

# NEWS UPDATE

## EQUINE SCIENCE CENTER

*"Better Horse Care Through Research and Education"*

SPRING 2008

### Podcast Series Offers Dynamic Way to Learn

Recognizing the growing trend toward multi-tasking, the Equine Science Center has created a series of podcasts for learners "on the run" or on their computers.

Using the latest in learning techniques, the podcasts cover some of the most asked-for information presented in the popular print-version Fact Sheets produced by Rutgers Cooperative Extension faculty and posted on the Equine Science Center website. Podcast subjects currently include:

- The Basics of Equine Nutrition (in two parts)
- Care for the Older Horse: Diet and Health
- The Basics of Equine Behavior
- Horse Trailer Maintenance and Trailing Safety (in two parts)

The running time for the podcasts ranges from five to seven minutes. They are available for listening or downloading on the Rutgers podcast site at <http://iTunes.rutgers.edu> and via a link on the home page of the Equine Science Center website, [www.esc.rutgers.edu](http://www.esc.rutgers.edu).

The source material for the podcasts – Rutgers Cooperative Extension Fact Sheets – consists of original research by Extension and Equine Science Center-affiliated faculty as well as summaries of research and publications produced by other prominent scholars and experts. More than 40 Fact Sheets address topics of interest to horse and horse farm owners and individuals involved in the horse industry. On the Equine Science Center website, these are linked to frequently asked questions and a dynamic search engine, which make finding answers a very simple task.

According to Dr. Karyn Malinowski, director of the Equine Science Center, the podcast series is just one more way of sharing the knowledge and research of the Center with the public.

"Our mantra is 'better horse care through research and education,'" she notes. "The Equine Science Center offers a wide variety of ways to learn – from seminars and conferences to peer-reviewed Fact Sheets to our highly interactive website, even to this newsletter. Audio recordings in the form of the latest podcast technology are just one more way to make learning as convenient and effective as possible," she says.

With this new technology, the Equine Science Center is among the first at Rutgers, and it is in the advance corps of leading academic institutions nationwide adopting this learning method.

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# From the Clubhouse

*Dr. Karyn Malinowski, Director*

Photo by Nick Romanenko



The Equine Science Center faculty and staff are off and running for 2008! There are exciting events coming up that you can read about in more detail in this newsletter. We are moving into the 21st century by featuring podcasts of some of our most popular Fact Sheets. Now you can take "better horse care through research and education" wherever you go!

A wonderful experience for me took place on January 9 and 10. Dr. Mary Nikola and I had the extreme pleasure of teaching a new short course, "Developing Future Leaders for the Horse Industry," to 29 enthusiastic students. There was a wonderful mix of undergraduate and graduate students along with people actively engaged in the equine industry. Also featured were outside speakers of the highest caliber, including Dr. Scott Palmer from the New Jersey Equine Clinic and Tom Luchento, President of the Standardbred Breeders and Owners Association of New Jersey. The class was split into four teams which worked well together over the two days. On day two, there was so much interest in the case study given to the class that half the class stayed an additional hour after dismissal. Sandy Denarski, the chair of Rutgers University Board for Equine Advancement, participated in the class and brought a wonderful business perspective to the discussion.

Dr. Mike Fugaro is also dazzling undergraduate and graduate students with another new course offered this semester, "Advanced Equine Health Care and Management." This course is sponsored by the Equine Science Center and is a partnership between Rutgers University and Centenary College. I'm sure the evaluations will be superb!

We also have been staying busy working with the Standardbred Breeders and Owners Association, the New Jersey Sports and

Exposition Authority and other organizations in providing data from the New Jersey Equine Industry 2007 Economic Impact report as leaders continue discussions with the governor's office regarding sustainability for the racing industry. In any press or media regarding the state of horseracing in New Jersey, the Center's study is usually cited.

I would like to congratulate two supporters of the Center on their recent recognition, which is truly worthy. Gwen Stableford was recognized by the New Jersey Department of Agriculture's Equine Advisory Board with the Governor's Trophy for Horse Person of the Year. Miss Stableford has worked tirelessly on the horse industry's behalf for decades and is one of the original supporters of our work at Rutgers. The Equine Science Center honored Patty Hogan, VMD, ACVS of Hogan Equine LLC at Fair Winds Farm with the "Spirit of the Horse" award. This award is given annually to a person whose life has been impacted by horses and who gives back, unselfishly, in return. Dr. Hogan certainly fits the criteria for this award!

While marking your calendars for future events, take note! The Center is working on "Horses 2009." I can't believe that a year has gone by since our last equine extravaganza! The dates will be March 28 and 29, 2009. After last year's success with "Horses 2007" we have our work cut out for us to equal or better our efforts.

I would like to remind everyone that working with and around horses is a risky business. Let this also serve as a reminder to inspect your facilities for potential hazards. For updates and fact sheets on the topics of horse and farm safety, visit our website at [http://www.esc.rutgers.edu/publications/farms\\_safety.htm](http://www.esc.rutgers.edu/publications/farms_safety.htm) for copies of these materials. Regardless of how experienced you are and reliable your horse is, accidents do happen.

I wish you a pleasant spring full of great equestrian activity. Thanks to all of our RUBEA members and donors for your continued support. I look forward to a very productive year!

## Podcast Series (continued)

Other universities that are leading the way include the University of California at Berkeley and Stanford University.

Experts in the field of education and communications are increasingly interested in adapting new technologies to the learning process, according to Diana Orban Brown, director of communications for the Equine Science Center. "At Rutgers, for example, faculty and staff are developing new ways to reach our various audiences, especially through electronic communication," she says.

Among the possibilities are DVDs and CDs, email newsletters, interactive websites, teleconferencing and videoconferencing, blogs, social networking sites, "wikis," instant messaging and text messaging.

The podcasts, then, were an outgrowth of this trend and were the brainchild of Orban Brown and Beverly Saadeh, a journalist and horse owner who saw the possibilities of using this new technique to deliver traditional information.

# Rutgers' Ninth Annual Young Horse Teaching and Research Program Yearling Auction to be Held on April 27

The Ninth Annual Yearling Auction, to be held at the Round House on the G. H. Cook Campus, Rutgers School of Environmental and Biological Sciences, will once again offer 12 well-trained yearling horses for sale as performance horse prospects. The six geldings and six fillies have spent the past eight months as part of the Young Horse Teaching & Research Program, which culminates on April 27 when they are sold at auction to raise funds for the program's following year.

This year's crop of yearlings ranges from very tall and refined to the heavier draft types, with something for everyone. They are sired by Hanoverian, Thoroughbred, Quarterhorse, or American Paint stallions out of Belgian or Percheron-cross mares. The horses' colors also range across the spectrum with eye-catching bays, chestnuts, blacks, a buckskin, a light red dun and even a red roan!

The yearlings come from the Hiatt Ranch in North Dakota, which has provided horses for the program since its establishment, and two North American Equine Ranching Information Council (NAERIC) Sport Horse breeders in Manitoba, Canada — Ravine Ranch and Early Dawn Sport Horses. The six Canadian yearlings are double-registered with NAERIC and the Performance Horse Registry, and the six from North Dakota will be registered with the American Warmblood Society.

More than 30 students participate in the Young Horse Teaching & Research Program each year. In addition to learning how to train and handle young horses, the students assist with nutrition research and marketing projects, gaining valuable

skills and knowledge for future careers in science and/or the equine industry. Ranging from beginners to advanced horse handlers, they are responsible for the daily care and training of the horses in preparation for the excitement of Ag Field Day and the Auction.

Photographs and detailed descriptions of the yearlings can be found at the program's student run website: [http://web.mac.com/ru\\_horses](http://web.mac.com/ru_horses) and at the Equine Science Center website: [www.esc.rutgers.edu](http://www.esc.rutgers.edu). The yearlings also can be viewed by appointment with Dr. Sarah Ralston ([Ralston@aesop.rutgers.edu](mailto:Ralston@aesop.rutgers.edu), 732-932-9404). The program's students will also be showing the yearlings in hand at the G. H. Cook Campus's Ag Field Day Horse Show, at 10 a.m. on Saturday, April 26.



*The Young Horse Teaching and Research yearlings will be shown in hand at the G. H. Cook Campus's Ag Field Day Horse Show at 10 a.m. on Saturday, April 26, and at a special preview on April 12 at 5 p.m.*

## Podcast Series (continued)

"Universities are adapting to the new way that students communicate with their peers and absorb information," says Malinowski. "Even though there will always be a place – indeed, an emphasis – on classroom education because of the advantages it provides students with interaction and peer reinforcement, we have gone way beyond the traditional classroom."

Among other methods, online learning opportunities are being offered by many faculty, including Dr. Sarah Ralston whose popular semester-long horse management and equine nutrition courses are available online. A growing number of continuing education courses also have an online or distance-learning/video-conferencing component.

Another example is the Equine Farm and Land Management Short Course organized by Dr. Carey Williams. The two-day session was reproduced on a 10-disc DVD set that is available for purchase for \$79.99 from the Rutgers Cooperative Extension office at 732-932-9514.

Other innovations currently are being developed by Rutgers' Office of Continuous Education and Outreach and the Office of Continuing Professional Education.

In the meantime, more podcasts are under development. Future topics will include a series on farm and barn safety, the care and feeding of the older horse, nutrition for foals and growing horses, descriptions of equine metabolic issues, causes and prevention of equine stress, manure management and pasture management.

# Student Voices: So What Do You Do With a Degree in Horses?

*Laura Gladney  
Class of '08*

This question has been on my mind since I decided to become an Animal Science major (equine option) three years ago.

Like many high school students, I applied to different colleges without knowing what I wanted to do with my life and hoping to stumble upon the right career. Throughout high school, my passions were theater and horses, and I had been informed that neither of these were acceptable ways to make a living in "the real world." So I left for the University of Connecticut without declaring a major, assuming I'd find something I liked.

Well, that didn't quite work out. Within a semester I had transferred to Rutgers simply to be closer to home. My options were the School of Environmental and Biological Sciences (SEBS), or the School of Arts and Sciences. When I saw that SEBS had an Animal Science major, my mind was made up! I have loved and worked with horses since I was eight years old and I felt as if someone was trying to tell me, "Just do it already!" However, I still had no idea of what I wanted to do for a living. I just knew that I was one step closer to working with horses.

Once here, I immersed myself in everything equine. I joined clubs, took classes, and became a research student with Dr. Carey Williams. I learned two very important things that semester: first, working in the treadmill lab is a lot of fun; and second, I don't do very well with needles. Simply watching someone draw blood made me feel faint, needing to lie down on the lab bench! However, thanks to Dr. Williams' patience and understanding, I was eventually able to draw blood myself and even catheterize a vein in preparation for an exercise test. It was a huge personal accomplishment for me and the first of many achievements in the treadmill barn.

My next step as an undergraduate research student was to participate in the George H. Cook Honors Thesis program. Because I transferred to Rutgers with no prerequisites, I was about a year behind in my classwork and uncertain if I had the background knowledge to take on such a project. Dr. Williams again supported me and suggested I go for it. During the summer of 2007, we started an 18-week study testing the effects of an antioxidant enzyme on exercising horses. It involved some long days and late nights, and I learned a lot about the hard work and dedication that go into equine research. The labwork phase was equally demanding, requiring nearly two full weeks in the lab. It required meticulousness and a lot of patience, but it all paid off when we saw our results in neat little graphs.

While the G.H. Cook project itself is not officially over, I have already received some feedback from presenting my findings at the American Society for Animal Science's Northeast Student Affiliate competition. Not only did I win second place in the Independent Research category, but all of the Rutgers G.H. Cook students swept that category. That was when I realized how fortunate I am to be involved with research at a top equine research facility.

I also have the Equine Science faculty to thank for several other opportunities I have received here. From volunteering at the Jersey Fresh CCI\*\*\* to a summer internship with Nutrena, a feed company, I have learned that anything's possible when you go to SEBS. My latest adventure has been applying for horse-related summer internships at Virginia Tech, as recommended by Dr. Williams. I think the most important thing I've learned from my experience at SEBS is to take every opportunity that interests you, no matter how large or small. You never know who you'll meet or what you'll learn.

I am graduating this spring, and I still don't know exactly what I'm going to do with my "degree in horses:" maybe I'll go to graduate school; maybe I'll work in the industry; maybe I'll work in Extension; maybe all three! What I do know is that life is a journey; nothing is set in stone. Wherever I end up, I'm sure it will be in some part due to the experiences and opportunities I got here at SEBS.



*Laura Gladney and Snowdrift.*

# Faculty Voices: The Role of the Horse in Human Health

Dr. Kenneth H. McKeever

Most people don't realize the role that the horse has played in many of the important discoveries that benefit both human and horse health. We all benefit from the basic and applied physiological research conducted on horses over the last few centuries.

A quick look back in history finds many examples of the use of the horse for biomedical research. For example, in 1792 Sir John Hunter found that blood in horses that had been run excessively would not clot. More modern studies show that he was describing the action of natural "clot busters" like tissue plasminogen activating factor (tPA), a substance used in drugs to treat people with heart attacks and strokes.

Many cardiovascular discoveries were made in the 1800s using the horse as a subject, most likely because of their large blood vessels and calm disposition. Researchers like Stephen Hales, August Chauveau, Jules Marey, Francois Magendie, and Claude Bernard (the "father" of modern physiology) all mastered techniques and made groundbreaking discoveries that are the foundations of modern cardiology.

In the early 1900s Van Slyke used horse blood to develop the oxyhemoglobin dissociation curve, a mathematical model used in blood gas analyzers in human and veterinary hospitals worldwide.

There are many other examples of the use of the horse as an animal model for basic research at the Rutgers Equine Science Center. Most recently, my team of colleagues and students from multiple departments and institutions have partnered with the Department of Defense to examine the anti-inflammatory and performance effects of various food extracts. Those studies have demonstrated that flavanols in cranberry and black tea reduce exercise-induced inflammation, a finding that may lead

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to reduced reliance on NSAID drugs in human soldiers as well as in equine athletes.

The key to the success of this research and other studies conducted at Rutgers are the many physiological similarities between horses and humans, such as the cardiovascular, muscular, thermoregulatory (sweating), immune, and endocrine responses that make the horse an ideal intermediate animal model for conducting those studies. Just as important is the athletic nature of the horse and its natural desire to run, which makes it easy to conduct controlled studies in the Center's high speed treadmill laboratory.

Thirteen years ago Dr. Malinowski and I conducted the first treadmill studies of aged horses. Since then Rutgers has published more information on the aged horse than any other institution in the world. Those studies are just part of the 145 book chapters, papers, and more than 60 abstracts that have advanced our understanding of the athletic horse. Over the last 29 years, collaborating with students and colleagues, I have charted new ground in a number of areas of endocrinology, demonstrating the effects of exercise and training on the hormones that control blood pressure and blood volume. Those studies increase our understanding of the mechanism behind high blood pressure. Studies have also looked at the hormones associated with the control of energy balance and appetite with application towards understanding anorexia and obesity in humans and horses.

Finally, many of the studies conducted over the years have examined the effects of various drugs on performance. Partnerships with the New Jersey State Police Equine Drug Detection Laboratory have yielded critical information that has been used in formulating new detection methods. This research has also been an asset for policy formulation by the Racing Commission in New Jersey and other states.

What excites me most is that my efforts are training the next generation of integrative and regulatory physiologists who follow in the footsteps of all of those who have used the animal model of the horse as a tool to make new and important discoveries benefiting horses and humans.



*Dr. Ken McKeever enjoys training the next generation of equine scientists.*

# Equine Science Update 2007 Looked at Bigger Picture

By Beverly Saadeh

Reprinted with permission from *Horse News*

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The Rutgers Equine Science Center understands the butterfly effect of the horse: one change has a thousand repercussions. The topics presented at the Center's annual Equine Science Update, held Dec. 11, 2007, reflected this domino effect. Despite the sleet and wind, a standing-room-only crowd gathered at the New Jersey Agricultural Museum on the G. H. Cook Campus to hear the latest equine research Rutgers has been involved in.

The Equine Science Center continues to take a national lead in researching things that affect the horse and the equine industry. The Center is working to ensure not only are there healthy horses to ride, but that there are green pastures, quality water and a vibrant support community for them, as well as future leaders to continue the legacy that is being built. Most importantly, the Center is standing tall in front of community and legislative members who accuse the horse of pollution or reduce it to a frivolous hobby.

The past science updates have focused on nutrition and health of the horse. As a change, this year's venue went farther afield, reviewing research on the horse's impact on the ecological system. Research on nutritional and joint health rounded out the evening's presentations.

## Ecological Impact

Postdoctoral associate Valdis Krumins covered the use of equine manure for energy. The popular term "bio-energy" is used to describe the conversion of animal waste into fuel. This is already being done in Europe and in the U.S. on large cattle and swine operations.

"The average horse produces 12 to 13 tons of wet waste a year. This includes bedding, urine and manure," said Krumins.

Multiplying that tonnage by the number of horses in the state equals over 170,000 dry tons of manure created in the Garden State each year. That could translate into \$10 million of recoverable energy annually.

Equine waste is unique in that bedding is often mixed with it. This additional material, usually wood shavings or straw, can add to the energy value, but also poses a threat in clogging the equipment that processes the raw material. Studies are currently underway to determine the impact of the bedding on the production process. Once a model for creating bio-energy from manure is established, there still persists the question of

economic viability. Is it cost effective for a small farm to produce bio-energy or should regional facilities be established?

The possibility of manure as an energy resource is offset by the concern of its run-off polluting fresh waterways. At the request of the Center, Rutgers Cooperative Extension conducted a study to determine whether or not the accusation that horse farms in the Colts Neck area are responsible for the pollution that closed several New Jersey beaches is true. The study, presented by Rutgers Agricultural and Natural Resources agent Bill Sciarappa, vindicated the horse in this particular case; the culprit turned out to be urban erosion caused by man. While agriculture is a major pollutant throughout the nation, New Jersey is a leader in reducing pollution through establishing best management practices for horse farms.

This study also suggested that horse pastures, acting as sponges, could work as buffers for flood control and erosion. Unfortunately, many pastures are overcrowded and have lost the turf that facilitates absorption. Studies are now underway to find pasture grasses that will develop extensive root systems and withstand heavy foot traffic, while simultaneously providing balanced nutrition for horses.

## Nutritional Updates

Dr. Sarah Ralston, associate professor in the Department of Animal Sciences, updated the audience on the Young Horse Teaching and Research program. For the past two years, her research has focused on total mix ration cubes, or TMR. Its advantages are consistency in quality and availability, ease in storage and handling and better control of excreted nutrients that may contribute to water pollution. TMR cubes are a standard in the cattle industry and are now being formulated and evaluated for horses. Total mix ration cubes are designed for free choice access and are roughage-based. In addition to sustaining weight gain in young horses, they were also evaluated for blood glucose levels.

Findings from the past several years' studies on insulin resistance and glucose levels' effect on growth have sent Ralston back to the drawing board. Her glucose/insulin research is now delving deeper into the role of genetic influence and the metabolic pathways of diseases associated with insulin resistance (IR).

"IR may be a marker but it is not the cause," said Ralston.

*(continued on page 8)*

# Learning More About the Equine Science Center

The Equine Science Center is raising awareness of its people, events and work through a series of informational "advertorials" aimed at various audiences and utilizing the pages of many popular equine publications.

From announcements of major programs funded through the Equine Science Center to a roadmap for accessing information through the Center's website, the advertorials (a combination of the words "advertisement" and "editorial") have been helping the public learn how to tap into the resources of the Center, its faculty and staff.

According to Sandy Denarski, chair of the Rutgers University Board for Equine Advancement, the advisory group to the Equine Science Center, one of the primary goals of the Center is to expand its visibility throughout New Jersey as well as nationwide and internationally.

"The Equine Science Center is one of the few – and perhaps the only – university-based organization dedicated to preventing disease and injury in horses and improving the quality of their environment and the health of the equine industry. Other centers and programs might focus on fixing problems or curing diseases, but the Rutgers Equine Science Center is the only one totally focused on prevention," Denarski says.

"Yet, even though the Center's outreach programs are

extensive, not every horse person in New Jersey and elsewhere is aware of the work of the Center. Thus the advertorial series has been very instrumental in getting the word out," she adds.

Recent advertorials have talked about the environmentally-sound best management practices demonstration farm that is being developed on the G.H. Cook Campus, the extensive library of Fact Sheets that covers wide-ranging areas of good horse-keeping, the latest statistics and data from the New Jersey Equine Economic Impact Study, the schedule of courses and seminars that are open to the public, and similar subjects. Another series talks about the students who are involved in equine studies, how they got interested in the subject, and what they plan to do after their undergraduate work at Rutgers is finished.

A new series of advertorials will discuss challenges and issues facing the horse industry and what the Equine Science Center is doing to address them. And of course, starting this summer, advertorials will announce the exciting programs and speakers of the upcoming Horses 2009 educational conference, scheduled for March 28 and 29, 2009.

Publications that have featured the Equine Science Center include *Horse News*, *Equine Journal*, *Pennsylvania Equestrian*, *Hoofbeats*, *Equine Marketer* and others.

### Better Horse Care Through Research and Education



**RUTGERS EQUINE SCIENCE CENTER: OUR MIDDLE NAME IS SCIENCE**

The Equine Science Center at Rutgers, The State University of New Jersey, is pleased to announce the mission of establishing better horse care through research and education in order to address the well-being and performance of horse and the equine industry.

- Identifying issues affecting horses and the horse industry
- Finding solutions through science-based inquiry
- Providing answers to the horse industry and to horse owners
- Influencing public policy to ensure the viability of the horse industry

So how does that mission apply to people who care about horses? Below are a few examples:

### Equine Science Center

**GETTING WELL-INFORMED: EXTENSIVE FACT SHEETS PROVIDE LOADS OF VALUABLE INFORMATION**

An entire "library" of fact sheets and information for horse owners, trainers, veterinarians, and people just starting out in the equine world is available at Rutgers Equine Science Center's website.

Equine Science Center's website and fact sheets are available on the Equine Science Center's website. You will see an area packed with information that will help you learn more about horse care and equine science. You will also find information on the Equine Science Center's website. You will see an area packed with information that will help you learn more about horse care and equine science. You will also find information on the Equine Science Center's website.

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**Equine Health Care: A Key to Better Horse Care**

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# Update 2007 (continued)

Graduate student Emily Lamprecht updated the audience about her research on equine joint-use trauma which accounts for 68% of training days lost with horses. She described the development of three models that can be used for evaluating changes in joint health after intensive exercise. They involve blood markers, synovial fluid analysis and thermography.

Lamprecht explained how intensive exercise creates cellular damage and causes inflammation, oxidative stress on tissues and possible osteoarthritis. Lamprecht stressed inflammation is the body's reaction to cellular damage and has benefits. The problems arise when the stresses become chronic, which then lead to joint health damage. Oral supplements are being evaluated for their potential in positively affecting joint health. The study's goal is to develop a means for early detection and prevention of injury to joints from use trauma and to design a training protocol that will reduce lameness from intensive exercise.

Supplementing for more than joints was the focus of Dr. Carey Williams' presentation. For the past two years Dr. Williams, the Cooperative Extension equine specialist, has studied nutritional profiles of horses competing at the Jersey Fresh CCI\*\*\* event held at the Horse Park of New Jersey. In both years, nearly half of the competitors have volunteered participation — filling out extensive questionnaires on feeds and supplementation and allowing Williams' team to draw blood from the horses before, during and after the event. The data has not been fully analyzed, but Williams was able to share information on the types of supplements used by the top athletes in this discipline. A quick rundown of supplement usage showed the following:

- 88% used electrolytes
- 85% used a digestive health supplement
- 62% used a joint supplement (63% used an oral supplement and 51% used an oral supplement as well as joint injections)

A quick analysis did expose that those horses without fresh pasture as a component of their diet showed consistently lower blood levels of vitamins compared to horses with fresh pasture as part of their nutritional program.

The health and training of the animal is only one component of the equine industry and the Equine Science Center is on a quest to make sure all the components are looked at in the big picture to insure the health of the industry. Horses need space, use land, eat crops, produce waste, affect water quality and are emotional targets for enthusiasts as well as detractors. New Jersey is leading the nation in producing scientific research in all of these areas. The Center is looking at the dominos and where they will fall next.

For more information see [esc.rutgers.edu](http://esc.rutgers.edu).

# Upcoming Events

## 90th Annual Ag Field Day

Saturday, April 26, 2008

G. H. Cook Campus

Rutgers, The State University of New Jersey

New Brunswick, NJ

## Young Horse Teaching and Research Program Yearling Auction

Sunday, April 27, 2008

11:00 a.m. – Pre-Auction Viewing in Red Barn

1:00 p.m. – Auction at Round House

G. H. Cook Campus

Rutgers, The State University of New Jersey

New Brunswick, NJ

## Farm and Land Management Short Course

Thursday, May 15, 2008

Snyder Farm

Pittstown, NJ

Thursday, May 22, 2008

Salem County Extension Office

Woodstown, NJ

## Equine Science Update

Tuesday, December 9, 2008

Cook Campus Center

Rutgers, The State University of New Jersey

New Brunswick, NJ

## ★ Save the Date! ★

### Horses 2009 Educational Conference

March 28 - 29, 2009

New Brunswick, NJ



“Better Horse Care Through Research and Education”

Dr. Karyn Malinowski  
Director

Diana Orban Brown  
Director of Communications

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