

EQUINE SCIENCE CENTER Better Horse Care through Research & Education



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Better Horse Care through Research & Education

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Equine Science Center

Rutgers , The State University of New Jersey 57 US Highway 1 New Brunswick, NJ 08901

(848) 932-9419

esc.rutgers.edu esc.rutgers.edu/fb

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MESSAGE FROM THE DIRECTOR

People all over the world interact with us daily; it is time that we raise the bar higher.

Since its inception, the Center has established itself prominently within state, national, and international equestrian communities through its research and outreach programs, strategic partnerships with state and federal agencies and private entities, dynamic website, and the widespread recognition and acknowledgment it has received as a result of the impact of its programs.

An example of our outstanding outreach is the highly successful "Equine Science 4 Kids" initiative, which has just been recognized as the first youth curriculum to be added to the equine science component, "Horse Quest," of eXtension. As it pertains to research and academics, the undergraduate and graduate students who have participated in our programs have gained valuable experience yielding a high success rate of acceptance into veterinary and graduate programs, in addition to producing students with skills needed to better manage horses in the industry.

By assembling diverse and multifaceted research teams, we are better equipped to thoroughly investigate equine issues that matter to our stakeholders and advance our mission. Center faculty and staff continue to succeed in the procurement of over \$500,000 through grants, contracts, and gifts during the period July 1, 2012 - June 30, 2013. The Rutgers University Board for Equine Advancement (RUBEA) has stepped up its role in, and commitment to our ambitious fundraising campaign. The campaign will expand Center faculty, research capabilities, programming, and outreach. People all over the world interact with us daily; it is time that we raise the bar higher. In 2012 alone, the Center received questions from over 21 countries worldwide through the "Ask the Expert" feature on our website. This is truly a testament to the influence of our programs and the significance of the equine industry on a global level.

The Equine Science Center is the force behind connecting invaluable research findings to the greater community and promoting best practices and knowledge to those caring for and working with horses. This year, Center faculty and students published 14 refereed journal articles, one new book, four book chapters, and numerous multi-media presentations and guest lectures.

I invite you to visit our website, spend time with us during one of our public meetings and Open Houses, and learn how we are training new generations of knowledgeable, equine advocates and specialists. passionate

With your partnership and generous support, the Equine Science Center looks forward to a bright future in service to the horse industry.

Best.

Karyn Malinowski, Ph.D. Director, Equine Science Center

WHO WE ARE



A unique equine academic environment.

The Equine Science Center at Rutgers, is the only equine-related academic entity in the country that assembles faculty, students, and staff from multiple disciplines and departments, both from within and outside the university. Our expert collaborative teams identify, research, and provide solutions for challenges facing horses, horse owners, and the horse industry.

The Exercise Physiology Laboratory, on the G.H. Cook Campus houses a high speed equine treadmill. Faculty and students have systematically used this invaluable piece of equipment in many research studies over the past two decades. The laboratory contains over \$2 million of state-of-the-art analysis equipment. With these resources, we provide undergraduate and graduate students the opportunity to work in a world-class scientific environment. A center for advanced learning in large animal sciences.

As the rural landscape of New Jersey changes, fewer students with interest in animal and veterinary sciences have sufficient exposure to large animals. For this reason, the Equine Science Center has established a specialized curriculum to provide our students the ability to experience the science of horses first hand. Our graduates are consistently recognized by veterinary schools for their experience with large animals at the Equine Science Center. As a result, a remarkably high percentage of our students are accepted by veterinary schools, and we are proud to note that many have gone on to become practicing large-animal veterinarians. Through several yearly treadmill demonstrations which are open to the public, our website, and continuing education courses, the Center impacts people in the equine industry of all ages. A center for discovery, practical research, and applied science.

The Equine Science Center is a hub for mission-oriented, practical researcha critical component in examining and solving equine-related issues. In addition to ongoing research in fundamental equine areas, some of our recent research topics include the role of natural food products for use in horses; ensuring the well-being and a level playing field for equine athletes; enhancement of immune function in all horses; care and management of young and older horses; and the role of horses in the environment.

The Equine Science Center serves as the epicenter for factual equine-based information derived from sound scientific studies. Moreover, with the horse as the closest animal model to human physiology, our research findings are not limited to the equine species, but human medicine as well.

WHAT WE DO



A center dedicated to public outreach and industry values.

A vision for the future.

The Equine Science Center emphasizes outreach and consistently shares research results with the public and the equine industry. We are committed to reaching out to the equine community in a number of different ways including Center hosted events, Rutgers Cooperative Extension programs in every New Jersey county, 4-H Youth Development programs, and a series of horse management webinars, seminars, and field meetings, as well as academic equine science courses open to the public.

Our website (esc.rutgers.edu) includes popular features such as the 'Ask the Expert' page, archived webinars and podcasts, and virtual tours brimming with valuable information. "Equine Science 4 Kids," is an online classroom featuring games, interactive activities, and a little horseplay for children of all ages. In thirteen years, the Equine Science Center has become vital to the future of the global horse industry. As the sole source for research and extension programming, we not only educate leaders, but also ensure the industry's viability, visibility, and vitality. The Equine Science Center has gained the respect and credence of equine enthusiasts in the Garden State and beyond. The New Jersey horse industry relies on the Center to fill a unique role that beckons the support of the industry because it:

- Speaks for the entire horse industry
- Provides credibility for the horse industry
- Has no hidden agenda
- Is the sole source for programming to ensure the industry's viability and vitality
- Is the place of education for the future leaders of the horse industry

Better Horse Care through Research & Education.



Rutgers University Board for Equine Advancement

BOARD MEMBERS

Ryck Suydam, Chair Elizabeth Durkin Esq., Vice Chair Sandy Denarski, Chair Emeritus David Meirs II, VMD, Chair Emeritus Taylor Palmer Jr., Chair Emeritus

> Ryan Avenatti Peter C. Bousum, VMD Michael Campbell Peter Cofranceso, III Thomas Luchento David Klemm Karyn Malinowski, Ph.D. Mark Mullen Hon. Cathy Nicola Max Spann, Sr.

MISSION

RUBEA seeks to assist the Rutgers Equine Science Center in its decisions regarding its equine teaching, research, and outreach; and to promote and support these activities through fund-raising and advocacy efforts.

VISION

RUBEA will become recognized as the advisory, advocacy, and fundraising organization for the Equine Science Center, meeting the financial needs for its sustenance and growth.

> Pictured Below: Guests listen to Dr. McKeever speak about research conducted at the Equine Exercise Physiology Laboratory



Ryck Suydam, Chair

Ryck Suydam is the president of the New Jersey Farm Bureau, partner in Suydam Insurance Agency of Somerset Township and operator of Suydam Farms LLC, a 300+ acre farm in Somerset County. Mr. Suydam has also served as a member of the New Jersey Thoroughbred Horsemen's Association, director of the Belle Mead Farmers Co-op, and director of the Somerset County Board of Agriculture.

Elizabeth Durkin, Esq., Vice Chair

Elizabeth Durkin is founder of The Durkin Firm, LLC. She has been practicing law for over 25 years, and has been involved with horses for equally as long. Part of her practice involves transactions between horse owners. She owns Hound 'N Horse, 140 acres of preserved farmland in New Jersey. Ms. Durkin won the Spirit of the Horse Award in 2011, and is a member of the Equine Science Center's "Community of '50."





Sandy Denarski, Chair Emeritus

Sandy Denarski is the former CFO of Johnson & Johnson Finance Corporation. She has been involved with horses over the last ten years and has contributed much to their awareness and advancement, especially as the former Chair of RUBEA. She received the Spirit of the Horse Award in 2006, and is a member of the "Community of '50."

David Meirs II, VMD, Chair Emeritus

David Meirs II has dedicated his life to the well-being and advancement of horses and the equine industry. Since receiving his veterinary license over 50 years ago, Dr. Meirs has cared for thousands of horses, in addition to establishing one of the most prestigious Standardbred breeding operations in New Jersey. In 2012, Walnridge Farm was awarded NJ Standardbred Breeder of the Year.

Taylor Palmer Jr., Chair Emeritus

Taylor Palmer Jr. is a former board member of the Standardbred Breeders and Owners Association of New Jersey, chairing the Breeders and Finance committees and serving as treasurer for a total of 25 years. Mr. Palmer is a fifth generation operator of Boxwood Farm in Englishtown.







CONTRACTOR Dedicated to the sustainability of the equine

"COMMUNITY OF '50" MEMBERS

Brad Benson Hyundai

Sandy Denarski

Dr. & Mrs. Stephen P. Dey, II

Elizabeth Durkin

Karyn Malinowski

Fair Winds Farm - Mark and Laura Mullen

New Jersey Department of Agriculture

New Jersey Farm Bureau

Standardbred Breeders and Owners Association of New Jersey

UMH Properties

Pamela Arena Weidel



Pictured Right: Frankie on the equine treadmill.

PURPOSE

The "Community of '50' for Equine Excellence" is an open group of dedicated people and organizations that understand the importance of supporting serious scientific research and also want to have a voice in policy-making as it affects horse farms and the horse industry in New Jersey and in this region.



industry through the Equine Science Center.

Members of the "Community of '50" are comprised of individuals, groups and commercial entities. They have committed to donating \$10,000 per year for a total of five years. Currently, our 11 individual and commercial members will donate \$550,000 to the Center for research and outreach activities.

<u>By 2018...</u>

The "Community of '50" will have procured over \$3 million of funding for the Equine Science Center to pursue research and promote industry sustaining initiatives.



Want to join?

Establishing an endowed chair in equine science ensures that the work of the Center lives on in perpetuity.

- Impact policy maker's decisions regarding the equine industry
 - Provide new opportunities for groundbreaking research
- Increase awareness of the value of horses to people and the world

Contact Information

Karyn Malinowski Director, Equine Science Center (848) 932-9419

Kelly L. Watts Associate Dean of Development (848) 932- 3576

RESEARCH 2013-2014 Projects Funded by the Equine Science Center

PRINCIPLE INVESTIGATORS

Carey A. Williams, Ph.D. Rutgers Equine Science Center Department of Animal Sciences

Laura Gladney Rutgers Equine Science Center Department of Animal Sciences

TEAM MEMBERS

Michael Westendorf, Ph.D. Rutgers Equine Science Center Department of Animal Sciences

Mark Robson, Ph.D., MPH Department of Entomology

William A. Meyer, Ph.D. Rutgers Equine Science Center Department of Plant Biology & Pathology

PRINCIPLE INVESTIGATORS

Thomas J. Gianfagna, Ph.D. Department of Plant Biology & Pathology

William A. Meyer, Ph.D. Rutgers Equine Science Center Department of Plant Biology & Pathology

Jeanne S. Peters Department of Plant Biology & Pathology

TEAM MEMBERS

Carey A. Williams, Ph.D. Rutgers Equine Science Center Department of Animal Sciences

Laura Gladney Rutgers Equine Science Center Department of Animal Sciences

Effects of Rotational versus Continuous Grazing Systems for Horses on Environmental Quality, Animal Health, and Production Cost

This project measures the effect of grazing systems on soil quality, plant production, animal health, and production costs by grazing horses in a continuous or rotational grazing system for two years.

Soil quality will be measured by soil fertility, bulk density, and water infiltration.

Plant production will be measured by vegetative cover, forage quality, species composition, and yield.

Horse health will be measured by body weight, body condition score, percent body fat, and voluntary movement.

Economics will be analyzed by comparing production and feed costs.

Creating Safer Pasture Grass through Chemical and Biological Analysis of New Tall Fescue Germplasm

This study is screening forage tall fescue plants that are grown in a Continental climate (Adelphia Turfgrass breeding program) to find endophyte friendly pasturage for horses in New Jersey. Endophyte friendly tall fescue has been developed and exists in the Central Plains and Southern regions of the United States. There have been no endophyte friendly tall fescue cultivars bred for Continental climates typically found in the Northeastern United States. Endophyte friendly tall fescue is useful because it produces low levels of undesirable alkaloids, high levels of desirable alkaloids, and has stand persistence.



Effects of Age and Acute Exercise on Heat Shock Protein 70 and Molecular Mediators of Inflammation and Insulin Sensitivity

Aging and insulin resistance challenge the health and well-being of horses. Recent biomedical research suggests a relationship between cellular mediators of inflammation and insulin resistance. Heat shock proteins (HSPs) are molecular chaperones that repair damaged proteins in every cell type, and are an important part of the adaptive response to exercise in skeletal muscle. Activity of HSPs declines with age, and recent research in human and rodent models with diabetes have indicated that HSPs have an anti-inflammatory role, and act to restore insulin sensitivity.

The goal of this research is to investigate the relationship among cellular mediators of insulin signaling and inflammation in aged and untrained horses in skeletal muscle. The results of these experiments will provide a mechanistic basis on which to develop strategies to maintain the health and well-being of aging horses. Pictured Above: Standardbred filly at Walnut Hall Stock Farm, Lexington Kentucky, one of the oldest family owned farms in the US.

PRINCIPLE INVESTIGATORS

Ryan C. Avenatti, M.S Rutgers Equine Science Center Department of Animal Sciences

Kenneth H. McKeever, Ph.D., FACS Rutgers Equine Science Center Department of Animal Sciences

> Karyn Malinowski, Ph.D. Rutgers Equine Science Center Department of Animal Sciences

TEAM MEMBERS

David Horohov, Ph.D. University of Kentucky Gluck Equine Research Center

Shawn Arent, Ph.D. Department of Exercise Science & Sports Studies

Stephen Alway, Ph.D., FACSM West Virginia University, School of Medicine Department of Exercise Physiology

REPORT ON MA

JOR RESEARCH

Horse Health & Well-Being Environmental Stewardship

HORSE HEALTH & WELL-BEING



Fast Frect

best model for translating exercise training research to human medicine because both horses and humans share the same thermoregulatory mechanism sweating.

Running On Youth Effects of exercise on yearlings and mature horses

Yearlings with no exercise experience undergo lower oxidative stress compared to mature mares with exercise experience. Exercise training for both groups only affected mature mares by decreasing oxidative stress and increasing antioxidant status.

After acute and intensive exercise, oxidative stress in horses can occur leading to cellular and muscular damage. The age of a horse undergoing exercise can affect its ability to recover and adapt from a bout of intensive exercise. Research is limited in the unfit, yearling horse just starting an exercise training program.

The hypothesis of this study from the Williams' lab in support of Ph.D. candidate Danielle Smarsh, was that yearling horses would have higher levels of oxidative stress as measured by malondialdehyde and nitric oxide concentrations, two indicators of oxidative stress, when compared to mature horses accustomed to exercise after a single bout of intensive exercise. In contrast to the expectation that yearlings would have a hard time coping with the introduction of intense treadmill exercise, results of this research indicated that this was not the case.

In a companion study, Williams and Smarsh investigated whether an exercise training/conditioning protocol could help blunt the effect of oxidative stress that occurs after intensive exercise in yearling and mature mares. Training did not affect any of the variables measured in the yearlings. Overall, yearlings did not begin their exercise training with higher levels of oxidative stress in muscle or blood as originally hypothesized. Yearlings had higher muscle nitric oxide prior to exercise training; however, mature mares had higher lipid peroxidation and lower antioxidant status in the muscle prior to exercise training, implying that they had higher levels of oxidative stress overall. However, after exercise training, the mares had lower levels of oxidative stress and higher antioxidant status.

Regenerating Insulin Sensitivity

The balance between exercise, inflammation, and insulin signaling

Heat shock proteins (HSPs) are involved in repairing damaged proteins, insulin sensitivity, and the anti-inflammatory response. Age-related differences of HSPs, and how these differences contribute to insulin resistance and loss of tissue function, are currently under investigation.

Work in the labs of Malinowski and McKeever continues to establish the molecular mechanisms underlying the age-related decline in insulin sensitivity in horses. Ph.D. candidate Ryan Avenatti is investigating the role of heat shock proteins (HSPs) in proper insulin signaling and adaptation to stress in equine skeletal muscle.

Activity of HSPs declines with age, and recent research in diabetic humans and rodent models of diabetes have indicated that HSPs have an antiinflammatory role, and act to restore insulin sensitivity. In humans, skeletal muscle is responsible for 75% of insulin-mediated glucose uptake, and since over 50% of the body mass of horses is made up of muscle (compared to 35 - 40% in humans), understanding the function of HSPs and other molecular mediators of inflammation and insulin signaling in equine skeletal muscle may have profound implications for horses that are aged and insulin resistant.

During the study, aged and young mares performed a series of exercise tests to determine exercise capacity and to collect blood and tissue samples for analysis of several important biomarkers. Analyses currently underway include assays for hormones, such as cortisol, insulin, epinephrine and norepinephrine, as well as immunoblotting for HSPs and related proteins, and gene expression analysis of HSPs and inflammatory cytokines.

This data will shed light on hormonal and molecular factors behind energy balance and the cellular machinery involved in adaptation to stress, and how these mechanisms are altered by aging and inflammation. Data will continue to be analyzed with a projected completion date by April 2014. This basic work will pave the way for the investigation of age-related differences of HSPs and other molecules, how these differences contribute to insulin resistance and loss of tissue function, and what methods can be undertaken to restore HSP activity and proper insulin signaling in aged and insulin resistant horses. As horses and humans age, they share many of the same ailments and conditions, such as diabetes and arthritis. Several medicines for humans have already come from equine research such as glucosamine and chondroitin.

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FARM AND LAND MANAGEMENT 8

Ryders Lane Farm at Rutgers is a fully operating best practices demonstration farm, open to the public all year for self guided tours.

Evaluating Perennial Grass Durability

Developing economical & environmentally sustainable pasture grass

Forage and turfgrass cultivars were tested for durability, wear, and abrasion in equine pastures. Using a combination may improve pasturage quantity, foster vegetative cover, reduce soil erosion and increase pasture sustainability.

In a Center funded project, scientists Bill Sciarappa, Bill Meyer, Stacy Bonos and Melissa Mohr, conducted pasture grass trials from 2007 - 2010 analyzing durability to select for improved forage potential for equine operations.

The combined impact of 1) varietal durability, 2) soil compaction, 3) soil displacement, and 4) divoting on pasture grasses, can create significant environmental issues as well as agricultural, economic and aesthetic problems. Turfgrass traffic tolerance in pastures continues to be a concern in the small state of New Jersey with its dense horse population of 42,500 animals and a large number of equestrian athletic fields and racetracks. Horse hooves add a unique farm animal dimension in damage to turfgrass. Bonos and colleagues developed an improved wear simulator that quickly and uniformly applies wear to a large number of turfgrass evaluation plots. This customized Rutgers model closely simulates severe horse hoof traffic in terms of abrasion, wear, and durability.

A wide range of results contrasted the better and the poorer pasture grass species and mixtures of 40 cultivars. Long-term, the Kentucky bluegrasses and combinations of Kentucky bluegrass, orchardgrass and tall fescue provided the highest level of wear tolerance.

Timothy and several other seed mixes did not perform well in the simulated model. Wear-resistant selections could be promoted over consumer-preferred, yet poor durability timothy, and some commercial mixes in order to improve pasture quantity, increase sustainability and minimize erosion.



& ENVIRONMENTAL STEWARDSHIP

Equine Operation Environmental Impact

A U.S. Department of Agriculture Multi-state Project

The "NE-1041" project assesses current environmental impacts and determines ways to minimize the negative consequences.

The U.S. Department of Agriculture supports agricultural research by encouraging the formation of multi-disciplinary and multi-institutional project teams to focus on agricultural issues related to profitability and economic and environmental sustainability. Recently, a U.S. Department of Agriculture project to study the impact of equine management and feeding practices on the environmental Impacts of Equine Operations," is a Northeast regional project but includes research and extension faculty from across the country. The project team includes representatives from: Alabama, Connecticut, Kentucky, Louisiana, Maryland, Michigan, Minnesota, New Jersey, North Carolina, Pennsylvania, South Dakota, and Vermont. The goal of this project is to incorporate the best available data on horse management and feeding practices, manure storage and disposal, pasture and cropping management, soil and environmental quality, erosion control, and farm management practices to minimize negative impacts of equine operations on the environment.

The specific objectives of the project are to :

- 1. Assess existing data on environmental impacts of equine operations
- 3. Identify gaps in current knowledge
- 4. Conduct research where necessary data is lacking or nonexistent
- 5. Incorporate existing and newly generated data into a systematic description of nutrient flow in soil, water, and air occurring on horse farms

Ensuring Farmland Sustainability

Ryders Lane Best Management Practices Demonstration Horse Farm

Ryders Lane Farm continues to serve as the primary location for pasture research and public education for environmental best management practices. Currently, pastures are being used to study the differences between rotational and continuous grazing systems.

Rutgers faculty members and researchers continue to conduct basic and applied research and educational programs regarding horses and the environment at the Ryders Lane Environmental Best Management Practices Demonstration Horse Farm. After recently renovating two large fields in the back of the farm and replanting them with Kentucky bluegrass, orchardgrass, and endophyte-free tall fescue, the Ryders Lane farm is ready for a new research project in fall of 2013. Animal Sciences Program Associate and Plant Biology graduate student Laura Gladney will begin her Master's research examining the effects of rotational versus continuous grazing on environmental quality, animal health, and production cost. The study will continue for two years and provide data on the differences between rotational and continuous grazing systems.

WASTE MANAGEMENT



What's in your compost?

Effects of bedding types & implications for small farms

Straw-based bedding processed using an aerobic composting system greatly reduces mass volume and is environmentally safe for land application.

The objective of this study, led by Rutgers Cooperative Extension agent of Sussex County, Stephen Komar, was to compare four of the most common bedding materials equine operations use for their chemical and physical characteristics of composted equine stall waste.

Groups of three horses were bedded on one of four different bedding types: 1) wood shavings, 2) pelletized wood materials, 3) long straw, and 4) pelletized straw

for 16 hours per day for 18 days. Stalls were cleaned daily with all contents removed, weighed, and stored separately based on bedding material type. Compost piles were equipped with a temperature sensor and data logger. Water was added and piles were turned weekly throughout the 100-day compost process. Initial and final samples were taken, dried, and analyzed for Dry Matter mass (DM), Organic Matter (OM) inorganic nitrogen (nitrate-N and ammonium-N), electrical conductivity, and soluble (plant) nutrients.

No significant temperature differences were observed among the bedding materials. The composting process resulted in significant reductions in DM mass for each of the four bedding materials with the highest reduction in long straw materials.

Manure Makeover

The growing need to educate farm owners of proper waste management

This project, under the leadership of Mike Westendorf, was a collaboration between the Department of Animal Sciences, and the Department of Agriculture, Food and Resource Economics at Rutgers, and the USDA National Agricultural Statistics Service. Equine farms are increasing in number in Northeast and Mid-Atlantic states. These farms may influence environmental quality concerns such as manure collection, storage, spreading, and disposal practices.

A manure management survey assessing manure management of 700 New Jersey equine farms in two watersheds where the environmental impact of horse manure has the potential of being significant was used. There were differences between the farms in the two watersheds in turnout time, pasture acreage, use of drag harrows, and farm income.

The survey posed questions about the following identified environmental farm issues:

- Equine diet
- Nutrient management
- Feed waste disposal practices
- Manure management
- Pasture management
- Resources for expert equine information

Twenty-six percent of respondents engaged a professional for feeding advice (21% veterinarians, 2% extension personnel, 3% professional nutritionists) Results indicated that future outreach programs should focus on feed management, manure storage location, rotational grazing, and the use of sacrifice areas as part of a pasture management program.

Pictured Left: Looking out from the Red Barn on Cook Campus.

The composting process resulted in significant reductions in OM and Carbon:Nitrogen ratio for all four bedding materials. The composted long straw material had greater concentrations of total Kjeldahl nitrogen, nitrate-N, and ammonium-N than the composted wood shavings.

This study demonstrated that incorporating aerobic composting systems can greatly reduce the overall volume of manure and yield a material that is beneficial for land application in pasture-based systems. Even though the straw-based materials produced nitrogen products hazardous to the environment it may be better suited for composting and subsequent land application with use of an aerobic system than wood-based materials. Still, factors such bedding sustainability, material cost, labor, and availability must be considered when selecting a bedding material.

Frop 5 Reasons to Compost:

- 1. It's a renewable resource
- 2. It's an environmentally sustainable fertilizer
- 3. Reduces greenhouse gas emissions
- 4. Slow nitrogen release for safer water impact
- 5. Regenerates degraded soil

ENSURING SUSTAINABILITY



OF THE EQUINE INDUSTRY

Equine Science 4 Kids Academics & Scholarships Economic Impact

EQUINE SCIENCE 4 KIDS!

Putting the Wonder Back In Science

ES4K uses real-life and virtual methods to motivate young equine enthusiasts to learn about the science of horses and stay involved in the industry.

Recognizing the growing need to promote Science, Technology, Engineering, and Mathematics (STEM) education, the Equine Science Center launched "Equine Science 4 Kids," an interactive youth portal available on the Center's website at: esc.rutgers.edu/kids. The goal was to create a teaching tool to introduce highly academic scientific concepts and research to youth ages 10-14 in a manner that is fun, interactive, educational, and intuitive. Information within the youth component focuses on three primary areas of research: Horses & the Environment - detailing how horses and humans fit harmoniously in a clean environment; Exercise Physiology - sharing similarities in how horses and humans exercise, including measurements of total protein and red blood cell volume (PCV); and Healthcare & Nutrition - covering the odd things that horses eat, aging, and keeping horses healthy.

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"Equine Science 4 Kids" is equal parts education and entertainment. Two games, "Fun on the Farm" and "Exercising HorsePower," are available on "Equine Science 4 Kids." "Fun on the Farm" was created as an illustrated interpretation of the Ryders Lane Environmental Best Management Practices Demonstration Horse Farm on the G.H. Cook Campus in New Brunswick, NJ. The game features a "bird's eye-view" of the farm and highlights several key environmental concerns on horse farms such as nutrient and waste management, weed control, fencing, pasture rotation, and soil enrichment.

The "Exercising HorsePower" game depicts the Equine Science Center's exercise physiology treadmill laboratory. The player has an opportunity to pick one of three horses to work with throughout the distinct levels of the game. The levels, which are progressively more challenging, represent the stages of a standard equine exercise study: Horse Preparation, Treadmill, and Laboratory Analysis.

In addition to the custom-designed games, "Equine Science 4 Kids" also includes fun fact sheets and FAQs in each of the three research areas. The mascot, Lord Nelson, has a blog which provides anecdotal accounts of his mischievous antics, and offers a comical, reallife approach to the science of horses. Lord Nelson also answers any and all horsey-questions submitted by visitors to "Equine Science 4 Kids" at:

LordNelson@aesop.rutgers.edu.

Pictured Left: "Equine Science 4 Kids" fans show off their Lord Nelson tattoos during Ag Field Day at Rutgers Day.

Pictured: A 4-H member explores the skeleton of RU Wishbone during the Center's Open House event.

ACADEMICS

Students and individuals interested in pursuing careers in the horse industry or just improving their knowledge of horses can study Equine Science in the Department of Animal Sciences at the School of Environmental and Biological Sciences (SEBS) at Rutgers. Please visit us at esc.rutgers.edu/learning.htm for further information.

Under the auspices of the Animal Industries-Equine Specialization major, students take all of the equine didactic courses available in addition to courses in marketing, basic sciences, and animal science, as well as gain "hands-on" experience through the Equine Practicum, Research in Animal Science course and/or Cooperative Education. A minor in Equine Science is also available to students majoring in other disciplines.

Courses emphasize the science of horses, not only through the "how" as in many other equine curricula, but also concerning the "why." Students interact closely with their advisors, pursue hands-on opportunities and are given customized guidance in career decisions.

Pictured Below: Center Director, Karyn Malinowski, presents a lecture on "Emotionally Charged Issues in the Educational Arena" to students at the University of Pennsylvania.



Public Course Offerings

Many of the SEBS undergraduate courses are open to the general public through the Office of Continuing Professional Education.

Courses include:

- Advanced Equine Health Care and Management
- Developing Future Leaders for the Equine Industry
- Equine Nutrition
- Horse Management



Business Planning for Equine Operations

A brand new course offered by the Equine Science Center, NJAES, and Northeast SARE, concluded in late March to rave reviews. The course was designed to assist equine business owners with the completion of a formal business plan. Modeled after "Annie's Project," a business class for women farmers, the course walked students step-by-step through the necessary components of establishing an equine business plan. A comprehensive workbook supplemented the lectures of each expert speaker.

The classroom sessions (led by Carey Williams, Robin Brumfield, and Laura Gladney) took place over seven Tuesday nights in two different locations (Freehold, NJ and Bridgewater, NJ) simultaneously through the use of video conferencing software. Participants were exposed to topics pertinent to equine business planning through lectures from prominent professionals in related fields.

Topics included:

- Why Business Planning is Important & Where to Locate Necessary Resources
- Strategic Planning and SWOT Analysis (Strengths, Weaknesses, Opportunities and Threats)
- Production and Operations Plans
- Marketing Plans
- Management and Personnel Issues
- Financial Plans

To purchase the Equine Business Planning Course workbook, contact Laura Gladney at **gladney@aesop.rutgers.edu**.

SCHOLARSHIPS



Pictured Above: Ernest C. Bell recipient, Monica Smetts (center), with Carey Williams (left) and Sarah Ralston (right) at the NJDA Breeder's Luncheon.

FScholarships provide 25% of funding opportunities for our students to pursue their academic aspirations in the field of Equine Science. Currently, we are proud to award two scholarships to outstanding aspiring scientists.

Ernest C. Bell Scholarship

The Ernest C. Bell Memorial Scholarship Fund was established to perpetuate Mr. Bell's memory and his ideals of courage and determination. The scholarship is awarded by the NJ Equine Advisory Board to a NJ resident junior or senior at SEBS who is majoring in Animal Science with an emphasis in Equine Science and demonstrates a high level of scholastic achievement, involvement with New Jersey's horse industry, and financial need.

This year's Ernest C. Bell Scholarship was awarded to Monica Smetts. Upon graduation from Rutgers University in 2013, she plans to attend veterinary school and become a mixed animal veterinarian. Although there is no veterinary school in New Jersey, she plans on returning to New Jersey since it will provide a great location to work with small animals, large animals, and possibly as a veterinarian at the race track.

Doris C. Murphy Endowed Scholarship in Equine Science

The Doris C. Murphy Endowed Scholarship in Equine Science was created to honor the memory of a woman who loved animals. Shortly before Ms. Murphy's death in 1998, she contacted her financial advisor, Kate Sweeney of Smith Barney, and expressed her desire to support animal studies. Ms. Sweeney, a Cook College alumna, suggested the equine science program as an appropriate beneficiary, and as Ms. Murphy was also very supportive of women's education, the endowed scholarship is offered to female undergraduate students majoring in Animal Sciences with an equine science interest. Students must also be New Jersey residents. Scholarship recipients for 2012-2013 were Marissa Costa, Merrill Simpson, and Rachel Walter.

ECONOMIC IMPACT



Pictured Above: Harness racing at Freehold Raceway.

Horse Racing Industry

The Equine Science Center serves as an advisor to the racing industry and an advocate for unity and cooperation among the various equine breed groups and discipline.

Karyn Malinowski presented "Dealing with Emotionally Charged Issues in Academia", specifically in relation to horse racing, to veterinary students at the University of Pennsylvania on November 27, 2012.

Malinowski was also asked to serve on a panel discussing the socio-economic importance of horse racing during the "Month of the Horse" on June 17, 2013 at the Monmouth County Library.

On April 5, 2013, Center associate Paul Gottlieb and team leader of the 2007 "New Jersey Horse Industry: Economic Impact" study, presented a paper entitled "Agricultural Industry Clusters: The Case for Horses," at the Southern Regional Science Association meetings in Washington, D.C. Dr. Gottlieb hypothesized that agricultural industries producing luxury goods that require globally-rare expertise, such as equine, will cluster in space for reasons similar to high-tech industries. Dr. Gottlieb highlighted the importance of state policies for equine industry clusters, including both incentives for equine breeding operations such as Sire Stakes programs and the regulation of gambling activities.

Racing contributes about 70% of the total economic impact of the equine industry in New Jersey.

The New Jersey Equine Industry 2007 Economic Impact Report; Rutgers Equine Science Center

REACHI



NG OUT



CENTER HAPPENINGS

NESA Competition at Rutgers

On February 23, 2013, Rutgers hosted the American Society of Animal Science/American Dairy Science Association Northeast Student Affiliate (NESA) competition. Undergraduate students from nine landgrant universities from Maine to Delaware participated.

Months of careful planning by Society of Animal Science seniors Jess Martin, Emily Natoli, Amber Byleckie, and Shruti Iyer laid the groundwork together with advisors Carey Williams, Barry Jesse, Nick Bello, Troy Roepke, Daniela Sharma, Carol Bagnell, and Danielle Smarsh.

The day included livestock judging at Cedar Lane Farm in Oldwick, NJ, and on-campus activities in Hickman Hall included a quiz bowl and presentations.

Alumni, faculty, and current graduate students judged the day's events. An awards banquet was held at the Radisson Hotel in Piscataway for all participants, including judges and other volunteers. Student mounted patrol members who welcomed attendees on horseback received rave reviews from the out of state visitors.

Take Your Kids to Work Day

On April 25, 2013 the Center hosted a brief interactive presentation with university employees' youngsters at the annual "Take Your Kids to Work Day." To begin, parents and children learned about the professional responsibilities required to work in a nonprofit organizational setting, such as the Equine Science Center, as well as the individual job descriptions of the Center's director, Karyn Malinowski, and PR specialist, Tiffany Cody. The children were then shown the "Equine Science Center 4 Kids" portal on the Center's website where they took some time to play the newly launched "Exercising HorsePower" online game. Afterwards, parents and children had an opportunity to pet a real horse while visiting Sarah Ralston, Laura Gladney, and SEBS students prepping their charges for the Ag Field Day horse show.

Pictured Below: A full house in the Exercise Physiology Laboratory watches a treadmill demonstration during Ag Field Day at Rutgers Day.



Equine Exercise Physiology Lab Opens its Doors to All

July was a busy month at the treadmill barn where the Equine Science Center hosted two Open Houses for the public to see the equine exercise physiology laboratory and high speed treadmill in action; the last of which hosted the Harness Horse Youth Foundation campers on July 25!

Malinowski discussed equine research at the Center before Carey Williams conducted a demonstration of the equine exercise physiology treadmill. Open House guests were amazed to see Frankie trot at 25 mph!

The second half of the Open Houses consisted of three stations where guests were introduced to pertinent areas of equine research. In the laboratory, graduate students Ryan Avenatti and Danielle Smarsh demonstrated techniques using various analyzing equipment. On the stall-side of the Red Barn, Malinowski showcased "Equine Science 4 Kids". At the last station, the newest equine addition "RU Wish Bone" a fully articulated equine skeleton, made its Open House debut. Williams illustrated the similarities between equine skeletal structure and that of humans, proving, yet again, how vital the horse is to advancing our understanding of human biology.



Jersey Fresh

In May, several Rutgers students and alumni attended the Jersey Fresh International Three-Day event at the Horse Park of New Jersey. The weekend included dressage, cross-country and show jumping competitions, concluding with an awards ceremony.

Junior Breeders Symposium

Equine Science Center faculty and staff participated in the annual Junior Breeders Symposium at the G.H. Cook Campus farm, organized by the New Jersey Department of Agriculture, on March 23, 2013. Over 200 adults and youth learned about *disaster preparedness* with Dr. Shari Silverman, *trailer safety* with Joanne Powell, and *pasture management and equine digestion* with Carey Williams.

RU Young Horse Reunion at Poker Pace

The RU Reunion, organized by Sarah Ralston, at the Colts Neck Trail Rider Poker pace was attended by 19 four-legged graduates and their mounts. The Poker Pace Prize totaled over \$1000 and the winner, Bev Torok, a Rutgers graduate herself, donated \$100 of her winnings to the Center.

Stakeholder Strategic Planning Meeting

The Equine Science Center's 2012 Stakeholder Meeting on was held in conjunction with the monthly NJDA Equine Advisory Board meeting where horse owners, farmers, businessmen and women, breeders, students, and equine enthusiasts gathered to address issues of importance to the equine industry in New Jersey. Key Identified Issues and announcements from the meeting can be found at esc.rutgers.edu on the "Publications" webpage.

Equine Science Center at Ribbon Cutting

Karyn Malinowski attended a ribbon cutting ceremony with equine professionals and dignitaries on behalf of the Equine Science Center. The ceremony, at Winners Circle at Monmouth Park, inducted the inaugural class of the New Jersey-Bred Hall of Fame.

SEMINARS

Horse Management

Equine Stress and Transportation, Rutgers University

Horse enthusiasts from around New Jersey braved the snowy weather to attend the "Equine Stress and Transportation" Horse Management Seminar on February 10, 2013, hosted by Carey Williams. Sarah Ralston started the morning off with her presentation, "Stress vs. Distress in Horses." Ted Friend, one of the country's leading animal behavior and well-being experts from Texas A&M University, explained how to combat stress in his presentation, "Relieving Transport Stress in Horses." For his second presentation, "Unintended Consequences for Slaughter Horse Welfare in the United States and European Union," Friend shed some light on this hot topic in the equine industry. Michael Fugaro from Centenary College and Mountain Pointe Veterinary shared real-world disaster scenarios during his presentation, "How to Handle a Trailering Emergency." To round out the day's presentations, Leslie Bulaga from USDA APHIS gave a primer on preparing for international horse transport in her talk, "Domestic and International Equine Transport Regulations."

Horse Diet Management

Increasing Productivity of Equine Pastures

In October 2012, Mike Westendorf organized two workshops on New Jersey horse farms to explain the results of a three-year study examining the environmental impact of equine operations and methods to increase pasture productivity. Workshops were hosted by Topline Farm in Asbury, NJ and Acadia Farm in Pilesgrove, NJ. Westendorf, Carey Williams, and Laura Gladney summarized the survey feedback with analysis of the environmental effects of horse farms. Williams also demonstrated the proper way to body condition score a horse, using a scale of 1 to 9 to estimate the horse's fat cover. Participants enjoyed practicing body condition scoring on horses from each of the farms. The last part of the workshop was a pasture walk through fields on the properties. Participants learned how the farm owners increased the productivity of their pastures using Best Management Practices recommended by the Equine Science Center team during the study; including mowing, fertilizing, rotational grazing, and weed control.

Pictured Below: Participants at the Horse Management Seminar hear a lecture from Ted Friend.



CONFERENCES

Hambletonian Veterinary Conference

Equine Science Center participates in the third largest veterinary CE meeting in the country

In conjunction with the annual harness race, the Hambletonian, First Choice Marketing presented the 2012 Continuing Education Veterinarian Conference at the Meadowlands August 2nd-4th. Vendors and veterinarians from around the world gathered at the Sheraton Meadowlands Conference Center to share expertise and offer lectures on this year's ground breaking equine discoveries. Equine Science

Equine Science Center faculty and staff were in attendance to promote and advance the Center's mission of "Better Horse Care through Research and Education." The Center discussed many of its recent developments in outreach and university research, namely, its upcoming website renovation, youth treadmill game component, "Exercising HorsePower" to "Equine Science 4 Kids" and vet memorial donation opportunities for veterinarians to honor the life of their client's horses through a corresponding donation to the Equine Science Center. Center faculty member Carey Williams was a featured speaker at the conference. Williams' lecture titled, "Antioxidant Research & its Applications for Use in Exercising Horses," covered findings in her latest studies researching antioxidants and their applications for use in exercising horses. Overall, evidence illustrates that supplementing antioxidants like vitamin E, vitamin C, and lipoic acid appear to be beneficial in reducing oxidative stress and muscle enzyme leakage by increasing the antioxidants that aid in reversing the negative effects of exercise byproducts.

Mid-Atlantic Nutrition Conference

Timonium, MD

The theme of the equine program at the 11th Annual Mid-Atlantic Nutrition Conference in Timonium, MD was Equine Stress. Sarah Ralston presented "Stress vs. Distress in the Horse" and Carey Williams presented "Feeding the Equine Athlete to Combat Oxidative Stress." Other topics in this program included holistic management, probiotic supplementation, gastric ulcer disease, inflammatory responses during training, and omega-3 fatty acid supplementation. Graduate student Danielle Smarsh and undergraduate Brianna Stafford also attended the conference to participate in the student poster competition for original research. Danielle won 2nd place for the graduate division and Brianna won 2nd place for the undergraduate division.



JERSEY ROOTS

Ag Field Day at Rutgers Day

The annual Ag Field Day at Rutgers Day proved very rewarding for faculty and staff of the Equine Science Center. On the last sunny Saturday in April, 80,000 visitors traveled to New Brunswick to experience, first hand, the many academic programs and services the state university has to offer. The Equine Science Center was present at the Red Barn welcoming alumni back to campus and introducing new friends to its work. Families gathered around the main information table to hear about recent and upcoming initiatives and research projects spearheaded by the Center. As anticipated, the line to view the high speed treadmill demonstration started long before the first presentation, so visitors could ensure a spot in the Equine Exercise Physiology Lab.

Karyn Malinowski began the event with an overview of the importance of horses to New Jersey's economic stability and what the Equine Science Center is doing to sustain their impact. Kenneth McKeever followed up with a brief presentation illustrating the various studies conducted over the past year and the parallels between equine and human physiology. Smiles spread across the crowd as cell phones and cameras were raised high to immortalize the moments of Snowdrift and Maggi galloping at 28 miles per hour on the treadmill under the guidance of Carey Williams.



Pictured Above: A young fan learns about "Equine Science 4 Kids" while coloring a t-shirt during Ag Field Day at Rutgers Day.

The equine industry contributes \$1.1 billion annually to the state economy.

Horses are responsible for nearly 13,000 jobs.

176,000 acres are utilized for 7,200 equine operations.

There are more horses per square mile in New Jersey than any other state.

The New Jersey Equine Industry 2007 Economic Impact Report; Rutgers Equine Science Center



GLOBAL REACH



Pictured Above: Drs. McKeever and Williams discuss equine exercise physiology methods to professors on tour from Beijing, China.

Chinese Professors Visit Rutgers During Agricultural Tour of NJ

Chinese agricultural faculty toured the Equine Science Center laboratory and learned agricultural management skills to apply to farm land in Beijing.

On November 28, 2012 faculty at the Equine Exercise Physiology Laboratory on College Farm Road spoke to a delegation of Chinese agricultural faculty members visiting from Beijing. The delegation consisted of 20 top professors of agriculture in China who vied for the limited spots available for a two week tour of several New Jersey facilities to learn about the state's agronomic practices.

"They were here in New Jersey to learn hands-on agricultural techniques," said Bill Hlubik, agricultural and resource management agent for Rutgers Cooperative Extension of Middlesex County, and co-coordinator of the delegation's visit, who accompanied the visitors on several Rutgers stops. "Here at Rutgers, we have one of the leading equine research departments and facilities in the country; it's a great model for them to learn from."

Delegates spent the morning experiencing the various phases of equine research and learning about the Equine Science Center's work in pasture and waste management, and horse care. Animal Sciences faculty members Carey Williams and Kenneth McKeever explained the scientific processes of the equine physiology laboratory. They also performed an exercise demonstration with a horse on the high-speed treadmill.

The goal of the trip was to bring knowledge gleaned from the visit back to local research facilities. The professors teach Agricultural Production in two to three year programs at their respective universities in China, preparing their students for future careers in agriculture production and agribusiness.

CELEBRATING HORSES



nation with 27% preserved land.

Open Space Pace & Festival of Horses

Supporting equine industry non-profits and the preservation of open space

The Open Space Pace, a non-profit organization dedicated to promoting the correlation between horses and open space in New Jersey held its inaugural event on Saturday, September 29, 2012 raising funds to support non-profit equine-related organizations, including the Equine Science Center, and the preservation of open space.

In an effort to realize its mission to increase awareness and educate the public of the importance of open space in New Jersey, the Open Space Pace hosted a day of fun for everyone to enjoy. Hundreds of guests arrived to peruse educational vendor tables, non-profit organization booths and advocacy group exhibits promoting agriculture and the equine industry. Racing entertainment was coupled with performances by the Medieval Times jousters and an evening concert featuring Southside Johnny and the Asbury Jukes.

The Rutgers Equine Science Center was a featured non-profit organization. Between peeling stickers and sponging on temporary tattoos for young supporters, the Center also described its mission of "better horse care through research and education" to the more seasoned members of the equine industry.



Annual Equine Science Update



Pictured Above: A tearful Malinowski commends the work of horses in NJ with mounted patrol unit, Dodgeball.

On December 11, 2012, the Center provided information and entertainment to its many guests at the annual Equine Science Update held at the Cook Campus Center. The engaging evening of equine science began with an energetic account of the importance of rider safety by Cape May County 4-H member, Katie Washart. Katie's presentation, "Hats, Helmets, and Everything In Between," emphasized the need for awareness and proper safety precautions when riding a horse. The partnership between the Equine Science Center and 4-H was further evidenced by the New Jersey 4-H Horse Project Advisory Committee (HPAC) presenting the Equine Science Center with a financial gift of support. Helen Ferraro and Estella Almeida, HPAC Program Leaders, issued a challenge to all guests in attendance to also be creative in developing ways to support the Equine Science Center.

Guests were then treated to an unexpected surprise when Rutgers University Mounted Patrol officer, Emily Ghods and her horse Dodgeball, made a guest appearance and captured the full attention of everyone in the auditorium. A tearful Malinowski acknowledged that, true to the mission of the Equine Science Center, the Mounted Patrol officers are also committed to the care, well-being, and performance of horses and the equine industry.

Malinowski presented an outline of recent Center activity followed by Carey Williams' lecture on "Antioxidants Research in Exercising Horses." The next topic, "Poop to Power: Making Methane from Manure" was delivered by Donna Fennell. Sarah Ralston presented two topics: "Vitamin C & Stress: Was Linus Pauling Right?" and "Pioneering NJHorseInfo.org". Presentations concluded with Tiffany Cody's "Game On– New Additions to Equine Science 4 Kids."

4-H to Make the Best Better

Every year hundreds of kids participate in the 4-H youth development program. Sharing similar values with the Equine Science Center, 4-H Horse Project members implement a "learn-by-doing" approach, where most activities are hands on in training or volunteering.

4-H provides educational programs for kids 4-18, which, by default, strengthens their adult skills in networking, community awareness and responsibility. See nj4h.rutgers.edu to get involved! On average, 4-H members contribute more service hours to their community than any other group of youth.

TRAVELS & AWARDS

EQUINE SCIENCE SOCIETY

Mescalero, New Mexico | May 2013

Several members of the Equine Science Center traveled to sunny Mescalero, New Mexico for the biennial scientific conference of the Equine Science Society. Karyn Malinowski, Ken McKeever, Sarah Ralston, and Carey Williams were present, as well as graduate students Danielle Smarsh, Ryan Avenatti and Laura Gladney.

Sarah Ralston presented "Rutgers Young Horse Teaching and Research Program: Risks and Benefits 1999-2012." Karyn Malinowski chaired and moderated a panel entitled, "What Role Should Equine Scientists Play (or should play) beyond our Traditional Audiences," and Carey Williams was chair and moderator of the Exercise Physiology section and a panelist for the Production and Management panel "Horses and the Environment: Grazing Research and Demonstration Site Methodology."



Pictured Above: From left to right: Laura Gladney; Karyn Malinowski; Kenneth McKeever; Nettie Liburt; Danielle Smarsh; Carey Williams

Danielle Smarsh presented "The Effects of Acute Exercise on Oxidative Stress in the Skeletal Muscle and Blood of Yearling and Mature Horses," which was awarded third place in the Exercise Physiology Graduate Competition. Karyn Malinowski was elected to the ESS Board of Directors for the second time and Ken McKeever was elected secretary/treasurer.



Distinguished Service in Equine Science

Kenneth McKeever, associate director for research at the Equine Science Center at Rutgers University and professor in the Department of Animal Sciences at the School of Environmental and Biological Sciences, received the Equine Science Society's (ESS) most prestigious honor, the Distinguished Service Award in Equine Science, on May 31, 2013. The award was presented during the annual ESS conference in Mescalero, New Mexico.

The Distinguished Service Award in Equine Science recognizes outstanding contributions in the field of equine science. Award recipients must also have a record of significant accomplishments in teaching, research and extension or service as it relates to advancement of the equine sciences and horse industry.

Sarah Ralston to receive Fulbright Scholarship

Sarah Ralston was selected to receive a Fulbright Scholarship for 2013-2014 to lecture and conduct research in late spring/early summer of 2014 at the Universidade Federal de Minas Gerais in Belo Horizonte, Minas Gerais, Brazil.

Gold Medal Horse Farm

The inaugural "Gold Medal Horse Farm 2013" award, was presented to Bix DiMeo and Showplace Farms. A collaborative new initiative between the Equine Science Center, the New Jersey Department of Agriculture, and the New Jersey Agricultural Experiment Station, the Gold Medal Horse Farm award recognizes outstanding farm management, and calls attention to equine industry's impact on the Garden State.

To review the qualifications for Gold Medal Horse Farm status, or to submit your farm for consideration, visit esc.rutgers.edu for fact sheets and the application.



Karyn Malinowski

In July, 2012, Karyn Malinowski, received the American Society of Animal Science and Equine Science Society's Equine Science Award. The honor recognizes outstanding achievement in the areas of extension, research, teaching or agribusiness in the equine industry. She was honored at the society's annual meeting in Phoenix, AZ.



Ryan Avenatti

On November 27, 2012 Ryan Avenatti received the Wilbur M. Runk award from Rutgers Cooperative Extension. Ryan is a Ph.D. candidate working in the Malinowski and McKeever laboratories. The award was presented by Larry Katz, Director of Cooperative Extension. This award recognizes excellence in graduate student research.



Linda Toscano

The Rutgers Equine Science Center named Linda Toscano the 2013 recipient of the "Spirit of the Horse" award recognizing individuals whose lives have been profoundly changed because of their involvement with horses and who have acknowledged the impact by giving back to the horse industry.

BUSINESS OPERATIONS



Center Growth & Awareness

Objectives for the Equine Science Center's public relations and marketing efforts from July 2012-June 2013 were to:

- 1. Increase awareness and raise the profile of the Center as the primary resource for everything equine.
- 2. Seek new opportunities to connect with supporters.

During the past year, the Center developed strategies and tactics to achieve these goals. In an effort to increase awareness, Center staff produced 23 press releases which resulted in over 150 Google Alerts. Articles appeared in print publications such as the Home News Tribune, Star Ledger, Equine Chronicle, Horse News, Asbury Park Press, and many others. Furthermore, Center staff produced four newsletters highlighting research, accomplishments, and recent or upcoming events.

The Equine Science Center hosted and/or attended numerous events from July 2012 – June 2013. Each event provides an opportunity for the Center to meet with its many constituents and further spread its mission of "Better Horse Care through Research and Education."

247 questions21 countries6 continents

1 Equine Science Center

2012 Webinar Series

The Center hosted a Fall Webinar Series themed "Demystifying Forage Feeding." The first webcast, featured Paul Siciliano from North Carolina State University. Siciliano presented "Predicting Pasture Intake and Its Practical Application in Managing Grazing Horses." It is difficult for horse owners to estimate exactly how much forage horses eat while out on pasture because horses consume it at different rates depending on duration of access to pasture. Additionally, horses graze various parts of the pastures and grasses differently depending on their turnout time. This informative webinar gave participants a better idea of how much a horse is eating when grazing on pasture and how one can utilize this information to help manage a horse's weight, diet, and potential metabolic problems. The second webinar, presented on December 4 by Krishona Martinson from the University of Minnesota, featured "Optimizing Equine Forage Use." Pastures are an affordable way to feed horses, resulting in approximately one-third the cost of hay. Optimizing the use of pasture in the equine diet begins with careful selection of coolseason pasture grasses. On the other hand, hay is likely the most expensive dietary component for all classes of horses post-weaning, and few horse owners can escape the need to feed hay at some time during the year. Optimizing hay use starts with reducing harvest and feeding losses. This presentation focused on ways horse owners can optimize both pasture and hay use when feeding horses. Please find archived webinars on esc.rutgers.edu on the "Multi-Media" webpage.

FUNDRAISING &

NJ State 4-H Horse Show Benefits Equine Science Center

The 2012 New Jersey State 4-H Championship Horse Show included a division in its prize list: the Equine Science Center Benefit Fun Show. Intended to recognize the Center for its contributions to the equine industry, the show featured classes and games sponsored by participating 4-H counties. The show, which was held at the Horse Park of New Jersey, August 23-25, raised \$1,000 for the Center. During the 2012-2013 period, Center faculty, staff, and RUBEA members ramped up fund-raising efforts, including a renewed focus on growing the "Community of '50' for Equine Excellence" campaign. Additionally, the Center has increased its visibility at functions and events catered to people who love horses and have the ability to make significant gifts to the Center.

The Center is taking commitment to new heights and has initiated an ambitious \$6.5 million campaign to expand faculty, research capabilities, programming, and outreach. Friends and supporters are invited to visit the Equine Science Center to learn about the pivotal role a meaningful gift can play in training new generations of knowledgeable, passionate equine advocates and specialists.

Reaching Out to Alumni

In 2012, the Center began a new outreach campaign targeting alumni of the Equine Science program as well as any Rutgers alumnus who has an interest in horses. Alumni were contacted through e-mail and Facebook with the option to sign up for the Engaged Alumni List. These "Engaged Alumni" will be sent special invitations to Center events with admission discounts and featured in the "Alumni Voices" section of the Equine Science Center newsletter. The initiative will also allow non-local alumni to keep in touch via Facebook updates, webinars, and website updates!

Want to receive our Alumni Announcements?

Send your name, e-mail address and/or mailing address to **gladney@aesop.rutgers.edu** to reconnect and join the Equine Science Center Engaged Alumni.

Pictured Left: Lisa Estler, Rutgers University, meets one of the research mares after the ACE Women's Network lecture.

Horse Heroes

In order to raise funds for the care of its research herd, the Equine Science Center launched "Horse Heroes," a new initiative offering sponsorships for its horses. The "Horse Heroes" program raises funds to purchase grain, hay, bedding, and veterinary care for the herd, which is comprised of approximately 24 mares.

Each of the "Horse Hero girls" has a profile containing biographical information such as age, sire and dam names, tattoo number and original home, as well as information about her role and involvement in teaching and research at the Equine Science Center. Horse Hero profiles are available from the Center's homepage: esc.rutgers.edu.

Thanks to generous donations from friends and supporters of the Equine Science Center, five Horse Hero mares have been sponsored: Biscuit, Frankie, Jackie, June, and Winnie. The Center extends its heartfelt appreciation to its Horse Hero sponsors - Jeanine McKay (Frankie); Autumn Ridge, New Jersey Region, and Somerset Hills Pony Clubs (Jackie and Biscuit); Pat Colbert and Kate Steenberg (June); and the Gloucester County 4-H Equine Science Club (Winnie). **Forme Equine Science** Center relies on public donors for 75% of its funding. State budget provides 25% of operating requirements.

> Your financial assistance supports research projects and outreach initiatives.





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