

TECHNOLOGY ROUNDUP

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Tech & Trade Offers

Textile Technology IRO & ROJ Products

Shirting, Denim, Silk and Fancy
fabrics, Curtains, Upholstery,
Bed sheeting and Towels etc.



Forthcoming Tech Events

- **8th IEEE International Conference on Digital Information Management (ICDIM 2013)**
- **3rd International Multi-Topic Conference (IMTIC 2013)**
- **2nd EC 2013 - Educational Development in a Changing World: The Mysteries and Myths of 21st Century**
- **2nd International Conference on Global Sustainable Development (ICGSD 2013)**
- **1st International Conference on Information & Communication Technology Trends - (ICICTT-2013)**

Indigenous Technology

Effect of Different Packing Materials and Storage Conditions on the Viability of Wheatseed (TD-1 Variety)

Pakistan is the 6th most populous country in world with a population of 160.9 million in mid 2008 with growth rate of 1.8% (GOP, 2008). Wheat, the most important crop and being the staple diet, is cultivated on the 8.459 million hectares with a production of 22.5 million tons. It contributes 13.7% to the value added in agriculture and 3.0% to GDP (GOP, 2008). About 9.3 to 42% of attainable wheat production is lost as a result of attack of various pests, pathogens and weeds in spite of control measures.

Grain quality is an important parameter for marketing and processing, and can affect the commodity value. These factors can be physical, such as temperature and humidity; chemical, such as oxygen supply; and biological, such as bacteria, fungal, insects and rodents. Safe storage preserves the qualitative and quantitative aspects of the grains by providing unfavorable conditions for the development of insects, rodents and microorganisms. The storage of grains in the natural environment of tropical areas poses great problems due to the temperature conditions and relative humidity, when compared to the areas having a cold or temperate climate. The parameters of temperature and relative humidity during storage are decisive in the process of loss of seed viability and composition.

Grain storage occupies a vital place in the economies of developed and developing countries. In Pakistan, improper traditional and recent methods of grain storage have caused lots of losses in terms of physical and chemical qualities. Proper grain storage in developing countries plays an important role in maintenance of their economy.

The fluctuations in temperature, dampness during storage and its longevity results in significant nutrient losses. Prolonged storage period with high seed moisture percentage also causes reduction in germination, seedling vigor, accelerates seed aging, increases germination time, electrical conductivity, insect infestation and finally loss in seed weight.

The present research was carried out to investigate the effect of different packing materials (tal bin, earthen bin, plastic bag, cloth bag and gunny bag) and grain moisture content at packing (10% and 16%) on viability of wheat seed for ten months of storage in the laboratory of Farm Structures, Sindh Agriculture University, Tandojam, Pakistan, during the year 2010-11. Temperature, moisture content and germination capacity were recorded throughout the storage period. When the gunny, cloth and plastic bags were used as the packing material, the moisture content and germination capacity were decreased and the seed temperature was increased with the increase of storage period despite the moisture content (10% and 16%) of wheat seed at packing. When seed was packed in metal and earthen bins the reduction in viability of seed with time of storage varied with the moisture content of seed at packing. Wheat seed stored in metal and earthen bins with initial moisture content of 10% showed satisfactory temperature, moisture content and germination capacity throughout the storage period than those packed with 16% moisture. Wheat seed stored in gunny, cloth and plastic bags were in good terms with temperature, moisture content and germination capacity in comparison with those in metal and earthen bins.

Courtesy:

Science, Technology and Development, 2012 31(1): 10-18 refs15

Author: Shakeel H. Chattha, Liaquat A. Jamali and H.R. Mangio (Faculty of Agricultural Engineering, Sindh Agriculture University, Tandojam, Pakistan). Khalil A. Ibupoto (Pakistan Science Foundation, Islamabad)

Indigenous Technology

Remote Sensing and GIS Application in Wetland Change Analysis: Case Study of Kallar Kahar

Wetlands are essential ecological features in any landscape. In their natural condition, wetlands supply numerous economical, ecological and cultural benefits to local communities, including water quality protection, flood and erosion control, fish and wildlife habitat, aquatic productivity and unique opportunities for education and recreation. Wetlands cover approximately 9.7% of the total area of Pakistan. The country has a great variety of Wetlands, both man-made and natural. However, these wetlands are now suffering because of ineffective management, urbanisation, poverty and lack of awareness.

Recent developments in geographical information system (GIS) and Remote Sensing Technologies (RST) are providing valuable tools to assist with monitoring, inventory and management of wetlands. Many studies were undertaken regarding change detection in wetlands by using GIS/Remote Sensing Technologies across the world.

Wetlands are one of the naturally occurring habitat. They provide invaluable bio diversity resources, water quality improvement, support ground water recharge, help in moderating climate change and supply flood control but they are deteriorated greatly due to economic development and population growth. In the present analysis, the object-based approach of 'ENVI' is presented to derive the change detection inventory information for Kallar Kahar Wetland using Quick bird imagery and Corona imagery. According to the results, agricultural and shrub area has reduced by 43% and 49% respectively whereas there has been an increase in the water-body, uncultivated/soiled area, orchard and built-up area by 40%, 53%, 79% and 38%, respectively. In order to analyse the change detection of wetlands using very high resolution satellite images, the outcome of the analyses is presented which can help in decision making for the purpose of land development and further assess the implications of the observed changes in the area for making appropriate recommendations.

Courtesy:

Science, Technology and Development, 2012 31(3): 251-259 refs20

Sheikh Saeed Ahmad and Summra Erum (Department of Environmental Sciences, Fatima Jinnah Women University, Rawalpindi, Pakistan).

Thin, Flexible Glass for Energy Storage

A new use for glass is being developed by researchers in Penn State's Materials Research Institute that could make future hybrid-electric and plug-in electric vehicles more affordable and reliable.



Thin and flexible glass for displays is already a widely commercialized technology. But even thinner glass, about one tenth the thickness of display glass, can be customized to store energy at high temperatures and for high power applications, such as electric vehicle power electronics, wind turbine generators, grid-tied photovoltaics, aerospace, and geothermal exploration and drilling.

Researchers report on experiments with various alkali-free glass compositions and thicknesses, comparing their energy density and power density to commercial polymer capacitors currently used in electric vehicles to convert energy from the battery to the electric motor. Because polymer capacitors are designed to operate at lower temperatures, they require a separate cooling system and a larger safety factor, which adds to their bulk. In this research, researcher identified 10-micron thick glass from Nippon Electric Glass (NEG) as having an ideal combination of high energy density and power density, with high charge-discharge efficiency at temperatures up to 180 °C and, in more recent experiments, even higher.

Partnering with NEG leverages the investment of leading glass manufacturers in developing the processes to create continuous sheets of glass with less thickness and fewer defects. Working with State College-based Strategic Polymer Sciences, the researchers are developing the capability to produce inexpensive roll-to-roll glass capacitors with high energy density (35 J/cc³) and high reliability.

In work funded by the Department of Energy, Manoharan and the Penn State team led by Michael Lanagan, professor of engineering science and mechanics, are collaborating with Strategic Polymer Sciences to coat the glass with high temperature polymers that increase energy density by 2.25 times compared to untreated glass, and also significantly increase self-healing capabilities. Self-healing or graceful failure is an important consideration in applications where reliability is a critical factor.

"These flexible glass capacitors will reduce weight and cost if replacing polypropylene capacitors," said researcher. "They could be used in any high energy density capacitor application not only in electric vehicles, but in heart defibrillators or weapons systems such as the electric railgun the navy is developing."

www.treehugger.com

Glove Identifies Poisons on Contact

Security takes top priority in laboratories and in production. In the future, employees exposed to risks will only have to put on a glove in order to receive a toxic substance warning: This textile identifies poisonous substances, and points them out immediately.



Employees in chemical production, the semiconductor industry or in laboratories are frequently exposed to harmful substances. The problem: Many of these aggressive substances are imperceptible to human senses, which makes handling them so risky. That's why there is a broad range of solutions that employers can use to protect their staff from hazardous substances, from highly sensitive measuring equipment to heat imaging cameras. Soon, this spectrum will be enhanced by one more clever solution that is easy to handle, and that dispenses with a power supply. Researchers at the Fraunhofer Research Institution for Modular Solid State Technologies EMFT in Regensburg have engineered a glove that recognizes if toxic

substances are present in the surrounding air.

The protective glove is equipped with custom-made sensor materials and indicates the presence of toxic substances by changing colors. In this regard, the scientists adapted the materials to the corresponding analytes, and thus, the application. The color change, from colorless (no toxic substance) to blue (toxic substance detected), for example warns the employee immediately. By synthesizing the adapted color sensor materials, they can detect gases like carbon monoxide, for example, or hydrogen sulfide. Still, this protective gear represents only one potential area of application. Sensor materials could also be deployed for the quick detection of leaks in gas lines.

The expert already has new ideas about how the solution could be developed further. For example, a miniaturized sensor module, integrated into textiles, could record toxic substances, store the measurement data and even transmit them to a main unit. This way, you could document how frequently an individual within a hazardous environment was exposed to poisonous concentrations over a longer period of time.

The researchers also envision other potential applications in the foodstuffs industry. In the future, color indicator systems integrated into foils or bottle closures are intended to make the quality status of the packaged foods visible. Because the sell-by date does not represent a guarantee of any kind. Foodstuffs may often spoil prematurely -- unnoticed by the consumer -- due to a packaging error, or in the warehousing, or due to disruptions in the refrigeration chain. Oil-based and fat-containing products are specifically prone to this, as are meats, fish and ready meals.

[Www.esciencenews.com](http://www.esciencenews.com)

World-Changing Technology Enables Crops to Take Nitrogen from the Air

A major new technology has been developed by The University of Nottingham, which enables all of the world's crops to take nitrogen from the air rather than expensive and environmentally damaging fertilizers.



Nitrogen fixation, the process by which nitrogen is converted to ammonia, is vital for plants to survive and grow. However, only a very small number of plants, most notably legumes (such as peas, beans and lentils) have the ability to fix nitrogen from the atmosphere with the help of nitrogen fixing bacteria. The vast majority of plants have to obtain nitrogen from the soil, and for most crops currently being grown across the world, this also means a reliance on synthetic nitrogen fertilizer.

Professor Edward Cocking, Director of the University of Nottingham's Centre for Crop Nitrogen Fixation, has developed a unique method of putting nitrogen-fixing bacteria into the cells of plant roots. His major breakthrough came when he found a specific strain of nitrogen-fixing bacteria in sugar-cane which he discovered could intracellularly colonize all major crop plants. This ground-breaking development potentially provides every cell in the plant with the ability to fix atmospheric nitrogen. The implications for agriculture are enormous as this new technology can provide much of the plant's nitrogen needs.

This leading world expert in nitrogen and plant science, Professor Cocking has long recognized that there is a critical need to reduce nitrogen pollution caused by nitrogen based fertilizers. Nitrate pollution is a major problem as is also the pollution of the atmosphere by ammonia and oxides of nitrogen. In addition, nitrate pollution is a health hazard and also causes oxygen-depleted 'dead zones' in our waterways and oceans.

Speaking about the technology, which is known as 'N-Fix', Professor Cocking said: "Helping plants to naturally obtain the nitrogen they need is a key aspect of World Food Security. The world needs to unhook itself from its ever increasing reliance on synthetic nitrogen fertilizers produced from fossil fuels with its high economic costs, its pollution of the environment and its high energy costs." N-Fix is neither genetic modification nor bio-engineering. It is a naturally occurring nitrogen fixing bacteria which takes up and uses nitrogen from the air. Applied to the cells of plants (intra-cellular) via the seed, it provides every cell in the plant with the ability to fix nitrogen. Plant seeds are coated with these bacteria in order to create a symbiotic, mutually beneficial relationship and naturally produce nitrogen. N-Fix is a natural nitrogen seed coating that provides a sustainable solution to fertilizer overuse and Nitrogen pollution. It is environmentally friendly and can be applied to all crops.

[Www.esciencenews.com](http://www.esciencenews.com)

Oven-Baked Fish Fingers Have Fewer Furans than Fried

Spanish and Portuguese researchers have discovered that fried fish fingers generate more furanic compounds than those baked in the oven. To be precise, there are three times as many when fried with olive oil and twice as many with sunflower oil. These compounds improve the food's organoleptic characteristics, but are believed to be toxic and carcinogenic.



Worries concerning the presence of furans in food have risen in recent years due to their toxic and carcinogenic effects, as observed in animals. In fact the International Agency for Research on Cancer, part of the WHO, has now listed them as possible carcinogens for humans.

A team of researchers from the University of Porto (Portugal) and the University of Extremadura (Spain) has evaluated the effects that the cooking conditions of fish fingers can have on the quantity of furans (furan, 2-furfural, furfuryl alcohol, 2-pentylfuran and 5-hydroxymethylfurfural). The results, published in the journal 'Food and Chemical Toxicology', reveal that fish fingers fried in olive oil contain approximately 30 micrograms of furans per gram ($\mu\text{g/g}$) and around 20 $\mu\text{g/g}$ when sunflower oil is used.

When they are oven-baked, on the other hand, they generate fewer of these harmful substances: 10 $\mu\text{g/g}$. Furthermore, if fried fish fingers are reheated in the microwave, concentrations of 8.15 $\mu\text{g/g}$ are found. "The number of furans is lower when the temperature is lower and frying time is shorter, and also decreases when a longer time elapses after cooking.

The research outcomes show that formation of furanic compounds can be reduced by adjusting the conditions of cooking and post-cooking, for example by using the oven instead of the deep fryer, lowering the frying time and temperature 4 minutes at 160 °C is sufficient or leaving a suitable amount of time (10 minutes) between cooking the product and eating it.

The researchers found that by following these recommendations the formation of furans can be reduced, although the volatile compounds associated with the aroma and flavour of the cooked products decrease along with them.

www.agenciasinc.es

Forthcoming Tech Events

1st International Conference On Information & Communication Technology Trends 2013 (ICICTT-2013)

2nd - 5th September, 2013
FAUUST, Karachi, Pakistan.
www.fuuast.edu.pk

8th IEEE International Conference on Digital Information Management (ICDIM 2013)

10-12, September 2013
Islamabad Marriott Hotel, Islamabad, Pakistan
www.icdim.org

2nd ICGSD 2013 - 2nd International Conference on Global Sustainable Development 2013

5th - 6th October, 2013
Kasbit, Pakistan
Www.kasbit.edu.pk

2nd EC 2013 - Educational Development in a Changing World: The Mysteries and Myths of 21st Century

30th November, 2013
IoBM Karachi , Pakistan
www.iobmeducationconference.webs.com

IMTIC 2013 - 3rd International Multi-Topic Conference

18-20th, December, 2013
Jamshoro, Pakistan
www.imtic.muet.edu.pk

Tech & Trade Offers

ROJ & IRO Products

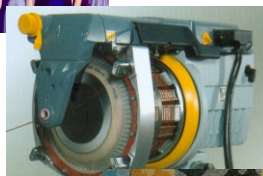
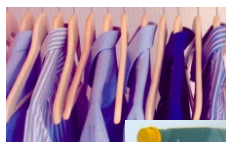
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