focus groups, we asked "How do you manage risk on your farm?" The answers summarize what had been said throughout the discussions. In general, the answer is "know the business," and particularly the specifics in the areas of animal production, forage production, and marketing, as revealed in this ethnographic report.

In response to this closing question, we recorded many sound suggestions.

On information: "Gather as much information as you can about whatever you are doing"; "Exhaust every source"; "Do the research"; "We tell everybody our secrets"; "Keep good records"; "Just keep informed"; "Remember what worked in previous years."

On technical matters: "Match fertilizers and livestock ... for equilibrium";  
"Control breeding"; "Manage calves as a group";  
On marketing: "Keep up with the market so you know when to sell";  
On financing: "Never go farther into debt than what my cows can pay me out";  
In general: "Have a plan"; "Proven management techniques"; "Use common sense"; "Try to stay ahead of any problems that might occur"; "Retain flexibility."  
In jest: "Flip a coin"; "Continue employment off the farm."

In conclusion, farm management is business risk management. It is accomplished through application of "farmer knowledge." Risk is implicit in all management, and the key involves choosing or adopting concrete practices that are appropriate to the particular enterprise and prevailing environment.

Farmers and other managers may also face financial risks, as defined by Hardaker et. al., involving credit, leverage, and insurance. Such risks are managed more with "banker knowledge." Successful farming requires a balance of attention between farmer and banker knowledge.

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