

Industry Questions for Production Medicine

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Purpose:

The purpose of these questions is to provide an industry-focused framework for developing an understanding of a food animal industry (beef, dairy, sheep, swine and other ruminant) that is sufficient to enable the practitioner to:

1. Assemble and modify an effective, innovative package of veterinary services to deliver to clients engaged in an industry segment.
2. Understand clients' perspective and the information that they require for decision making when the practitioner is marketing, justifying, and monitoring services to them.
3. Understand the current and likely future trends in industry segments, their likely impact on clients, and the consequences for veterinary practice in that segment.

Questions:

(Note that ordering is my perception of a somewhat logical order rather than a rank of importance)

Industry Demographics:

1. Based on their resource inputs (e.g. capital, feeds, labor, water, land, genetics) and product outputs (e.g. calves, milk, seedstock, cull animals), what are the natural segments of the industry? What major factors determine this segmentation?

Ex: Registered seedstock vs. commercial livestock, low input grazing vs. high input intensive

2. What is the scale (range of size) of enterprises (in terms of number of production units, typically number of head, facility and stock investment, gross income) by geographic region? What general factors determine this distribution (e.g. transportation costs, weather, water, feeds, ancillary services, land availability)? Where are the concentrations of animals and herds?

See USDA Census of Agriculture at <http://www.agcensus.usda.gov/>.

3. What are the trends in these distributions? What types of enterprises are disappearing, which are growing? What general factors driving the changes?
4. In what geographic regions are new enterprises being established, what is their segment, what is their scale, and what factors are determining their location? What are the consequences of these developments on the rest of the industry? On veterinarians?
5. How does the total production of an industry segment vary year to year and how does this variation affect prices? What causes cycles with lengths of years? What is happening at the enterprise level

to cause this cycling? What are the characteristics of the enterprises that do not survive the bottoms of these cycles? What are the effects of these cycles on veterinarians?

Ex: The "7 year" beef cow cycle, the milk "boom to bust" cycle

Industry Structure:

1. What major resources (e.g.: skilled and unskilled labor, water, forage, capital, land, management skills, replacements, housing, equipment,...) are required by enterprises in each segment in different regions?
2. What are the major input and output measures (e.g., lbs of calf weaned, lbs of milk produced, tons of hay, hours of labor)? What are sources of regional prices for these?
3. What is the optimal physical quantity and economic value of these major inputs and outputs on a per production unit (or other capacity measure) basis (e.g. yield per head, labor hrs per head, facility investment per head, winter feed cost per head, yield per acre, lbs of calf sold per bred cow)? What are the generally regarded target values ("rules of thumb") for a given type of enterprise? What values indicate a low likelihood of survival for a particular enterprise?

For example: What is the typical investment in free stall housing or in a milking parlor on a per lactating cow basis? In a feedlot feed mill on a per head basis? In a ranch on a per cow basis?

For typical values, see:

Major production texts

Morris, DL, ed. (1995). Standardized Performance Analysis of Beef Cattle Operations. *Vet Clin North Am Food Anim Pract* 11(2) July 1995. (IRM and SPA programs)

Extension Service Crop and Livestock Budgets

4. What are the relative values of these resources between regions? What is the competition for these resources in different regions?
5. What affects resource availability and value year-to-year? Current trends?
Ex: Alfalfa hay costs in different areas – drought, rain timing, irrigation water availability; corn for ethanol
6. What are the different market routes for a segment's products? What causes price differences and marketing cost differences between regions?
Ex: Haulage costs for milk from milksheds to population centers, milk marketing orders
7. What is the tendency toward vertical integration (controlling more steps of production)? What factors are driving this trend? What are the likely consequences for the rest of the industry?
8. What is the tendency toward horizontal integration (increasing scale or size)? What factors are driving this trend? What are the likely consequences for the rest of the industry and for veterinarians?
9. What is happening to the numbers of enterprises relative to the numbers of animals in different regions? Why? What are the likely consequences for veterinarians?

Industry Environment: (political, environmental, social, tax, legislative, land use, animal welfare, ...)

1. What are the major producer organizations representing industry segments?
Ex: NCBA, NMPF
2. What are serious controversies potentially affecting segment enterprises in particular regions? Who are the opponents to segment enterprises in particular regions and what are their motives? What

will be the effect of adverse outcomes on the economics of operations? What are the likely consequences to these enterprises if a disadvantageous legal outcome occurs? How are veterinarians involved and how will they be impacted?

Ex: Manure and waste management, water conservation and allocation, odor control, food safety, animal rights and welfare.

3. How does the tax code influence industry structure and how does it influence decisions by investors to make short and long term investments in particular segments? What other factors influence investment by outside investors?

Ex: Cash vs. accrual accounting

4. What is the effect of government programs (commodity support programs, water projects, environmental pollution, trade) on the economics of industry segments and what is the likely trend of these programs? What will be the effect of these trends on the economic and production goals of operators? How different are true vs. subsidized values and what will happen if subsidy changes?

Ex: USDA CRP program and beef cattle supply

5. What is the effect of current international tariffs and quotas? What is the likely effect of anticipated changes in these? What will be the effect of these trends on the economic and production goals of operators?

Ex: Importing countries requiring imported products of livestock origin to originate from herds free of specific viral, bacterial and parasitic diseases.

Production Cycle:

1. What is the production cycle of individual animals and of enterprises in each industry segment?

Dairy Ex: Cow freshens, is bred optimally at 80 DIM, dries at 305 DIM, has a 45 day dry period and calves again. Calf is liquid fed for 40 days, weaned at 50, progressively grouped and bred at 15 months. If dairy is grazing based, herd calving is synchronized to the grass growth.

Beef Ex: Spring-calving herds vs. fall-calving herds

2. How does the production cycle of a segment relate to other vertical components of the industry and to prices? How can producers take advantage of these and what are veterinary roles in these opportunities

Ex: Spring calves from cow-calf operations going to winter stocker grazing operations to feedlots for finishing.

Ex: Annual price cycle for weaned calves and for cull cows.

Ex: Fall preg check of beef cows, feeding open cows in a lot for spring cull cow price rise

3. How does the annual climate cycle affect the production cycle of each segment (eg., the forage cycle), the production system selected by each segment (e.g., warm housing vs. hutches, drylot vs. free stall, seasonal temperature effect on dairy cow breeding vs. environmentally controlled barns), and what is the effect of adverse year-to-year variation (e.g., drought years)? What opportunities do these variations and the producers' need to manage them present to veterinarians?

Ex: Herd culling and minimum cost supplemental feeding of beef cows during drought.

4. What are the critical points or phases of the production cycle and what are the major problems of animals that are associated with these points?

Ex: Calves: Transition from monogastric to ruminant (dairy), transition from liquid to dry feeds (beef and dairy), weaning (beef and dairy), grouping (dairy).

Ex: Cows: Late pregnancy feeding (beef and dairy), transition to peak lactation (dairy), re-breeding (beef).

5. What are the animal husbandry objectives (nutrition management, animal density, production, ...) during each critical point or phase of the production cycle? What are the values of typical goals (e.g.: peak lbs., days open, lbs. feed per lb. gain, ...)?

Ex: Getting dairy cows to maximum peak milk quickly, maintaining transition DMI.

6. How are these production system problems detected and who detects them? Is detecting these problems earlier beneficial and, if so, how might this detection be done? What are the consequences of late problem detection? What are the current and potential roles of the veterinarian?
7. How can these problems be prevented and what can be monitored other than the occurrence of the problem to determine if prevention practices are effective and sufficient? What are current and potential roles of the veterinarian?

Goals, Economics, and Survival:

1. What are common economic and non-economic goals of enterprise operators in each of the industry segments? How do these goals differ and even conflict between segments?
2. What is the likely minimum economic size of segment enterprises by region? What are the major factors determining this threshold?
3. What are the key economic and production measures that determine short and long term survival of an enterprise in each segment in different regions? How are these factors measured and how are they related?
4. What are the secondary production measures that are commonly used, how are they measured, and how are they related to the key economic measures?
5. What are the important economic measures and objectives during each phase of the production cycle?
6. What is the economic value of a unit change of each of these measures? How does this value change over the ranges of the base unit (i.e., how linear is the relationship? E.g. cost of days open)? Which have the potential of the highest return per unit of investment (time, dollars) by management? Which the lowest?
7. What are the facility investment vs. sub-optimal production risk tradeoffs (e.g. free stall vs. drylot and coliform mastitis, swine production and housing management strategies - EMW, off-site, all in / all out, waste milk pasteurization)? What are the break-even points? The risk from increased complexity and system failure?
8. What are the risks (market prices, epizootics, climatic, reproductive failure, ...) to enterprise survival in the different segments? How are these risks managed? What is the veterinarian's role in this risk management?
9. What is the economic cost of "failures" (e.g., clinical mastitis, failure to breed, calf death, BRD case, ...) that veterinarians have traditionally been involved with? How many normal units of production or net profit does it take to balance the economic loss of a typical case (particularly in terms of net profit)?

Livestock Replacement and Genetic Improvement:

1. What are the genetic characteristics of economic importance in each segment and what is their heritability? Do these characteristics differ and even conflict between segments?

2. What is the economic value of a one unit change of each of these genetic characteristics?
3. What are the different methods of managing replacement breeding and selection? How rapid is the expected rate of improvement when they are used?
4. What are the benefits, the risks, and the economic consequences of different genetic management strategies? How do these different replacement breeding strategies impact other aspects of the enterprise such as labor and capital requirements?
5. What is the veterinarian's current role in replacement breeding and selection? What are the opportunities for veterinarians?
6. What is the genetic impact and economic cost-benefit of veterinarian-advocated selection practices on other economically important heritable traits?

Ex: Selection of larger pelvic opening size in heifers, larger testicles in bulls

Producer Information Sources:

1. What are the primary sources of production-related information for producers in the different industry segments? How do the better managers differ from the poorer managers in their use of information?
2. Who are the information providers that compete with the veterinarian and what is their usual level of knowledge? How do operators perceive veterinarians relative to these competitors (credibility, knowledge, cost, ...)?
3. What are the major trade magazines (free advertiser supported and subscription)?
4. What is the role of the Internet? What are the characteristics of the producers that use the Internet? How is the Internet changing the role of the veterinarian changing with respect to providing information and evaluating information?

Veterinary Interventions and Services:

1. What are the current veterinary interventions or services typically delivered to an industry segment in different regions?
2. What are the potential veterinary interventions and services that may constitute a package for each of the industry segments?
3. What are the veterinary skills and knowledge currently required to execute these interventions and to provide advisory services? What is likely to be necessary in the future?
4. How do producers perceive these services and the veterinarian delivering them? Who are currently and potentially the veterinarian's competition and how do producers perceive them? What are the competition's expertise and skills? What are the veterinarian's competitive advantages and disadvantages?
5. What currently available technology is under- or over-utilized by many veterinarians delivering services to an industry segment? How can the veterinarian's competition use this technology?
6. What is the likely impact of developing technology on existing and potential veterinary interventions or services? How can the veterinarian's competition potentially use this technology?
7. What are the benefits and costs to the enterprise of each intervention or service (in terms of production, dollars, management and labor time, disruption of routines, ...)? What, if any, are the potential impacts of each intervention on other phases or aspects of the production system?
8. How can these interventions and services be marketed? What information is needed to support the value of these interventions to the client? What are the most important incentives and disincentives

for a manager to adopt an intervention or service?

9. How can the veterinarian monitor the benefit/cost of these interventions and services, evaluate their effectiveness, and document their results?
10. How do veterinary interventions affect enterprise risks and their management?
11. What is the approximate minimum clientele "mass" to justify making the investment necessary (time and money) to develop the knowledge and skills for each intervention or service? What is the likely long-term trend of this clientele "mass"?

Production Medicine Information Sources for Food Animal Veterinarians:

1. What are the relevant professional organizations for food animal veterinarians in each production sector?
2. What, where, and when are the major professional meetings that are relevant to food animal practitioners?
3. What are the relevant scientific and professional journals for production medicine veterinarians?
4. What are the major textbooks covering relevant production medicine topics at a level of information needed by the production medicine veterinarian? While in practice, how can the practitioner become aware of relevant new texts?
5. What are the other major sources of printed information on production medicine topics and how can items be obtained (particularly those containing relevant economic information)?
6. Who and where are the academic clinicians specializing in particular industry segments that have a nation-wide or international reputation? How and where can the practitioner contact them?
7. Who and where are the private practitioners serving particular industry segments who also have a nation-wide reputation for production medicine? How can the practitioner identify and contact them?
8. What are the means by which practicing food animal veterinarians can update existing expertise, acquire new knowledge and skills, and maximize credibility? What is the relative effectiveness and cost of each in terms of effort required, knowledge gained, time in-practice, time away from practice, and expense?

Ex: Post-graduate programs at the Great Plains Veterinary Education Center (beef), University of Wisconsin (dairy) and Guelph.

Ex: Seminars associated with national meetings of professional associations such as AABP.

References and Resources:

Under "VM 577P Herd Production Medicine" at <http://www.vetmed.wsu.edu/courses-jmgay/>

In-Print & On-Line Production Medicine Information Resources

<http://www.vetmed.wsu.edu/courses-jmgay/PMCurrentProdMedRefs.htm>

Introduction to Herd Production Medicine

<http://www.vetmed.wsu.edu/courses-jmgay/PMIntroduction.htm>

Introduction to the Beef Cattle Industry and the Veterinarian's Role

<http://www.vetmed.wsu.edu/courses-jmgay/POEBeefIndustry.htm>

Basic Concepts for Cow-Calf Herd Health Programs

<http://www.vetmed.wsu.edu/courses-jmgay/FDIUCowCalfHH.htm>