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NEEM COATED UREA : USES AND BENIFITS

Dinesh Kumar

Out of 17 nutrients essentially required by crop plants for their normal growth and reproduction, nitrogen (N) is generally required by them in the largest amounts. Urea is one of the most widely used source of fertiliser N in the world. It also has a high nitrogen content (46%), in comparison to many other popular nitrogen sources. When applied to soil, urea is first transformed into ammonical (NH4+) form after its hydrolysis and then to nitrite (NO2-), followed by to nitrate (NO3-) forms by the process of nitrification. Most of the crop plants use nitrate as a source of nitrogen except rice which prefers ammonical form over the nitrate. Though nitrification is a necessary phenomenon for making nitrogen available to crop plants, but the rapid nitrification is one of the key processes that encourages Nitrogen losses from the soil. This leads to reduced recovery of urea-N by crop plants. The percent recovery of fertilizer N, say urea-N for example, is generally called as nitrogen use efficiency (NUE).

The recovery of fertiliser N by a crop, especially through chemical fertilisers such as urea, in India ranges from 30 to 50% for rice. One scientific study has estimated a nitrogen use efficiency (NUE) below 33% for cereal production at the global scale. The unaccounted 67% fertiliser N escapes through different routes, such as, urea and nitrate leaching, ammonia volatilization and denitrifcation etc., which may contribute to the contamination of water bodies and the atmosphere. Thus the increased NUE and decreased nitrogen fertiliser application to crops can markedly contribute to the conservation of air and water quality.

Nitrification inhibitors (NIs)

Urea is hydrolyzed into ammonium carbamate in the presence of water and urease enzyme when applied to soil. The ammonium carbamate dissociates into ammonical form of nitrogen and carbon dioxide. The ammonical form of nitrogen is then converted to nitrate by the process of nitrification involving two steps. In first step, ammonium is transformed to nitrite and in second step, nitrite is converted to nitrate. The faster nitrification rates results in accumulation of large amounts of nitrate in soil, which are liable to be lost easily by leaching and/or denitrification. Thus regulation of urea hydrolysis and nitrification in agricultural crop production has been one of the major strategies in overcoming these N losses.

The nitrification inhibitors (NIs) are the synthetic chemicals or natural products derived from plants which slow down the rate of nitrification. The use of NIs with urea has been found quite effective in increasing the nitrogen use efficiency across the field crops. But the high cost of development and subsequent registration of effective inhibitors are serious issues in their extensive use. NIs deactivate the ammonia monooxygenase enzyme responsible for the oxidation of ammonical nitrogen to nitrite form. NIs help to retain soil N in the ammonical form for a longer time and therefore provide more opportunities and time for its uptake by crop plants. To reduce N losses, several slow release materials and inhibitors of nitrification and urease have been developed and evaluated in the irrigated lowland rice and many other cereal crops including sugarcane and maize.

Most of the synthetic nitrification inhibitors such as nitrapyrin, dicyandiamide and ammonium thiosulphate remain unpopular with the Indian farmers due to their high cost and limited availability. But the coating of urea with neem oil or other neem products found a great favour by Indian researchers and farmers as it is much cost effective way to save the N fertiliser. Many research studies in India have conclusively established that neem oil acts as an effective nitrification inhibitor if coated onto urea.

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JOB HIGHLIGHTS

SSC

Staff Selection Commission notifies Junior Engineers (Civil, Mechanical, Electrical, Quantity Surveying & Contract) Examination, 2015
Vacancies : 1000
Last Date : 10.08.2015 **(pg 2-11)**

ORDNANCE FACTORY

Ordnance Factory Dehu Road requires 170 Danger Building Worker, Examiner, Electrician, Turner, Miller etc.
Last Date : 21 days after publication **(pg 30-31)**

BANK

Exim Bank requires 78 Manager/MM II and Administrative Officer/JMI
Last Date : 22.07.2015 **(pg 12-13)**

BHEL

Bharat Heavy Electricals Limited requires 50 Supervisor Trainee.
Last Date : 31.07.2015 **(pg 25)**

Turn over the pages for other vacancies in Banks, Armed Forces, Railways, PSUs and other Govt. Deptts

WEB EXCLUSIVES

Following item is available in the **Web Exclusives** section on www.employmentnews.gov.in :

- **Rs two lakh crore investment likely to rain on urban areas in next five years for Smart cities and AMRUT plans**

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CAREER OPPORTUNITIES IN WOOD SCIENCE & TECHNOLOGY

Hemant Kumar & Rajiv Umrao

The Food and Agriculture Organization of the United Nations (FAO) estimated that the forest industry contributed approximately US$ 468 billion or 1 per cent of global gross value added to global GDP in 2006. The total forest cover of the India is 69.79 million hectare which is 21.23% of the total geographical area of the country (FSI 2013). Total annual consumption of wood in household construction and furniture, industrial consumption, and agricultural implements is estimated to be 48 million cum and total annual consumption of fuel wood for the country is 216.42 m tonnes. Our forests are under extreme pressure due to over increasing population. There needs a strong team of forestry professionals, scientist & wood technologist to optimize the consumption of wood, resulting mitigate the burden on natural forest. Pulp and paper represented about 40 per cent of this contribution. The forestry and primary timber processing industry contributes huge employment in primary wood processing (sawmilling, panels and pulp & paper) and forestry businesses. The vast majority of these businesses are among the small and medium sized enterprises. Wood has always provided society with its basic needs for fuel and shelter. The aesthetic and decorative characteristics of wood are incentives for its use in paneling, furniture, and architectural design. Wood products emerging from production

facilities, however, satisfy a wider variety of human needs and wants. Consider a few of the things around us: implements for work; toys for play; houses, furniture, books, and newspapers; photographic film, and energy--conveniences and necessities all supplied by wood. The list goes on to include lumber, plywood, particleboard, fiberboard, pallets, and numerous other industrial and consumer commodities; and the list continues to grow.

Our society is facing diminishing supplies of non-renewable resources and increased costs for their procurement. Compared to wood, non-renewable resources, such as oil and iron ore, have high energy requirements for conversion into finished goods. Wood, as a renewable resource, is an attractive alternative. Accordingly, an increase in the use of wood and the variety of products produced from it, promise a bright future for the wood-using industries and our society.Though the history of forestry in India is very old but processing and utilization efficiency of wood products are not competing with other countries. Currently the research, education and extension in wood technology in India are being pursued by Indian Council of Forestry Research & Education (ICFRE) under Ministry of Environment and Forests. A comprehensive approach in the field of wood technology will be a viable option towards mitigating climate change & conservation of natural forests.

EDUCATION IN WOOD TECHNOLOGY

Wood science & technology is an essential subject offered during graduation in forestry (B.Sc. Forestry). Wood Science and Technology is an expanding career opportunity for individuals interested in material science, engineering, material processing, chemistry, or marketing. It is an interdisciplinary field that has its foundation in the physical sciences, with a direct link to applications of technology. Graduates of a Wood Science and

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Air Surcharge 20p for Srinagar, Leh, Kalimpong, Imphal, Dimapur, Agartala, Duliajan, Karimganj, Chabua, Diphu, Dibrugarh, Tezpur, Haillakandi, Mariani, Jorhat, Shillong, Digboi, Silchar, Port Blair

DIGITAL INDIA

The Prime Minister, Narendra Modi, has said the Digital India programme will fulfill the dreams of crores of Indians. Launching the digital India week in New Delhi, Mr. Modi said the leading business houses have already committed to invest Rs. 4.5 lakh crore in the programme which will generate employment for 18 lakh people in the country. Describing cyber-related risks as a global threat of "bloodless war", he called upon the nation's IT community to serve the entire world by building credible cyber-security systems. The Prime Minister also exhorted the captains of India's IT industry to boost production of electronic devices and goods in the country, as part of the "Make in India" initiative, to reduce dependence on imports. He outlined his vision of e-governance and mobile governance, where all important Government services are available on the mobile phone. He assured full support to young entrepreneurs who wished to launch Start-ups. He called upon the youth to innovate and said "Design in India" is as important as "Make in India."

Digital India has been envisioned as an ambitious umbrella programme to transform India into a digitally empowered society and knowledge economy. The vision of Digital India is centred on three key areas - (i) Digital Infrastructure as a Utility to Every Citizen, (ii) Governance & Services on Demand and (iii) Digital Empowerment of Citizens.

Various projects/products launched or ready to be launched under this initiative are as follows:

- Digital Locker System to minimize the usage of physical documents and enable sharing of e-documents across agencies·
- MyGov.in - an online platform to engage citizens in governance, through a "Discuss", "Do" and "Disseminate" approach.
- Swachh Bharat Mission (SBM) Mobile app to achieve the goals of Swachh Bharat Mission.
- eSign framework to allow citizens to digitally sign a document online using Aadhaar authentication.
- The Online Registration System (ORS) under the eHospital application for providing services like online registration, payment of fees and appointment, online diagnostic reports, enquiring availability of blood online etc.
- National Scholarships Portal for beneficiaries from submission of application to verification, sanction and disbursal
- Digitize India Platform (DIP for large scale digitization of records in the country that would facilitate efficient delivery of services to the citizens.
- Bharat Net, a high speed digital highway to connect all 2.5 lakh Gram Panchayats of country- the world's largest rural broadband connectivity project using optical fibre.
- BSNL's Next Generation Network (NGN), to manage all types of services like voice, data, multimedia/ video and other types of packet switched communication services.
- BSNL's large scale deployment of Wi-Fi hotspots throughout the country.
- 'Broadband Highways' as one of the pillars of Digital India to address the connectivity issue while enabling and providing technologies to facilitate delivery of services to citizens.
- Policy initiatives like e-Kranti Framework, Framework for Adoption of Open Source Software in e-Governance Systems, E-mail Policy, Use of IT Resources, Application Development & Re-Engineering Guidelines for Cloud Ready Applications.
- To create BPO centres in different North Eastern states and also in smaller / mofussil towns of other states.
- National Centre for Flexible Electronics (NCFlexE) to promote research and innovation in the emerging area of Flexible Electronics.
- Centre of Excellence on Internet on Things (IoT) as a joint initiative of the government agencies and private institutions such as Nasscom. (PIB Release)

NEWS DIGEST

- The Cabinet Committee on Economic Affairs has cleared a new scheme the "Pradhan Mantri Krishi Sinchayee Yojana" (PMKSY) with an outlay of Rs. 50,000 crore over a period of five years .The PMKSY aims at convergence of investments in irrigation, expand cultivable area under assured irrigation , improve on-farm water use efficiency, enhance the adoption of precision-irrigation and other water saving technologies, enhance recharge of aquifers and introduce sustainable water conservation practices.
- Centre has approved the creation of a common electronic platform which will allow farmers and traders to sell their produce to buyers anywhere in the country. Rs 200 crore has been allocated over a period of 3 years for the scheme to set up an online national agriculture market by integrating 585 wholesale mandis across India. The move aims at providing farmers free market access to realise better price. Currently, Agriculture Produce Marketing Committee (APMC) acts in different states and permit the first sale of crops after harvesting by farmers only in regulated market. Multiple licences are required at present to trade in different mandis within the same state.
- The Union Cabinet has given its approval for the institutional framework for the National Skill Development Mission. It has also given nod for the India's first integrated National Policy for Skill Development and Entrepreneurship 2015. The Mission will provide a strong institutional framework at the Centre and States for implementation of skilling activities in the country
- Eight core infrastructure sectors grew to a 6-month high of 4.4 per cent in May, 2015 mainly due to a surge in output of coal and refinery products. These core sectors had grown 3.8 per cent in May last year. Coal output rose 7.8 per cent, refinery products output increased 7.9 per cent, and electricity generation rose 5.5 per cent during the month this year. Crude oil production increased 0.8 per cent, steel and cement grew 2.6 per cent, each, during the month. Fertiliser output increased 1.3 per cent. But natural gas recorded negative growth of 3.1 per cent in May

NOTICE REGARDING WINDOW ADVTS

Employment News is mandated to provide detailed information related to jobs/training/educational opportunities to the unemployed youth from all parts including the remotest areas of the country.
In accordance with the government guidelines, advertisers are requested to send detailed advertisement which includes information on the number of posts, age, educational qualification, experience and mode of submission of application etc. for publication in EN/RS to help applicants get a full picture of the concerned vacancy. Incomplete, sketchy or ambiguous advertisements are not accepted by EN for publication.

CAREER OPPORTUNITIES...

Continued from page 1

Technology program have a comprehensive knowledge and understanding of wood as a raw material. This knowledge includes the anatomical, physical, chemical and mechanical properties of wood. In addition, students receive training in the major wood processing operations, Wood Seasoning, Wood Preservation, Reconstituted Wood Based Panels, Forest Products, Adhesives, Timber Engineering and Construction, Product Design and Fabrication, woodworking and finishing and chemical modification. Depending upon their career interests, students supplement their knowledge of wood as a material by a selection of additional courses within a specified area. Examples of areas often chosen are industrial engineering, business administration, personnel relations, economics, civil engineering, and chemistry. Some universities offer degrees in wood engineering as part of their engineering curriculum. Wood technology professionals are considered to be appropriate managers for forest protection, value addition to major forestry products (woody) and to make farmers more economically strong and globally competitive. All the aspects related to Wood Technology are covered in the form of major & minor courses.

PROCEDURE OF ADMISSION

In India, Forest Research Institute (FRI) under ICFRE is only offering the Master degree in Wood Technology. The admission/selection procedure in the Master's in Wood Technology, one can apply after completion of graduation in Science, Forestry/ Agriculture/ Basic sciences etc. The process of selection in master's degree is through qualifying the entrance exam conducted at all India level. Similarly, for Ph.D. one can take admission in the Institute of Wood Science & Technology (IWST) Bangalore,Indian Plywood Industries Research and Training Institute(IPIRTI), Bangalore, Central Pulp & Paper Research Institute (CPPRI) & FRI. The National Eligibility Test (NET) in Forestry examination conducted by Agricultural Scientist Recruitment Board (ASRB) of ICAR, Pusa, New Delhi, one of the important certificates for lectureship, which can be attended by Post Graduate students of Wood Technology. Besides this, the Post-Doctoral Fellowship (PDF) in Wood Technology and allied sciences is also offered by various National and International Universities /Organizations.

EMPLOYMENT AND CAREER OPPORTUNITIES

The opportunities for a satisfying career in the Wood Science and Technology sector are wide-ranging. Currently employment openings exceed the number of post-graduates available to fill them, and this shortage is expected to continue in future. Salaries in the field of Wood Science and Technology can be compared favorably with those offered to engineers and scientists in the country. The career advancement in this field is also excellent. The different sectors/ areas where wood technology professionals are being placed are manufacturing, technical service, research and marketing.Candidates having master degree in wood technology are recruited by Central Govt., State Govt. and Forest Departments for the post of scientist B, handicraft promotion officer Quality inspector and logging officer. Wood technology professionals in the rural development Projects as Project officer for the activities related to livelihood and small scale cottage industries. In private sector these professionals can take up employment as technical personnel either in laboratories and R&D companies like ITC, wood based industries depending on their field of specialization. Now days all retail groups or procurement agencies etc. in hard goods section need wood technologist for providing technical support as well as product design and development. These professionals can be recruited as Quality inspector and Production incharge in Wood Based Industries like wood specimen identification, Pulp and Paper Industries, charcoal industries, Katha Making Industry, wood pelleting, engineered wood or composite wood industries, saw milling & saw doctoring, Resin and Turpentine Industry, Medicinal and Aromatic Plant Units, Other Wood Products Industries etc. Some industries require professionally qualified managers having expertise in wood technology and forestry for smooth running of their industries. The recent sector of Biofuels and bioenergy also provides good platform to the wood technology professionals particularly for short rotation timber and related energy crops. Estimation of carbon sequestration potential and carbon trading is the new and exciting domain for these experts. The wood technology professionals can plan for Ph.D. and PDF programmes from any reputed University/ Institutes in India or abroad in the field of nanotechnology, material science and engineered wood for making a career in the academic. These professionals having master's degree alongwith NET certificate can directly move towards academic profession and join the national and international University/institution as faculty, scientists and research officers. Employment opportunities also exist with NGOs involved in protection and conservation of forest resources and Corporates having own plantations for timber production and processing etc. Furthermore, a wood technologist can work as a self-employed consultant for the wood based industries and agencies.

WOOD TECHNOLOGY EDUCATION

The Forest Research Institute University (FRI) under ICFRE is only institute which offering the Master degree in Wood Technology. Institute of Wood Science & Technology (IWST) Bangalore, Indian Plywood Industries Research and Training Institute (IPIRTI), Bangalore and Central Pulp & Paper Research Institute (CPPRI), Saharanpur under Forest Research Institute University, Dehradun offers the degree, diploma & training related to wood technology in India. Abroad also, many Universities and colleges offer programmes related to wood technology.

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