The State of the Equine Industry

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Alltech Inc.

Let's kick this off with a little background...

United States Horse Population Estimates

<table>
<thead>
<tr>
<th>Year</th>
<th>Source</th>
<th>Estimate (Millions)</th>
<th>Population Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>American Horse Council</td>
<td>5.25</td>
<td>All horses</td>
</tr>
<tr>
<td>1986</td>
<td>American Veterinary Medical Association</td>
<td>6.60</td>
<td>&quot;Pet&quot; horses only</td>
</tr>
<tr>
<td>1991</td>
<td>American Veterinary Medical Association</td>
<td>4.90</td>
<td>&quot;Pet&quot; horses only</td>
</tr>
<tr>
<td>1996</td>
<td>American Horse Council</td>
<td>6.90</td>
<td>All horses</td>
</tr>
<tr>
<td>1996</td>
<td>American Veterinary Medical Association</td>
<td>4.00</td>
<td>&quot;Pet&quot; horses only</td>
</tr>
<tr>
<td>1997</td>
<td>USDA Agriculture Census</td>
<td>3.02</td>
<td>On-farm horses only</td>
</tr>
<tr>
<td>1998</td>
<td>USDA-NASS</td>
<td>5.25</td>
<td>All horses</td>
</tr>
<tr>
<td>1999</td>
<td>USDA-NASS</td>
<td>5.35</td>
<td>All horses</td>
</tr>
<tr>
<td>2001</td>
<td>American Veterinary Medical Association</td>
<td>5.10</td>
<td>&quot;Pet&quot; horses only</td>
</tr>
<tr>
<td>2002</td>
<td>USDA Agriculture Census</td>
<td>3.64</td>
<td>On-farm horses only</td>
</tr>
<tr>
<td>2005</td>
<td>American Horse Council/ Deloitte Consulting</td>
<td>9.20</td>
<td>All horses</td>
</tr>
<tr>
<td>2007</td>
<td>USDA Agriculture Census</td>
<td>4.60</td>
<td>On-farm horses only</td>
</tr>
<tr>
<td>2007</td>
<td>USDA Business Plan</td>
<td>5.80</td>
<td>All horses</td>
</tr>
<tr>
<td>2007</td>
<td>American Veterinary Medical Association</td>
<td>7.30</td>
<td>&quot;Pet&quot; horses only</td>
</tr>
</tbody>
</table>
Annual Economic Impact of Horse Industry in U.S.

- $135 billion
- 4.5 million horses*
- Supports 1.6 million full-time jobs

* horses that are fed

AHP Equine Industry survey

- 11,189 responses collected
- Largest equine industry survey in the US
- 92% are horse owners
- Average of about 5 horses owned
- Ages 45+ tend to own more horse than younger participants
- Relatively small number of horses leased
- Average of about 10 horses managed
- 39% board their horses on someone else’s property
- Almost 75% at least sometimes use their horses for pleasure/trail riding

How many horses do you or members of your household currently:

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Average</th>
<th>Response Total</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own</td>
<td>5.06</td>
<td>53,528</td>
<td>10,579</td>
</tr>
<tr>
<td>Lease</td>
<td>0.37</td>
<td>822</td>
<td>2,240</td>
</tr>
<tr>
<td>Manage</td>
<td>10.41</td>
<td>37,965</td>
<td>3,600</td>
</tr>
<tr>
<td>Answered question</td>
<td>10.825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skipped question</td>
<td>363</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On average, survey respondents own about 5 horses and manage over 10. Fewer survey respondents lease horses.

Average

- Own: 5.06
- Lease: 0.37
- Manage: 10.41
How horses are used

As expected, many horses are used for pleasure and trail riding. Somewhat surprisingly, the next most frequently reported use is dressage.

Are you spending more money per horse now than you were in 2007?

Nearly 3/4 of the respondents are spending more per horse now than in 2007; this isn't surprising due to general inflation as well as rising oil prices and poor weather conditions which caused feed prices to spike.

Increase in expenses

Respondents indicate that the greatest increases in expenses have occurred with feed, fuel, and veterinary care.
At least 70% of the respondents indicated that their horses are vaccinated against Tetanus (89.8%), West Nile (88.1%), WEE (76.1%), EEE (76.0%), and Rabies (72.7%).

Joint problems represent the horse health issue of most concern to respondents; care of the senior horse is the only other health issue receiving a majority of responses. This is interesting but not entirely surprising since the respondents in our sample, on average, own two horses over the age of 15.
Costs

- Cost of maintaining a horse has increased in the past few years
- 73.8% are spending more money per horse now than in 2007
- Top 3 issues facing the equine industry
  - Unwanted horses
  - Cost of keeping horse
  - Loss of trail and riding areas

<table>
<thead>
<tr>
<th>Top 3 issues facing the equine industry</th>
<th>Response</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburdened welfare groups</td>
<td>9.4%</td>
<td>994</td>
</tr>
<tr>
<td>Owners who don’t understand horses</td>
<td>30.2%</td>
<td>3,176</td>
</tr>
<tr>
<td>Horses that aren’t trained appropriately</td>
<td>17.6%</td>
<td>1,896</td>
</tr>
<tr>
<td>Lack of educational materials on horses</td>
<td>3.8%</td>
<td>128</td>
</tr>
<tr>
<td>Cost of horsekeeping</td>
<td>44.4%</td>
<td>4,676</td>
</tr>
<tr>
<td>Loss of trails and riding areas</td>
<td>35.3%</td>
<td>3,714</td>
</tr>
<tr>
<td>Unwanted horses and what to do with them</td>
<td>42.9%</td>
<td>4,627</td>
</tr>
<tr>
<td>Not having the option of daughter</td>
<td>17.8%</td>
<td>1,791</td>
</tr>
<tr>
<td>No marketing for the overall industry to attract new owners</td>
<td>13.8%</td>
<td>1,365</td>
</tr>
<tr>
<td>Lack of a unified voice in Washington</td>
<td>14.7%</td>
<td>1,530</td>
</tr>
<tr>
<td>Competition for open spaces from developers, producers of biofuels, etc.</td>
<td>28.8%</td>
<td>2,922</td>
</tr>
<tr>
<td>Other</td>
<td>11.9%</td>
<td>1,214</td>
</tr>
<tr>
<td>answered question</td>
<td>10,531</td>
<td></td>
</tr>
<tr>
<td>did not answer question</td>
<td>657</td>
<td></td>
</tr>
</tbody>
</table>

A majority of the respondents indicated that the issue of "unwanted horses and what to do with them" represented the top issue facing the equine industry. The cost of horsekeeping, the loss of trails and riding areas, owners who don’t understand horses, and not having the option of slaughter were also selected as key issues needing attention.

Summary of Survey

- Respondents age 45 and up are most likely to remain at the same level of participation.
- The general result is that the likelihood of increased participation is decreasing in the age of the respondent but increasing in income levels.
- Income is largely insignificant in predicting future levels of participation.
- Based on the results in the survey, the aggregate amount of participation is likely to remain roughly the same, although increases will be observed in some areas and decreases will be observed in others.
Virginia’s Horse Industry

Virginia Horse Population by Breed, 2006

<table>
<thead>
<tr>
<th>Breed</th>
<th>Number</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Saddlebred</td>
<td>7,300</td>
<td>3.4</td>
</tr>
<tr>
<td>Appaloosa</td>
<td>9,600</td>
<td>4.4</td>
</tr>
<tr>
<td>Arabian and Anglo-Arabian</td>
<td>13,000</td>
<td>6.1</td>
</tr>
<tr>
<td>Argentine</td>
<td>8,000</td>
<td>3.8</td>
</tr>
<tr>
<td>Haflinger</td>
<td>2,000</td>
<td>1.0</td>
</tr>
<tr>
<td>Malibu Pinto</td>
<td>11,000</td>
<td>5.1</td>
</tr>
<tr>
<td>Morgan</td>
<td>2,600</td>
<td>1.3</td>
</tr>
<tr>
<td>Paint/Pinto</td>
<td>1,400</td>
<td>0.7</td>
</tr>
<tr>
<td>Paint Pinto</td>
<td>1,400</td>
<td>0.7</td>
</tr>
<tr>
<td>Percherro</td>
<td>2,700</td>
<td>1.3</td>
</tr>
<tr>
<td>Quarter Horse</td>
<td>88,000</td>
<td>42.2</td>
</tr>
<tr>
<td>Standardbred</td>
<td>5,000</td>
<td>2.3</td>
</tr>
<tr>
<td>Tennessee Walker</td>
<td>15,500</td>
<td>7.2</td>
</tr>
<tr>
<td>Thoroughbred</td>
<td>30,900</td>
<td>14.5</td>
</tr>
<tr>
<td>T性能騾, 犬騾</td>
<td>13,000</td>
<td>6.1</td>
</tr>
<tr>
<td>Other equine</td>
<td>29,700</td>
<td>13.7</td>
</tr>
<tr>
<td>Total</td>
<td>215,000</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Virginia Horses by Primary Use, 2006

- Trail Riding/Trail Pleasure: 14%
- Other*: 17%
- Racing: 48%
- Breeding: 17%
- Competition/Show: 48%
5 factors for continued growth and development

1. Availability of affordable undeveloped land
2. Maintenance of an agricultural infrastructure that provides the materials, services and facilities needed for breeding, training, stabling, feeding and caring for horses
3. A healthy pari-mutuel racing industry
4. Quality show and competition facilities and venues such as the Virginia Horse Center, Commonwealth Park, and Great Meadows Event Park
5. An active calendar of shows, competitions and other equestrian events

Horse Operations

- 41,000 horse operations in 2006
  — 41% increase from 29,000 reported in 2001
- Over $780 million in horse-related expenditures in 2006
- Estimated average expenditure per equine increased nearly 9% — $3,642 in 2006
- Race horses typically incur more expenses due to:
  — Transportation to and from races and competitions
  — Training and upkeep
  — Need for specialized tack and equipment

Horse Racing

- Virginia was the center of American racing until the end of the 1800's when Thoroughbred industry migrated to Kentucky
  — Thoroughbred racing from June to mid-August
  — Standardbred from mid-September to early November
- 10 off-track betting facilities located throughout the southern half of Virginia
- Competition from neighboring states is intense and escalating
  — WV and PA have legalized slot machines at track and off-track locations
  — MD is in the process of licensing them
  — KY is currently considering slot legislation
Shows, Competitions, and Other Events

- Active calendar of horse shows, competitions, and other horse related events
- Some are restricted to particular breeds or emphasize a specific type of competition
- Competition season occurs mainly in the late spring, summer, and early fall
- May is the busiest month
  - December – least active
- Average length of shows/competitions
  - National shows – 3.3 days
  - Regional events – 2.7 days
  - State events – 1.9 days
  - Local shows – 1.1 days
- Most common event is hunter/jumper shows

Virginia Horse Shows and Competitions by Discipline, 2010

- Hunter/Jumper 54%
- Dressage 25%
- Other 20%

Virginia Horse Show and Competition Attendance Estimates, 2010

<table>
<thead>
<tr>
<th>Category/Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendees</td>
<td></td>
</tr>
<tr>
<td>In-county</td>
<td>428,287</td>
</tr>
<tr>
<td>Other in-state</td>
<td>379,554</td>
</tr>
<tr>
<td>Out-of-state</td>
<td>131,031</td>
</tr>
<tr>
<td>Total</td>
<td>938,871</td>
</tr>
<tr>
<td>Employees</td>
<td>5,207</td>
</tr>
<tr>
<td>Vendors</td>
<td>2,782</td>
</tr>
</tbody>
</table>
### Economic Impact

#### Impacts of the Virginia horse industry

- **Largest employment effects**
  - Agriculture and service sectors
  - Trade and construction
- **Industry purchases**
  - Agriculture (farming, farriers and groomers)
  - Construction
- **Largest component of impact is related to the expenditures of Virginia horse owners**

<table>
<thead>
<tr>
<th>Impact</th>
<th>Employment</th>
<th>Labor Income</th>
<th>Value-added</th>
<th>Total Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>12,098</td>
<td>$323,567,325</td>
<td>$347,346,016</td>
<td>$642,927,067</td>
</tr>
<tr>
<td>Indirect</td>
<td>1,288</td>
<td>$66,090,711</td>
<td>$108,945,789</td>
<td>$198,293,499</td>
</tr>
<tr>
<td>Induced</td>
<td>2,705</td>
<td>$112,752,202</td>
<td>$213,529,230</td>
<td>$326,795,434</td>
</tr>
<tr>
<td>Total</td>
<td>16,091</td>
<td>$502,410,239</td>
<td>$669,821,036</td>
<td>$1,202,016,001</td>
</tr>
</tbody>
</table>

*Virginia Total, Direct, Indirect and Induced Impacts of Horse Industry, 2010*
Impact by component

- Largest component is related to expenditure of Virginia horse owners
  - Horse operations:
    - 12,685 jobs
    - $410.1 million in labor income
    - $526.1 million in value-added
    - $926.3 million in total sales
  - Shows and competitions:
    - 2,294 jobs
    - $59.3 million in labor income
    - $92.6 million in value-added
    - $172.6 million in total sales
  - Pari-mutuel racing activities:
    - 1,112 jobs
    - $32.9 million in labor income
    - $51.1 million in value-added
    - $103.2 million in total sales

Distribution of Value-added Impact by Component, 2010

- Largest concentration of economic impacts is in Northern Virginia
  - Fauquier and Loudon counties each have over 800 jobs attributable to the horse industry
  - Largest employment impact is in Rockbridge County (estimated 1,331 jobs stimulated)
  - New Kent County – economic impact of 789 jobs
Horse Industry Expenditures

- Direct expenditures generated
  - Horse operations such as farms, breeding facilities, and boarding facilities
  - Pari-mutuel race facilities and spectators
  - Horse show and competition providers, spectators, and out-of-state participants
- Largest category of expenditure is purchase and upkeep of horses
  - Feed and bedding

Equine Economics

Top five equine expenditures in VA 2006 were:

1. Feed & Bedding $99,648,000
2. Equipment Purchases $92,007,000
3. Labor Expenses $74,178,000
4. Capitol Improvements $72,574,000
5. Equine Purchases $63,638,000

Virginia Equine Survey, 2006

Equine Economics

- Majority of cost = Feed
- 90% of equine operations fed grain concentrate/energy source beyond hay or pasture
- 80% of this feed was purchased in bags from a retail store
- 70% of equine operations fed an additional vitamin/mineral supp

NAHMS, 2005
**Good Quality vs Poor Quality Feeds**

- Decreased feeding rate
- Highly digestible ingredients
- Incorporates technology to increase nutrient availability
- Cost per bag may seem more expensive BUT!!

**Cost per head per day!!**

- If a 50-pound bag of feed costs $12.00
  - $0.24/pound
  - Recommended minimum of 6 pounds / day
  - Cost per day = $1.44

- Another feed costs $15.00 for 50 pounds
  - $0.30/pound
  - Recommended minimum of 4 pounds / day
  - Cost per day = $1.20

**Quality**

- Guaranteed Analysis doesn’t tell you ANYTHING about the digestibility or quality of the feed.
- Just because the %CF or %CP are values you expect doesn’t mean quality.
Fiber Quality

- Historically fiber was used as a filler in grain concentrates
- Horse evolved to eat a high fiber diet
- Feeds shifted to high fat, high quality fiber
- Decreased digestive disturbance

Fiber Quality

- All fiber sources are not of equal value to the horse.
- Fiber Quality is a matter of digestibility
  - Good - Dried beet pulp, soybean hulls
  - Moderate - Dehydrated alfalfa meal, Ground Timothy, Ground Orchard grass
  - Poor - Oat hulls, peanut hulls, rice hulls

Fiber Quality

- Low-roughage or poor quality roughage diets can = digestive disturbances:
  - hindgut acidosis
  - colic
  - gastric ulcers
  - behavioral problems
- Course roughage with low digestibility or particularly course fiber has been observed to cause impaction colic.
Protein Quality

- Type & amount of **essential** amino acids.
- Lysine, Methionine and Threonine.
- The only way to assume quality of the protein is to read the ingredients.
  - Soybean meal, dehydrated alfalfa meal ✓
  - Wheat middlings and flaxseed meal ✗

Protein Quality

- **GOOD**
  - 12% crude protein feed - Soybean meal, dehydrated alfalfa meal and milk-based ingredients (Whey).
- **BAD**
  - 12% crude protein feed – Wheat Midds as the main protein source (Collective term – “Grain Byproducts”).

Quality not Quantity!

- Growing Thoroughbred foals
- 14% CP vs. 9% CP
- No difference in BW, ADG, physical measures

Staniar et al., 2001
Protein Quality

- Increasing protein quality rather than quantity has advantages:
  - More efficient utilization by the horse
  - Less contamination of pasture by excreted nitrogen

Environmental Impact

- Excess minerals
- Whatever is not used by the horse is excreted and may impact soil quality, water quality and pasture quality

Manure Disposal

<table>
<thead>
<tr>
<th>Method</th>
<th>%</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine garbage pickup</td>
<td>2.6</td>
<td>(0.3)</td>
</tr>
<tr>
<td>Hauled to landfill</td>
<td>1.5</td>
<td>(0.2)</td>
</tr>
<tr>
<td>Hauled away, other than to landfill</td>
<td>10.9</td>
<td>(0.6)</td>
</tr>
<tr>
<td>Applied on fields on the operation where any livestock graze</td>
<td>37.2</td>
<td>(1.0)</td>
</tr>
<tr>
<td>Applied on fields on the operation where no livestock graze</td>
<td>42.0</td>
<td>(0.9)</td>
</tr>
<tr>
<td>Manure/waste bedding allowed to accumulate or left to nature</td>
<td>32.4</td>
<td>(1.0)</td>
</tr>
<tr>
<td>Sold or gave away</td>
<td>16.9</td>
<td>(0.7)</td>
</tr>
<tr>
<td>Other</td>
<td>2.3</td>
<td>(0.3)</td>
</tr>
</tbody>
</table>
Environmental Impact

- 1100lb horse - maintenance
- Endogenous losses = 16mg/day
- Diet A
  - 46 mg of Cu
  - 35% available
  - 16 mg of Cu available to meet the daily endogenous loss
  - 30 mg of copper from the diet would be excreted into the environment.

Lawrence, 2004

Environmental Impact

- 1100lb horse - maintenance
- Endogenous losses = 16mg/day
- Diet B
  - 23 mg of Cu
  - 70% availability
  - 16 mg of Cu available to meet the daily endogenous loss
  - 7 mg of copper from the diet would be excreted into the environment.

Lawrence, 2004

Environmental Impact

- Effects of Excess Copper In Dairy Manure Applied to Cool Season Forage Grasses
- Decreased growth rate & plant quality in Timothy and Orchard grass plots (root weight & new shoots)
  - Just Cu: what about Sodium selenite, excess protein (N)

Flis et al., 2008
Summary

- The QUALITY of the ingredients DOES MATTER!!!
- The guaranteed analysis can be met with poor quality ingredients - condition and performance of your horse will be decreased.
- Poor quality protein and fiber are not well digested by the horse.

Horse Slaughter

• The last U.S. slaughterhouse that butchered horses closed in 2007 in Illinois, and animal welfare activists warned of massive public outcry in any town where a slaughterhouse may open.
Did you know....

- Congress never banned horse slaughter but gave inspection powers to the Agriculture Department in 1996.
  - In 2006, it voted to halt federal inspections, which essentially ended the industry.
- Industry withered in 2006 when the government could no longer inspect plants that butchered horses for consumption and the meat couldn’t be sold.

• Since the Ban:

- The number of horses exported from the U.S. to Mexico increased by 660 percent (%).
  - Almost 138,000* horses were shipped out of the country for slaughter in 2010, compared to the 104,899 horses that were slaughtered domestically in the year before the ban took effect.
- *This number may be underestimated by up to 30% due to ‘Show Horses’ not returning....
- Abuse and neglect increased when horse slaughter shifted to Mexico and Canada – horses where beyond the reach US law

• A federal report issued in June found that local animal welfare organizations reported a spike in investigations for horse neglect and abandonment since 2007.
  - Colorado: data showed that investigations for horse neglect and abuse increased more than 60 percent
  - It has been estimated that over a 1,000 of ‘unwanted horses’ have been abandoned in the Appalachian area alone.
• Recently….  
  • President Obama signed a bill that dropped the prohibition on inspections  
    — Administration now stands ready to conduct them should anyone open a horse-slaughter plant.  
  • According to the Agriculture Department’s Food Safety and Inspection Service there are no horse slaughterhouses operating in the U.S. that produce meat for human consumption  
  • Many states have laws banning horse slaughter  
  • Dozens of states in the South and West now plan to begin horse slaughter processing, a business worth about $65 million a year.

• Opponents claim horse meat inspections could cost taxpayers $3 million to $5 million a year.  
• Lawmakers in California and Illinois have banned the slaughter of horses for human consumption  
  — More than a dozen states tightly regulate the sale of horse meat.

• Pro-slaughter activists say the ban had unintended consequences:  
  — increase in neglect  
  — abandonment of horses  
• They estimate a slaughterhouse could open in 30 to 90 days with state approval and eventually as many as 200,000 horses a year could be slaughtered for human consumption.  
  — Most of the meat would be shipped to countries in Europe and Asia, including France and Japan.  
• The practice of Americans dining on horse meat is virtually non-existent in this country, where the animals are treated as beloved pets and iconic symbols of the West.
Conclusions

• The horse industry is an evolving but steady market.
• The feed industry must adapt to the changing demographics.
• Consumer knowledge and environmental impact concerns will continue to increase.
• The ‘unwanted horse’ situation will continue to be an issue for the foreseeable future.