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NITRA NEWS

.....WITH INDUSTRY ALWAYS



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**A QUARTERLY
NEWSLETTER
FROM NITRA**

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FROM DIRECTOR GENERAL'S DESK

This last quarter of 2025 has been very eventful for NITRA. During this period NITRA was awarded the CII Industrial Innovation Award 2025, recognizing us among the Top Innovative R&D Institutes in India. The jury especially appreciated NITRA's work on milkweed fibre, specialized firefighter suits, and the development of import-substituted instruments. Besides, NITRA also received Innovation Award in Intexcon Conference 2025 for exemplary contribution in the field of protective textiles.

Hon'ble Textile Minister Shri Giriraj Singh visited NITRA during this period for inspecting the pioneering Milkweed (Aak) cultivation project. The Minister praised NITRA's groundbreaking research on Milkweed fibre. It's a matter of great satisfaction that he affirmed to garner support from Prime Minister Shri Narendra Modi on this. The Textile Minister also appreciated NITRA for obtaining the 'CLOCell' trademark for Milkweed fibres. In this visit, the minister also dedicated India's first Fire Manikin System to the nation and industry at NITRA. The newly installed Fire Manikin System is built to global standards and will safeguard workers across high-risk industries by enabling advanced assessment of protective garments.

Another significant event of this period is that a team of NITRA scientists led by Dr. M. S. Parmar, attended ITMA ASIA & CITME 2025 Fair in October 2025, at , Singapore. This year the major theme was sustainability, circularity and application of Artificial Intelligence. NITRA team visited the various exhibit sectors, took part in seminars/symposiums at ITMA and had interacted with international textile industry technocrats to draw a roadmap for NITRA's future R&D and consultancy areas. A galaxy of important personalities including exhibitors, bureaucrats, scientists, academicians, and industrialists visited NITRA Pavilion and appreciated its works.

NITRA also organized the Research Advisory Committee meeting wherein NITRA scientists presented 16 R&D projects. Besides, an MoU with Ruma Devi Foundation was signed. NITRA has also successfully transferred the manufacturing technology of three indigenously developed instruments for evaluating heat transfer in protective textiles to M/s Asian Test Equipment in this period.

I hope you all enjoy reading this edition of NITRA News.

Dr. M. S. Parmar
Director General, NITRA

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R&D SPECTRUM

Presently, NITRA is working on 06 Government sponsored projects:

❖ ON-GOING PROJECT:

Sponsoring Agency: NTTM, Ministry of Textiles, Govt. of India

- Development of Specialized Firefighting Suit
- Development of flame-retardant Nylon 66 yarn/fibre indigenously
- Cellulose-based indigenous high Clo value and low-density surface modified natural fibre for developing thermal layers of extreme cold climate clothing
- Development of Indigenous State-of-the-art Instruments for Protective Textiles
- Design and development of various products from Milkweed (*Calotropis gigantea*) floss/fibre

Sponsoring Agency: DST, Govt. of India

- To Develop Protective Work Wears for Sewage and Sanitary Workers

❖ PROPOSED PROJECT:

- Development of Flame Retardant micro glass beads-based Retro-reflective material
- Development of 3D Orthogonal Woven Composite for Airborne Radome Structures
- Application of new-age Hydrophobic Oleophilic Milkweed fibers for Oil and grease removal form Industrial waste water
- Osmotic power generation from high- TDS textile effluent streams
- Cultivation of milkweed crop to establish and maintain the supply chain of milkweed floss for textile industry
- Development of 3D high performance knitted sports textiles with thermo-physiological comfort and impact protective properties for commercial application
- AI based model for fabric defect analysis

RESEARCH PAPER PUBLISHED/PRESENTED

S.No.	Title	Author/s	Publication / Place	Publication Date
1	Development of Molten Metal Splash Resistance Workwear using Sustainable Approach for Foundry Workers	Shweta Saxena, M.S. Parmar, Swami Sharan	<i>International Conference - Products, Applications and Prospects, Organised by PSG</i>	12 Dec 2025
2	CLOCell fibre: A New age Sustainable fibre for extreme cold climate clothing	M.S. Parmar, Preeti K. Sachdeva	<i>International Conference - Products, Applications and Prospects, Organised by PSG</i>	11 Dec 2025

RESEARCH PAPER PUBLISHED/PRESENTED

S.No	Title	Author/s	Publication / Place	Publication Date
3	Enhancing the power quality of a grid-connected rooftop solar PV system under varying environmental conditions: Strategic optimization of influencing parameters using machine learning and desirability-driven approach	Ramesh C. Yadaw, Ashok K. Dewangan, Leeladhar Nagdeve, Ashok K. Yadav, Aqueel Ahmad	<i>Sustainable Energy Technologies and Assessments</i>	1 Nov 2025
4	Condensation polymerization of Nylon 66 for flame retardant application	Sundermoorthy Palanisamy, Kuldeep Yadav, C P Bansal, Neha Kapil, M.S. Parmar	<i>APA conference on polymers for advance technology</i>	13 Oct 2025
5	Milkweed floss: Farm to Foreign	M.S Parmar, Preeti Kaur Sachdeva, Vikas Singh	<i>National Conclave on Weaving India Together: Natural Fibres, Innovation and Livelihoods from the Northeast and Beyond</i>	7 Oct 2025
6	Biodegradable, Flushable Sanitary Napkin Using Natural Fibre: A Revolutionary Product Development	Ranu Khad, Nidhi Sisodia, Arindam Basu	<i>38th National Convention of Textile Engineers in National Seminar on "Emerging Challenges of Sustainable Technical Textiles"</i>	5 Oct 2025
7	From Waste to Weave: Unconventional Natural Fibers in Sustainable Textiles	Nidhi Sisodia, M.S. Parmar, A.K. Pandey	<i>38th National Convention of Textile Engineers in National Seminar on "Emerging Challenges of Sustainable Technical Textiles"</i>	5 Oct 2025
8	Valorisation of Grapevine Waste for Sustainable Technical Textiles: Comparative Characterization of Bark and Core Fibers	Princy Rana, Sabina Sethi, Nidhi Sisodia	<i>38th National Convention of Textile Engineers in National Seminar on "Emerging Challenges of Sustainable Technical Textiles"</i>	5 Oct 2025

CONSULTANCY CORNER

- *Inspection / Consultancy services*

Third-party inspection :

Third party inspection in 13 units of woollen jerseys, 7 units of terry towels, 1 unit of rucksack/combat backpack, 7 units of T-shirts, 3 units of Angola cloth, 5 units of blankets, 10 units of coat combat disruptive, 1 unit of lightweight ground sheet, 1 unit of uniform cloth, 3 units of lightweight sleeping bags, 3 units of thermal vests, 2 units of polycarbonate shields, 1 unit of thermal underpants, 2 units of rain capes, 1 unit of cap comforter, 10 units of disposable P/C cloth, 1 unit of cotton vest, 2 units of cold weather thermal, 2 units of helmets, 1 unit of tie, 1 unit of boots, and 1 unit of flannel.

Consultancy services :

During the period of Oct.-Dec., 2 assignments for setting up a 1200 KLD ZLD model and upgrading an 800 KLD ETP, 1 assessment of adequacy of a 21+21 MLD CETP, 4 energy audits, 1 project for establishment of a common facility centre, 3 valuations of fixed assets (plant and machinery), 2 manpower audits/studies, 1 electrical safety audit, 3 process audits, 2 studies on overall effectiveness of equipment and machinery, and 2 assignments on pollution prevention and effective waste management.

HRD FOCUS

S. No.	Nature of Program and Date	Venue	Division	No. of trainees
1	Fundamental Course on Protech	NITRA, Ghaziabad	HRD & Publication	54
2	Fundamental Course on Protech	Minerva Group of Institutions, Dehradun	HRD & Publication	17
4	Fundamental Course on Protech	Sri Ram College, Muzaffarnagar	HRD & Publication	60

TESTING ZONE

Newly Established Testing Facilities

- Fire Manikin Test Setup for evaluation of protective clothing performance
- Comprehensive Food Testing Laboratory
 - Analysis of spices, herbs, and condiments
 - Microbiological examination of alcoholic and non-alcoholic beverages
- Footwear and Leather Testing Facility
 - Raw material testing
 - Sole adhesion testing
 - Abrasion resistance tests
 - Flexing resistance evaluation
 - Water vapor permeability assessment
- Bullet Proof Helmet Evaluation Unit
 - Design assessment
 - Evaluation of helmet accessories

Advanced Specialized Laboratory Instruments

- Radiant heat tester
- Molten metal splash tester
- Automatic flammability tester for vertically and horizontal oriented samples
- Automatic limiting oxygen index tester
- Retro-reflectance tester
- Hunter Lab spectrophotometer tester for high-visibility clothing
- Impact of spatter tester
- Contact heat tester
- Electrical resistivity tester
- Fire resistance testers
- Sweat guarded hot plate tester
- IMO tester
- Gas fume chamber
- Toxicity tester
- Smoke visibility tester

Testing Services:

During the period Oct. -Dec., 2025, total 1623 samples were tested in NITRA's seven NABL accredited laboratories (258 samples by PQE, Chemical, 827 samples by CSE and H&F, 233 samples by Microbiology labs, 51 samples by Eco & Env. lab and 255 samples by PTTD lab).

► Moments of Glory



NITRA – Recognized Among India’s Top Innovative & R&D Institutes

We are proud to share that NITRA was awarded the CII Industrial Innovation Award 2025 on 16 December 2025, recognizing us among the Top 5 Innovative R&D Institutes in India. The jury especially appreciated NITRA’s work on milkweed fibre, specialized firefighter suits, and the development of import-substituted instruments under NTM. This achievement is particularly significant as it marks our fourth consecutive year receiving this prestigious recognition. It reflects the dedication, innovation, and collaborative efforts of our researchers, faculty, students, and industry partners.

NITRA Receives Innovation Award in Intexcon Conference 2025



After receiving the ITTA award NITRA also received Innovation award in Texcon 2025 at Ahmedabad. Mr. Swami Sharan, Sr. Scientist, receives this Award on October 07, 2025 on behalf of NITRA. It is awarded for NITRA’s exemplary contribution in the field of protective textiles i.e. for the development of specialized firefighters suit also called fire entry suit.

► Dignitaries Visit



Hon'ble Textile Minister Shri Giriraj Singh visits NITRA campus

Hon'ble Textile Minister Shri Giriraj Singh visited NITRA campus on 22nd November, 2025 for inspecting the pioneering Milkweed (Aak) cultivation project led by Dr. M. S. Parmar, Director General. The Minister praised NITRA's groundbreaking research on Milkweed fiber and highlighted its potential to revolutionize the textile sector. The Textile Minister reviewed the large-scale Milkweed cultivation, emphasizing its sustainability, resilience, and potential for economic and environmental impact. He affirmed support from Hon'ble Prime Minister Shri Narendra Modi and recognized NITRA for obtaining the CLOCell™ trademark for Milkweed fibers—signifying their exceptional thermal insulation and cellulosic properties. He also noted that several leading companies that have adopted this innovative technology, with more industries keen to participate



Hon'ble Textile Minister Dedicates India's first Fire Manikin Test System to the Nation and Industry at NITRA

The newly installed Fire Manikin Test System at NITRA Ghaziabad, built to global standards, will safeguard workers across high-risk industries by enabling advanced assessment of protective garments.

Shri Giriraj Singh encouraged all industrial sectors to utilize NITRA's advanced testing facilities and collaborate in developing innovative Milkweed-based products. This marks a proud milestone for NITRA and the textile fraternity, reinforcing India's commitment to research-driven progress and safety in the industry.

Director General's Engagements



Director General Presents Paper on CLOCell (Milkweed fibre)

Dr M.S.Parmar presented a paper on "CLOCell fibre (Milkweed fibre): A New age sustainable fibre for extreme cold climate clothing" during Plenary Session of 6th International Conference on Industrial Textiles Product, Application and Prospects organised by PSG College of Technology, Coimbatore in collaboration with Institute for Frontier Materials, Deakin University, Australia, Northwest Composite Centre, University of Manchester, UK and HoF University of Applied Sciences, Germany on 11 & 12th December 2025.



Director General Presents NITRA's work on "CLOCell (Milkweed Fibre) at Oswal Woollen Mills Ltd.

Dr. M. S. Parmar was invited by M/s Oswal Woollen Mills Ltd. to present NITRA's work on CLOCell (Milkweed Fibre): A New-Age Sustainable Fibre for Extreme Cold Climate Clothing." The presentation and the research work carried out by NITRA were highly appreciated by the industry representatives. A small quantity of Milkweed fibre was also provided to M/s Oswal Woollen Mills Ltd. for research trial purposes.

Director General's Engagements



NITRA's Presence at the Chintan Shivir cum Exhibition at Panipat

Many key areas touched upon in an exclusive interview of Dr. M. S. Parmar, Director General, NITRA, conducted during the Chintan Shivir – Panipat's Textile Industry Transformation Summit. This interview reflects an ongoing commitment to driving knowledge exchange and supporting the transformation of Panipat into a stronger, innovation-driven textile hub. The summit focused on:-

- The evolving landscape of the textile and technical textiles sector
- The importance of strong collaboration between industry and NITRA.
- Eco-friendly alternatives for textile applications (Milkweed plant)
- Potential to support rural livelihoods and sustainable cultivation practices.

Glimpses



Senior Scientists from NITRA visit ITMA ASIA + CITME 2025 Fair at Singapore

Dr. M. S. Parmar, DG, Dr. Neha Kapil, Asst. Director, Mr. Kushagra Prakash, Principal Scientific Officer and Mr. Lalit Giri Goswami, Sr. Scientific Officer, attended ITMA ASIA & CITME 2025 Fair during 28-30 October 2025, at Expo Singapore. NITRA team visited the various exhibit sectors, took part in seminars at ITMA and had interacted with international textile industry technocrats to draw a roadmap for NITRA's future R&D and consultancy areas.

Glimpses



Galaxy of Important Personalities Visit NITRA Pavilion at ITMA 2025

A galaxy of important personalities such as Shri Rohit Kansal (I.A.S), Addl. Secretary, MoT, Gol, Shri Anil Kumar Sagar (I.A.S) Principal Secretary, Dept. of Handloom and Textile, Khadi and Gramodyog, Govt. of Uttar Pradesh, Mr. Sandeep Hora, Dy. Chairman NITRA & CEO Aeronav Industrial Safety Appliances, Mr. Amit Walia, VP, Vardhman Textiles Ltd., Prof. Rajiv Pandhe, RMIT, Australia, Dr. R.A. Lal, Chairman, NISTI, Sr. Officials from M/s. Sahi Exports, Sr. Officials from Monte Carlo and many more visited NITRA Pavilion. NITRA scientists explained them about various developmental activities at NITRA.



Tectextil India – 2025

Dr. M. S. Parmar, Director General, Mr. Vivek Agarwal, Deputy Director, Dr. Shweta Saxena, Principal Scientific Officer, Mr. Pankaj Kumar Senior Scientific Officer and Dr. Preeti Kaur Sachdeva Senior Scientific Officer, attended Tectextil India – 2025 Fair during 19th – 21st November 2025 at Bombay Exhibition Centre, Mumbai.

During the event Dr. M.S. Parmar was invited for panel discussion on Indutech – Future of Industrial Textiles: Advancing with Natural fibers, smart Materials and emerging Application. He discussed wide applications of milkweed during this session

» Glimpses



Dr. Preeti Kaur Sachdeva Represents NITRA at IDEATHON

NITRA's Senior Scientific Officer, Dr. Preeti Kaur Sachdeva, co-chaired and judged the Ideathon (Innovation in Fibres and Crafts) technical session on 7 October 2025 and presented "Milkweed Floss: Farm to Foreign" at the National Conclave on Weaving India Together, organized by the College of Community Science, Central Agricultural University, Tura, at New Delhi.



NITRA Scientist Presents Nylon 66 Polymer Research

NITRA Senior Scientific Officer Dr. Sundaramoorthy Palanisamy attended the APA Conference on Polymers for Advanced Technology and presented "Condensation Polymerization of Nylon 66 for Flame Retardant Application" on 13 October 2025 at Udaipur, Rajasthan, showcasing research on advanced flame-resistant polymer development.



Dr. Shweta Saxena Presents paper at INDUTECH 2025

Dr. Shweta Saxena, Principal Scientific Officer Presented paper on "Development of molten metal splash resistance workwear using sustainable approach for foundry workers" at INDUTECH 2025, 6th International Conference on Industrial Textiles -Product, Application and Prospects organised by PSG College of Technology, Coimbatore on 11 & 12 th December 2025.

Research Advisory Committee Meeting



RAC Meeting at NITRA, Ghaziabad

The RAC meeting was held at NITRA on December 27, 2025. NITRA scientists presented 16 R&D projects to the august gathering consisting of experts from textile and apparel industry and academia (RAC members & special invitees). Developmental projects were aimed for Steel industry / automotive industry / armour sector /specialized fire suits/agro textiles/extreme cold climate clothin / sports textiles / industrial products/sustainability etc. Extensive discussions were held and new ideas were also shared.

The meeting was chaired by Mr. Nitin Nolakha, Managing Director, Nitin Spinners limited , while Mr. Sandeep Hora CEO Aeronav Industrial Safety Appliances graced the occasion. Dr. M.S Parmar, DG NITRA, in his welcome address, emphasized that NITRA's belief has always been to conduct R&D in the area which are directly going to benefit textile and apparel industry. Stalwarts from the industry and academia appreciated R&D activities of NITRA. Mr. Vivek Agarwal, Dy. Director NITRA, proposed the formal vote of thanks.

Leisure & Recreation Time



Exciting Stress Management Session for NITRA Workforce

We're excited to share that the members of NITRA and NTC family enjoyed an impactful Stress Management Session led by Wg Cdr Divya and her team, introducing everyone to Sahaja Yoga meditation. Participants found the session highly effective, reporting inner peace, stress relief, and greater harmony.

MoU and Technology Transfer



MoU With Future Collaboration for Milkweed Cultivation and Sourcing of Milkweed Fibre

An MoU was signed on 3rd December 2025 between NITRA and the Ruma Devi Foundation to work together on sustainable materials, rural skill development, community empowerment, and technology support. The MoU was signed by Dr. M. S. Parmar, Director General, NITRA and Ms. Ruma Devi of Ruma Devi Foundation. The partnership aims to drive impactful, community-focused, and eco-friendly initiatives in the textile sector.



NITRA Transfers Heat Testing Instrument Technology to M/s Asian Textile Equipment

NITRA transferred its state-of-the-art technology for testing heat and thermal behaviour of protective textiles, developed under the NTTM-sponsored project, to M/s Asian Textile Equipment. The agreement, signed by Mr. Aslam Islam and Dr. M. S. Parmar, strengthens indigenous innovation, enhances protective clothing research, and supports Make in India and Atmanirbhar Bharat initiatives.

MoU and Technology Transfer



NITRA Technical Campus Signs MoU with Bennett University

NITRA Technical Campus signed a Memorandum of Understanding (MoU) with Bennett University on November 21, 2025, at Bennett University. The MoU was formally signed by Dr. B. K. Sharma, Director, NTC, and Dr. Raj Singh, Vice Chancellor, Bennett University, to promote academic collaboration, research, and knowledge exchange.



NITRA Technical Campus Signs MoU with Campaigning Source Pvt. Ltd

NITRA Technical Campus has signed yet another important Memorandum of Understanding (MoU) with Campaigning Source Pvt. Ltd. The purpose of this MoU is to promote academic cooperation, joint research initiatives, and enhance the employability of our students. Through this collaboration, students of NITRA Technical Campus will gain valuable exposure.



NITRA Technical Campus Signs Strategic MoU with Anudip Foundation

NITRA Technical Campus, Ghaziabad signed a strategic MoU with Anudip Foundation for Social Welfare on 8 December 2025 to enhance student employability and IT skills. The collaboration focuses on industry-aligned training, career development, and creating a strong pool of skilled, future-ready technology professionals.

Now Avail Fire Manikin Testing Facility at NITRA

Fire Manikin installed successfully and ready for testing



It fulfills the testing requirements of

- IS 17881 (Part 1) & IS 17881 (Part 2)
- ISO 13506-1 & ISO 13506-2
- ASTM F1930
- NFPA 2112

Key Features

- Full-scale fire manikin for advanced flame and heat exposure testing
- High-precision thermal response and heat flux measurements
- Customizable, standards-compliant protocols
- Comprehensive technical reporting for R&D and certification

Why Choose NITRA?

- Accredited, modern infrastructure and test chamber
- Deep expertise in protective clothing and technical textiles
- Center of Excellence in Protech
- Fast turnaround and expert guidance



Contact Heat Tester

NITRA Develops Contact Heat Transmission Tester (As Per ISO 12127-1:2015 / IS 17462-1: 2020)

It can determine Contact Heat Transmission through Protective Clothing (including hand protectors) or Constituent Materials intended to protect against High Contact Temperatures.



NITRA has Installed a New Instrument called Thermal Analyser

The instrument is installed and now ready to test thermal property of materials as per ASTM C 518, ASTM C 1784, ISO 8301, JIS A 1412, EN 12667, and EN 12664.



FROM IDEA TO INNOVATION



Launch your Technical Textiles startup with research and entrepreneurship grants under the GREAT Scheme (NTTM), offered by the Ministry of Textiles.

This is the right time for startups to join hands with NITRA under the National Technical Textiles Mission (NTTM) and accelerate innovative ideas into scalable, market-ready solutions



We Provide end to end incubation support through:

- Assistance in preparing high-impact project proposals for funding
- Expert mentorship from industry and research professionals
- Access to state-of-the-art R&D and testing facilities
- End-to-end support for prototype design and development



Northern India Textile Research Association (Linked to Ministry of Textiles, Govt. of India)

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