



How can you benefit with the ScholarShare® College Savings Plan?

GET THE FACTS



- News
- Articles
- Videos
- Images
- Books
- Search

- Health & Medicine
- Mind & Brain
- Plants & Animals
- Earth & Climate
- Space & Time
- Matter & Energy
- Computers & Math
- Fossils & Ruins

Science Video

Share Blog Print Email Bookmark

Cloned Apples

Plant Scientists Graft Apple Trees to Select Disease-Resistant Traits

August 1, 2005 — Grafting -- an ancient way of cloning plants -- enables plant scientists to create new varieties of apples. The selected genetic traits allow trees to resist pests with less pesticides, and to make better-tasting fruits.

See also:

Plants & Animals

- Trees
- Food
- Seeds
- Botany
- Agriculture and Food
- Cloning

Reference

- Apple
- Pollination management
- Pest (animal)
- Yeast

STATE COLLEGE, Penn.--Apple season is right around the corner, but do you know where your apples are coming from?

Researchers are using science to make apples better than ever -- and easier on your pocketbooks!

Apples. They're big! And mmm ... Are they good! But do you know where they come from? Trees? Seeds? Close, but actually, all of the apples we eat, whether we buy them at the store or pick them off a tree, are clones! For 2,000 years, growers have attached the root of one tree to the shoot of the desired fruit to clone it through a process called grafting. Making a genetic copy of the preferred fruit is the only way to get reliable apple quality.

"People's children don't look identical to the parents. Same thing with trees, so you might lose those good-tasting characteristics of the fruit in the next generation," says Tim McNellis, a plant pathologist at Penn State University in State College, Pennsylvania.

Now, plant scientists are trying to selectively pick traits to copy by using the root to turn on and off desirable genes in the shoot. For example, taking the root of a small Crab Apple tree and grafting it to the shoot from a tasty Gala apple can produce a small tree with great fruit.

McNellis says the goal is to provide a higher quality product hopefully at a lower cost. Creating trees that are more disease-resistant cuts down on pesticide expenses -- which could mean your \$11 bag of apples would cost \$7. But the experiments are just beginning.

Professional horticulturist Rob Crassweller says, "We want to see not only how much fruit they produce but how good the fruit is." And if the research pans out, they will only get better.

This research is a slow process. It takes about seven years from grafting a tree to seeing fruit on it. But you could see these smaller trees become reality in the next five years.

BACKGROUND: When we buy apples at the store, they don't come from seeds, but a 2,000-year-old technique. This involves grafting the shoots and branches of an existing apple tree, called a scion, onto a new trunk and root system -- called a rootstock -- and planting the hybrid in the ground. Scientists are now trying to determine the links between specific genes and the most desirable apple traits, especially disease resistance.



WHY WE NEED CLONES: If you plant a Golden Delicious apple seed, you won't get a tree that produces Golden Delicious apples. Each seed has too much genetic variability. Usually this produces a crab apple, the "mutt" of the apple world. Apple breeders must make clones of Gala or Macintosh or other specific varieties, every generation. It has less to do with genetics and more to do with influence. Rootstocks seem to switch on dormant genes already present in the scion.

FUN APPLE FACTS:

- The science of growing apples is called pomology
- The Greeks, Etruscans, and Romans all practiced grafting their favorite apple varieties to other apple rootstocks

Ads by Google

Advertise here

Heirloom Apple Trees

Providing Certified Organic fruit trees for the home and farm

www.treesofantiquity.com

Rare & Unusual Tree Seeds

2010 Whatcom Seed Catalog Online Easy Ordering - Super Fast Delivery

www.seedrack.com

Pruning Apples Trees

Find more sources/options for what your looking for

www.webcrawler.com

Apple Trees, dwarf-semi

Flavorful, disease resistant apples for the home gardener.

RaintreeNursery.com

Apple Trees

Buy Henry Field's Quality Apple Trees - Free Coupon

HenryFields.com

Related Stories



Going Back to the Source for a Heartier Apple Tree

(January 5, 2006) — Grafts, genetic material and rootstocks collected during the 1990s from wild apple trees in central Asia may revolutionize the nation's apple industry. This material shows potential for helping breed ... > read more



Kazak Apple Research Key To Preventing Blue Mold

(September 28, 2008) — Blue mold, caused by the fungus *Penicillium expansum*, is the scourge of apple breeders and producers throughout the world, causing extensive losses to stored apples. As the familiar saying goes, one ... > read more



Found: The Apple Gene For Red

(December 6, 2006) — CSIRO researchers have located the gene that controls the color of apples -- a discovery that may lead to bright new apple ... > read more



Understanding Apples' Ancestors

(December 14, 2009) — A species of wild apples that could be an ancestor of today's domesticated apples are native to the Middle East and Central Asia. A new study comparing the diversity of recently acquired wild apple ... > read more



Using Software To Measure Variances In 'Honeycrisp' Apple Peels

(February 28, 2009) — Apples, long been associated with good health, contain anthocyanins, important antioxidants that give the apple their red color. ...

Just In:

First Confirmed Species of Monogamous Frog

Science Video News



Tree Tracker

Arborists and volunteers are combing the streets of Baltimore and other cities, counting trees and gathering information about them. The information. ... > full story

Plant Biologists Discover Plant Defenses Against Insects

Research Entomologist Prescribes New Form Of Pest Control

Environmental Scientists Find Tree Combo For Carbon Sequestration

more science videos



Breaking News

... from NewsDaily.com

Scientists find new way to help crops fight pests

Calcium may help you live longer: study

Glenn Close has genes mapped

Scientists find "mother" of all skin cells

"Personal" study shows gene maps can spot disease

more science news



In Other News ...

House Democrat says still short on health votes

Gunmen in Mexico kill 3 with U.S. consulate ties

Irish police release cartoonist murder plot suspect

More than 100,000 swarm Bangkok, seek elections

Greek bailout tops EU finance ministers' agenda

A week on, Iraq PM pulls ahead in tight race

Netanyahu voices regret in settlement row with U.S.

Georgia opposition accuses gov't over TV "war" hoax

Massachusetts Bay Colony

- The largest apple ever picked weighed three pounds
- Actress Gwyneth Paltrow named her baby daughter Apple

Search ScienceDaily *Number of stories in archives:*
44,032

Free Subscriptions ... from ScienceDaily

Get the latest science news with our free email newsletters, updated daily and weekly. Or view hourly updated newsfeeds in your RSS reader:

[Email Newsletters](#)

[RSS Newsfeeds](#)

Feedback ... we want to hear from you!

Tell us what you think of the new ScienceDaily -- we welcome both positive and negative comments. Have any problems using the site? Questions?

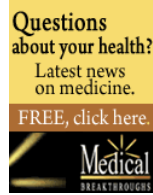
Your Name:

Your Email:

Comments:

Click button to submit feedback:

Note: This story and accompanying video were originally produced for the American Institute of Physics series *Discoveries and Breakthroughs in Science* by *Ivanhoe Broadcast News* and are protected by copyright law. All rights reserved.



Find with keyword(s):

Enter a keyword or phrase to search ScienceDaily's archives for related news topics, the latest news stories, reference articles, science videos, images, and books.

Ads by Google

[Advertise here](#)

Pruning Apple Trees

Pruning Apple Trees. Beautify Your Garden. Get Inspired.

Landscaping.LumaGardening.com

[About This Site](#) | [Editorial Staff](#) | [Awards & Reviews](#) | [Contribute News](#) | [Advertise With Us](#) | [Privacy Policy](#) | [Terms of Use](#)
Copyright © 1995-2009 ScienceDaily LLC — All rights reserved — Contact: editor@sciencedaily.com
Part of the iVillage Your Total Health Network