Technology Advances in Gardening

One of the reasons we like to grow vegetables is to capture and enjoy that wonderful flavorful freshness of backyard picked food that goes straight to the table. Science today is making and testing all types of new methods to keep our foods fresher, healthier and more productive.

According to a recent news release, the Agricultural Research Service is working with the produce industry to make sure that fruits and vegetables taste as good as they look. They're counting on "machine vision" tools that can predict the quality of fruit or vegetable flavor--right after picking and in the packing plant--without ever touching the product. Machine vision is widely used in industry by employing optical sensors to inspect objects.

Typically fruits and vegetables are judged by sample tastings, but there is no guarantee that all of the produce in the batch will taste the same. Samples are also tested for firmness by mechanically stabbing them with a thick, steel probe .which destroys the food sample so it can't be sold.

The Research Service scientists have developed machine vision prototypes that "taste" every single piece of produce from right after harvest to when it passes by on the packing line. The scientists created a laser prototype to use on apples and peaches as test foods. According to the scientists, the detector focuses four laser beams, each a different light wavelength, into one sharp beam that shines deep into individual fruits.

Laser light photons momentarily scatter all the way to the fruit's core and measure the amount of light bounced back after interacting with tissue reflects firmness. Peaches and apples are separated by whether they are soft, firm or hard. The theory is that since scattered light also indicates the amount of light absorbed by the fruit, and that absorption is affected by sugar levels in the fruit, this technology can be used to predict flavors, such as sweetness in apples.

As the technology is further developed, qualities like ripeness and sourness can be detected. The scientists plan to test the laser on other types of vegetables and foods in the near future.

With the price of gasoline above historic levels, most of us realize how much we rely on petroleum sources from around the world and how much our lives would be changed without it. What we need to do as a society is become less dependent upon limited petroleum reserves and especially the ones we don't own. One way of doing this is learning how to utilize renewable sources of energy.

A renewable source such as plants that grow quickly and efficiently such as corn, soybeans and sunflowers can be a rich source of oils that can be adapted to energy use and building blocks of plastics and other materials we use heavily in our society. For example, machine fuels, industrial oils, lubricants, plastics and other materials can be made from plant or animal sources. As a result, we can continue to employ farmers and our land to produce these renewable resources.

All this means we are moving more each day to a biobased economy as well as a knowledge economy no longer based on pure traditional manufacturing. Scientists are coming together more and more to discuss "biorefining" which is the use of plants to serve as a source of long-chain hydrocarbons, which can be used as petroleum-like feedstocks to make industrial oils and other biobased products.