

Please Join NHAITC for an Upcoming Educator's Workshop

**“Remember
our Heritage, Imagine
our Future”
NHAITC Workshop
Feb 6th, 2004
9am - 12 pm**



Please join NHAITC as we use the theme of agriculture to explore our state's history and discover where it is taking us in the future. Educators will be provided with information, activities and curriculum to facilitate the teaching of our NH heritage as well as where agriculture is taking us in the future. Hands-on activities that focus on geography and history, like trace your "Ag Roots" and "Where to Settle", are just some of the topics that will be introduced as new ways to incorporate agriculture into your general studies or a NH history unit.

After sharing the morning with us you'll be given a complimentary ticket to spend the afternoon hours enjoying the Expo and meeting the folks who are keeping NH agriculture alive today and for the future. You'll leave with reproducibles, curriculum and much more!

Fiber to Felt #2 Educator's Workshop - February 13th, 2004 Pelham NH

If You Missed the First, Don't Miss This One!
Even if you have never felted before this workshop will provide you with all the information necessary to felt. For those coming back we have something new to share with you!

Highlights

- * Staff Development Credits
- * Free Curriculum and Resources
- * Fun, Fun, Fun



We can't wait for Fiber to Felt #2!

Feltmaking with Children

- *Join experienced felter Caroline Owens as she prepares you to bring the ancient art of feltmaking into your class.
- *You will create several felt projects suitable for beginners thru advanced. Learn what supplies are needed and explore the many educational tie-ins with felt.
- *Caroline Owens is a former Vocational Ag teacher now raising sheep and teaching workshops on felting.

NHAITC WORKSHOP REGISTRATION FORM

Please fill out the form and return with the appropriate workshop fee. Make checks out to NHAITC.



Name: _____ School: _____ Grade taught: _____

Address : _____ City: _____ State: _____ Zip: _____

Phone #: (best one to reach you at): _____ email: _____

Please check which workshop you wish to register for:

_____ Our Heritage, Our future (\$40.00) _____ Felt to Fiber #2 (\$65.00)

Credit Card Name & #: _____ Exp.Date: _____

Signature: _____

NHAITC, 295 Sheep Davis Rd., Concord NH 03301 Phone: 603-224-1943





Below is just a few overviews of the many projects currently being researched by **ARS (Agricultural Research Service)**, the chief scientific research agency of the U.S. Dept. of Agriculture. After reading you'll see why entomology is so critical to our food source and affordability. More info on any of these topics and other agricultural research can be found in USDA's monthly journal "Agricultural Research" or www.ars.usda.gov/us/AR.

New Defense Against the Hessian Fly

Imagine this scene: The larva of a Hessian fly bites into the tender leaf of a wheat plant. In its saliva are substances poisonous to the plant, causing stunted growth and even death. But this time, endowed with unique resistance genes that act like an alarm system, the wheat is able to detect the intruder and deploy a fighting response.

Scientists with the USDA-ARS and Kansas State University (KSU) aim to give wheat this defensive edge by understanding its enemy's offensive arsenal. For the first time, ARS entomologist Ming-Shun Chen and KSU colleague Xuming Liu have identified several genes from the Hessian fly's salivary glands that may be responsible for triggering release of the plant-altering compounds. What makes the

Hessian fly such a troubling pest is its ability to reinvent itself, literally. The Hessian fly, which has plagued U.S. wheat farmers since at least the Revolutionary War, has countless biotypes. In other words, the insect is capable of mutating to produce races that can overcome the resistant wheat plants put out by scientists and breeders.

Engaged in a vicious cycle, plant breeders must have new wheat varieties ready to fend off the resilient Hessian fly, which typically makes a comeback in six to 10 years. And as the pool of fly genes with counter-resistance grows, the task of creating hardy wheat plants becomes increasingly more difficult. Hoping to find a more stable solution, Chen and Liu have gone to the source of the unique Hessian fly-wheat interaction: the fly's salivary glands. There the potent molecules are synthesized and directed into the wheat plant. These compounds appear to help create a favorable

environment for the developing Hessian fly larva. The Hessian fly has been known to cause up to \$100 million worth of damage and crop losses in a single year.

Fungus on Tap to Fight Whiteflies, Other Pests!

Trouble is literally brewing for silverleaf whiteflies, thrips, spider mites and other insect plant pests. The trouble in question is a new fermentation procedure that the ARS has patented for mass-producing spores of the fungus *Paecilomyces Fumoso-roseus* as a biological pesticide.

Microbiologist Mark Jackson developed the deep-tank liquid culture fermentation procedure based on his fungal nutrition studies at ARS' National Center for Agricultural Utilization Research in Peoria, Ill. There, he combined the procedure with a commercial collaborator's method of formulating the fungus' spores into an air-dried powder that can be wetted and sprayed onto plants.

Whiteflies are a prime target because the sap-sucking insects are pests of some 600 different kinds of plants, including cotton, tomato and poinsettia.

Infestations in these and other U.S. crops have caused multimillion-dollar losses. Whiteflies can also cause harm by infecting plants with disease-causing viruses and excreting honeydew, a sticky waste product that can gum up farm equipment. *Paecilomyces* kills whiteflies by penetrating the pest's body to feed and grow. New spores emerge to infect other whiteflies, sparing nonhost insects as they spread. Despite *Paecilomyces*' appeal as a biological alternative to chemically controlling the pest, past attempts to commercialize the fungus have stumbled on high production costs, quality control problems and other setbacks. Jackson figures he has overcome them through innovations in how the fungus' spores are cultured, formulated and made stable for long-term cold storage.



Do you Know an Outstanding "Ag Teacher"? Someone who Deserves to be Recognized?

Applications for our 2004 Ag Teacher of the Year are now available. The winner

receives a trip to the National and Regional Ag in the Classroom Conference, along with \$100 of free Ag curriculum for their classroom. Please help us recognize their efforts, call, email or write with your nominee!

How does a spring week in beautiful New Mexico sound?

If chosen you will be our guest as you join educators from all over the world as they converge for a different kind of western experience in June of 2004. The national convention is a "one of a kind" inside look at teaching agricultural in your classroom. "The best summer camp" a teacher could ever go to! So if you or a teacher you know deserves such an experience please contact us....we'd love to see you go West!



Websites Worth a Peek:

BugNet-Map-

www.umass.edu/ent/BugNetMAP/

Find information on curriculum, lesson plans, news groups, resources, calendar of events, youth programs, children's literature, arthropod of the month and much more!

Young Entomologists Society -

www.members.aol.com/YESbugs/mainmenu.html

This group is best known for innovative and kid-friendly educational programs and services, along with exceptional resource information and great children's literature and hands-on education materials. Make sure to check out this outstanding group and their site.





Insect Myths & Facts

- * Insects, especially honey bees, do not collect honey from flowers. In reality, they collect nectar, a dilute water solution containing different sugars and amino acids. They later convert it to honey.
- * It's a myth that many insects, especially bees, produce sound through their rear ends. In reality the buzzing sound in flying insects is actually made by the insect's wings beating very rapidly.
- * Insects do not shed their "skin" when they molt. In reality an insect's body covering is very different from our skin. It is an exoskeleton; but by calling it skin, children are apt to mentally equate the insect's outer covering to our own skin.
- * Insects do not see thousands of identical images through their compound eyes. Each facet or ommatidium of the compound eye sees part of an image, thus creating a mosaic, which is much like how the image on the computer screen forms an identifiable image.
- * It is a misconception that insects spread and carry disease. Insects themselves do not spread or carry diseases directly. Micro-organisms or other pathogens living in the insect cause the disease we commonly think of as being insect-borne.
- * Insects do not "breathe," they have a respiratory system but they do not possess lungs or a diaphragm muscle that moves air inward & outward, instead they have an open respiratory system made up of tiny tubes called trachea that open directly to the outside in terrestrial insects.
- * Insects or Arthropods as they are classified, are the largest group of animals in the world, numbering over 1,000,000 that have been identified.
- * Wasp might be the most uninvited guest to your picnic but they are actually quite useful. Wasps often use caterpillars and aphids which do serious harm to garden food to feed their babies.
- * Unlike a wasp, a bee is a true vegetarian, all bees feed on pollen and nectar. There are about 22,000 species of bees.
- * There are more types of beetles in the world than any other creature. More than 300,000 species are already known.
- * Insects are good indicators of water pollution.
- * Leaf Cutter ants travel up to one mile to get to their favorite leaf and then carry it home on their back.
- * Flies and butterflies can taste with their feet



Resources to Inspire..... Bug Exploration

* **WOWBUGS: New Life for the Life Science** - This compilation of 20 activities is a great change for middle and high school teachers tired of working with *Drosophila*. Wowbugs are a tiny wasp about the size of a fruit fly with a biology and behavior pattern that makes them well suited to classroom studies. The book includes chapter on teaching aides, detailed procedures for raising them, teacher planning time line, charts and student hand-out sheets. Charts detail how the activities relate to the National Science Standards and variety of science e process skills. Robert W. Matthews, Thomas R. Koballs, Jr., Lynda R. Flage, and Eric J. Pyle. Riverview Press LLC, Athens, Georgia, 1996. \$19.95.

* **A Pill Bug's Life** by John Himmelman (Grades K-3): Striking original watercolors depict each creature's worked from it's unique perspective. Simple text describes the creatures' movements and activities.

* **The Beeman** by Laurie Krebs - (Grades Pre-K-4) With rhyming text and warm, expressive paintings, this beautiful picture book takes the reader through a year of beekeeping from the point of view of a little girl helping her beloved grandpa, known in the town as the Beeman.

* **The Life and Times of the Ant** by Charles Micucci - Not mighty in size, but mighty in resourcefulness, the ant has crawled on earth since prehistoric times. Another great book in the Life & Times Series of Charles Micucci wonderful style.

**The above reviews are synopsis and publishers comments on the above books courtesy of powell.com*

Want to Come to an NHAITC Workshop Free!

If you can get a first time AITC workshop participant to sign up, you come for 1/2 price. If you can get 2 new first timers you'll come for free! With your help we can continue to reach educators in our state and provide them with the enthusiasm and information to be well-informed Ag teachers.





New Hampshire
Agriculture In the
Classroom Council
295 Sheep Davis Rd.
Concord NH, 03301

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DID YOU KNOW?

Ladybugs will not fly if the temperature is below 55 degree Fahrenheit. A dragonfly can fly up to 50-60 miles per hour and a praying mantis can turn it's head 180 degrees! And if that isn't amazing enough nearly 1,000 new species of insects are named each year.....for such small creatures, they sure can make a big impact on our lives.

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February 6th & 7th - Farm & Forest Expo

“Remember Our Heritage, Imagine our Future - Educators Workshop”

Join NHAITC on Feb 6th as we use the theme of agriculture to explore our state's history and discover where it is taking us in the future. Come see the many businesses and people involved in NH Agriculture. There's a little something for everyone in this 2 day family festival. More information on page 4.

February 13th—Fiber to Felt #2 Educators Workshop

Back by Popular demand, Fiber to Felt Workshop #2 is open to anyone interested in using fiber in their curriculum or to learn how to have fun with fiber! More information on page 4.

February is National Cherry Month

Berries can brighten up any dull winter lesson plan! NHAITC can loan the interactive cd-rom entitled “Chillin with the Cherry Street Kids” or better yet log onto www.cherrymkt.org for more fun and activities.

National Ag Day—March 20, 2004

Celebrate Agriculture! As the world population soars, there is an even greater demand for the food and fiber produced in the US. Yet, fewer and fewer Americans understand the processes by which their food is produced and delivered. That's precisely what Ag Day is all about: Building awareness for and appreciation of, the role of agriculture in our everyday.

Visit www.agday.org to learn more!

Farm to School Workshop—March 27, 2004

The University of NH & NHAITC join together to bring the farm to teachers in order to develop place-based curriculum that supports experiential & inquiry-based learning about our state and region's food and farming system. Detailed information on page 3.

