

WOOL RESEARCH ASSOCIATION

(LINKED TO MINISTRY OF TEXTILES, Govt. of India, New Delhi)

P. O. Sandoz Baug, Kolshet Road,
THANE - 400 607 (Maharashtra)



55th ANNUAL REPORT AND ACCOUNTS FOR THE YEAR 2019-20

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GOVERNING COUNCIL (2018-2020)

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PRESIDENT	-	SHRI. H.K. CHATTERJEE, RAYMOND LIMITED
SR. VICE PRESIDENT	-	SHRI DEEPAK GOEL GEETANJALI WOOLLENS P. LTD.

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1.	SHRI. S.L. POKHARNA	-	RAYMOND LTD
2.	SHRI. R.K. KHANNA	-	AMRITSAR SWADESHI WOOLLEN MILLS
3.	SHRI RAJESH RANKA	-	MODERN WOOLLENS LIMITED
4.	SHRI BHARATBHAI PATEL	-	SHRI DINESH MILLS LTD.
5.	SHRI. A.K.CHURIWAL	-	BSL LIMITED
6.	SHRI. RAJEEV KAPUR	-	KAPOTEX INDUSTRIES PVT. LTD.
7.	SHRI SANJAY KAJARIA	-	GOKALCHAND RATTANCHAND WOOLLEN MILLS PVT. LTD
8.	SHRI. R.L. TOSHNIWAL	-	BANSWARA SYNTEX LTD.

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1. AS&FA OR HIS REP., MINISTRY OF TEXTILES
2. JOINT SECRETARY (WOOL) OR HIS REP., MINISTRY OF TEXTILES
3. JOINT SECRETARY (R&D) OR HIS REP., MINISTRY OF TEXTILES
4. TEXTILE COMMISSIONER OR HIS REP., O/O TEXTILE COMMISSIONER
5. SHRI. M.K. BARDHAN, MUMBAI
6. SHRI. K.K. MISRA, (C.O.O.), WOOL RESEARCH ASSOCIATION

SPECIAL INVITEES

1. SHRI. DILIP GIANCHANDANI, WOOLMARK SERVICES INDIA PVT LTD
2. SHRI. K.K. MISRA, SECRETARY GENERAL, I.W.M.F., (EX. OFFICIO)
3. GP. CAPT. K.S. SHEKHAWAT, ED, CENTRAL WOOL DEVELOPMENT BOARD, (EX. OFFICIO)
4. DR.POSHAK PATEL, MANAGING DIRECTOR
GUJARAT SHEEP & WOOL DEVELOPMENT CORPN., AHMEDABAD
5. DR. S.K. CHAUDHURI, FARIDABAD, HARYANA
6. ALL OTHER ORDINARY MEMBERS OF WRA.

TECHNICAL CUM RESEARCH ADVISORY COMMITTEE (TRAC) (2018-2020)

CHAIRMAN : SHRI. H.K.CHATTERJEE

MEMBERS :

- | | |
|-----------------------------|---|
| 1. DR.R.V. ADIVAREKAR | - U.I.C.T., MUMBAI |
| 2. GP. CAPT. K.S. SHEKHAWAT | - CENTRAL WOOL DEVELOPMENT BOARD, JODHPUR |
| 3. DR. RAGHVENDRA SINGH | - C.S.W.R.I., AVIKANAGAR |
| 4. DR. S.K. CHAUDHURI | - FARIDABAD, HARYANA |
| 5. SHRI DILIP GIANCHANDANI | - WOOLMARK SERVICES INDIA PVT LTD, MUMBAI |
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| 8. DR. A.M. MIR | - CASHMERE MARKETING AGENCIES, J & K |
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| 13. SHRI. RAJEEV SHARMA | - SHIKHAR HANDLOOM WEAVERS SOCIETY, H.P. |
| 14. DR.N. S. GANGAKHEDKAR | - COMPUTE SPECTRA COLOUR PVT LTD, MUMBAI |
| 15. SHRI. SEKATIA GHOSH | - JAYASHREE TEXTILES, KOLKATTA |
| 16. SHRI. SUBODH DAGA | - JAYASHREE TEXTILES, KOLKATTA |
| 17. SHRI. ASHOK HONDA | - OCM INDIA LTD, AMRITSAR |
| 18. SHRI. VIJAY THAKUR | - H.P. STATE COOP WOOL LTD, SHIMLA |
| 19. SHRI. JAY KUMAR | - MAHADEV WOOLLEN MILLS, H.P, |
| 20. SHRI. ADIL BHAI | - MAHILA MANDAL, BALMER |
| 21. SHRI. ALIK SINHA | - BSL LTD, BHILWARA |
| 22. DR. M.K. TALUKDAR | - KUSUMGAR CORPORATE, MUMBAI |
| 23. DR. DILIP KUMAR DUREHA | - L.N.I.P.E, GWALIOR |
| 24. DR.VIKAS B.THAKARE | - JD, DEFENCE RES. & DEV. ESTABLISHMENT, GWALIOR |
| 25. DR. R.S.CHAUHAN | - IDST SCIENTIST, DRDE, GWALIOR |
| 26. SHRI. RAVIKANT KAPUR | - CHAIRMAN EMERITUS, WRA (EX-OFFICIO), THANE |
| 27. SHRI. M.K. BARDHAN | - MUMBAI |
| 28. SHRI. K.K. MISRA | - DIRECTOR (OFFICIATING), WRA (EX-OFFICIO), THANE |
| 29. DR. MRINAL CHOUDHARI | - JOINT DIRECTOR, WRA (EX-OFFICIO), THANE |
| 30.. MS. SEEMA PATEL | - JOINT DIRECTOR, WRA (EX-OFFICIO), THANE |

NOTICE

NOTICE IS HEREBY GIVEN THAT the 55th Annual General Meeting of The Wool Research Association will be held on **Tuesday, 29th December, 2020 in the Committee Room, Indian Woollen Mills' Federation, Churchgate Chambers, 7th Floor, 5, New Marine Lines, Mumbai – 400020 at 12.30 p.m.** to transact the following business :

1. To welcome Members and Invitees and notice to be read out
2. To confirm the minutes of the last Annual General Meeting held on 27th September, 2019.
2. To receive and adopt the Annual Report and Accounts of the Association thereon for the year ended 31st March, 2020.
3. To elect The President, Sr. Vice President, Vice President and Members of the Governing Council for the year 2020-2022.
4. To appoint Auditors for the current year and fix their remuneration.

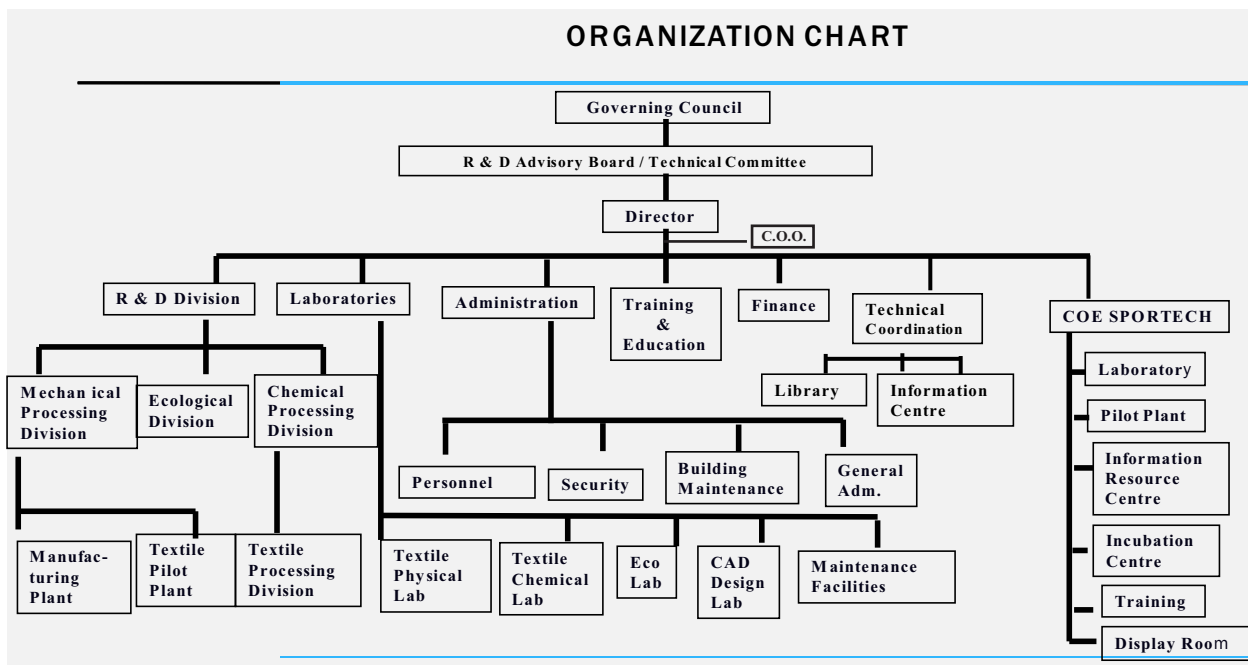
“Resolved that M/s. J.P.J ASSOCIATES LLP, Chartered Accountants, D/401, Shantidwar C and D CHS, Shantivan, Borivali (East), Mumbai – 400 066, the retiring Auditors, being eligible for re-appointment, be and hereby appointed as the Auditors of Wool Research Association for the year 2020-2021 on remuneration of Rs.45,000/-.”

NOTE: (a) Member entitled to attend and vote at the meeting may appoint a Proxy to attend and vote instead of himself and the Proxy need not be a Member. The Proxy and Nomination Forms are enclosed.

BY ORDER OF THE GOVERNING COUNCIL

sd/-
(K.K. Misra)
Director (Officiating)

Date : 16th December, 2020

ANNUAL TECHNICAL REPORT 2019- 2020**1.0 INFRASTRUCTURE**

WRA is well equipped with necessary infrastructure in Research and other technical activities as expected from a TRA. The organization has its own sprawling campus of over 13 acres land at Thane.

It has its own accommodation where following infrastructure has been created over last five decades of its existence.

1. Accredited Textile Physical Laboratory
2. Accredited Textile Chemical Laboratory
3. Research & Development Division
4. Eco-testing Laboratory
5. Textile Technology Laboratory
6. Pilot Plant
7. Library
8. Training facilities with classrooms, teaching aids etc.
9. Auditorium & conference room with audio system
10. Computers, LCD projectors, Over head projectors
11. Information & Technology Co-ordination Centre
12. Administrative & Accounts Department
13. Center of Excellence – Sportech

2.0 CENTRE OF EXCELLENCE FOR SPORTECH

Under Ministry of Textiles Technology Mission in Technical Textiles, WRA has set up a Centre of Excellence in Sportech. A state of art testing facility and incubation centre are established and simultaneous efforts have been made to attain international accreditations and collaborations. WRA has been serving user industry through its wide testing facilities and development of affordable products in India without compromising functionality and performance of our athlete. WRA is setting up an advanced technology centre for light weight sports goods in its premises in Thane. Its mandate includes :

- ┆ Newer sports goods/sportswear requiring high dexterity, skill and sporting gears.
- ┆ Higher level of sports standards and challenges within sporting nations.
- ┆ Growth of sports facility and infrastructure in the country.
- ┆ Popularization of fashion oriented sportswear and performance garments.

3.0 TYPE OF ACTIVITIES

- i. Research & Development
- ii. Testing/Evaluation service to the Industry, Export Oriented Organisations, Government organizations etc.
- iii. Colour Technology
- iv. Training & Education
- v. Research in the Emerging Technologies like Technical Textiles, Plasma & Nano technology, Phase change materials, IT, Smart Textiles, Supercritical Processing etc.
- vi. Technical services to the Decentralised Carpet Industry, SMEs, Cottage/Rural industry.
- vii. Technology Development in Woollens & Manmade Textiles
- viii. Technical Survey & Audit of Industrial Units
- ix. Technical Feasibility Report Formulation
- x. Turnkey Projects
- xi. Research, training, prototype development, etc in Sportech.

4.0 TEXTILE TESTING LABORATORY

┆ NABL Accreditation of Textile Testing Laboratory:

- Total 380 Test Parameters (290 Mechanical and 90 Chemical) were accredited
- More than 300 national and international test Methods were included in New scope

┆ Textile Testing and Analysis (2018-19)

Detail	2018-19	2019-20
No. of Client Request received	2751	3292
No. of Samples Tested	5625	7661
Client Base	350	870
Revenue Generation (in Lakhs)	123.77	172.09
NABL accreditation parameters	380	415

5.0 YARN & FABRIC MANUFACTURING FACILITIES – PILOT PLANT

Pilot plant is equipped with yarn manufacturing facilities for spinning worsted yarn, friction spun yarn, blends of wool with other natural and synthetic fibers.

The facilities available with pilot plant including machineries of Centre of Excellence - Sportech is as mentioned below:

Technology & Application Centre

A. For Long Staple Fibre: Fiber to Sliver conversion

1. Carding Machine
2. Gill Box
3. Combing Machine

B. Yarn Innovation Center - From Sliver/Top to Innovative /functional yarn

1. Roving frame
2. Ring frame
3. Sliver to yarn ring frame
4. Friction Spinning System (DREF 2)
5. Winding machine (Cheese)
6. Two for one Twister

The friction spun yarn manufacturing constitutes a full - fledged six spindle friction spinning machine to spin homogeneous yarn from textile wastes and special technical fibers and engineered yarn for specifically technical textiles.

C. Knitted / Weaving Centre from innovative Yarn to fabric

1. Sectional warping machine
2. Weaving Machine (Rapier Loom)
3. Circular Knitting Machine
4. Direct Warping machine
5. Warp Knitting Machine (Tricot)
6. Warp Knitting Machine (Raschel)

Knitting Facility also includes hand knitting machine, semi automatic flat bed knitting machine. Miniature handlooms for developing woven fabric samples.

D. Coating & Laminating Facility

1. Hot melt Coating and laminating machine
2. Fabric rolling machine (Fabric preparation for coating/lamination: fabric from fold to roll, roll to roll)

E. Light Weight Sport Goods Composite Center

1. Heating oven
2. Cold storage chamber
3. Degassing unit
4. Zero grade granite surface table
5. Vacuum pump
6. Braiding machine (Facility under Installation)
7. Precision winding machine

F. Other Machines

1. Compression Moulding Machine
2. Shoe Stitching machine
3. Industrial Sewing Machine
4. Ultrasonic Sealing Machine
5. RF sealing machine
6. Hank to cone winding machine

These machines are being utilized for product development related to sport textiles and other technical textiles.

Carpet manufacturing facility

Apart from the above, Pilot plant is also equipped with carpet manufacturing facility. Hand Knotted carpet can be produced.

6.0 ECO LABORATORY

WRA'S ECO laboratory is equipped with analytical instruments like HPLC, Particle size analyzer, UV-Vis Spectrophotometer, ICP-OES, FTIR, DSC. Testing such as Formaldehyde, Heavy Metals, Moth proofing, particle size of dry and liquid sample, thermal analysis, (bioassay and chemical assay) etc. can be performed in the facility.

Eco Laboratory also provides short term training and consultancy as per client's requirement.

7.0 TEXTILE CHEMICAL & COLOUR DEPARTMENT

Textile Chemical & Colour department is involved in R&D and testing related to textile wet processing (Textile pre-treatment, dyeing & Finishing), advanced textile technology like Plasma treatment, ultrasonic treatment, functional finishing, coating, colour difference measurement, quality control, yellowness & whiteness index measurement. It is also involved in colour recipe prediction service for all customer specific requirements. It also has top and yarn dyeing facility up to 1 kg. Chemical & Colour department also conducts short term Advanced Courses in Colour Match Prediction for industrial users. This department also provides training and consultancy to Academic projects.

Chemical Department is equipped with Dielectric Barrier Discharge Plasma Reactor, Ultrasonic Cleaner, Ultrasonic Probe, Tube resonator, Laboratory Pad-Dry-Cure machine with IR Pre-heater, Laboratory coating Machine, Brookfield viscometer, Planetary ball milling machine, Mixer mill machine, COD meter & reactor, Research grade meter, turbidity meter, conductivity meter.

Colour department is equipped with Bench Top Spectrophotometer (i7, X-Rite), hand held spectrophotometer (I one pro, X-rite), Colour matching software, Robotic auto Dispensing System (Colour Focus 72, Dye Focus/ Daelim Starlet), Colour viewing cabinet (Spectra LUX Jr. / Paramount), Infracolour Dyeing machine, Shaker dyeing machine, Laboratory Jigger dyeing machine and HTHP top dyeing machine.

8.0 ON-GOING R & D PROJECTS

8.1 MINISTRY OF TEXTILES

- (i) **Project Title: Synthesis of optical whiteners with good photo stability and improvements in the bleaching processes to produce photo stable bright white and pastel shades woollen casual fashion knitwear, sports and leisurewear products and carpets using Indian and other cheaper imported qualities of wool.**

Objectives:

- i. Synthesis of optical whiteners with good photostability and Improvements in the bleaching processes to produce photostable bright white and pastel shades woollen casual fashion knitwear, sports and leisurewear products and carpets using Indian and other cheaper imported qualities of wool.

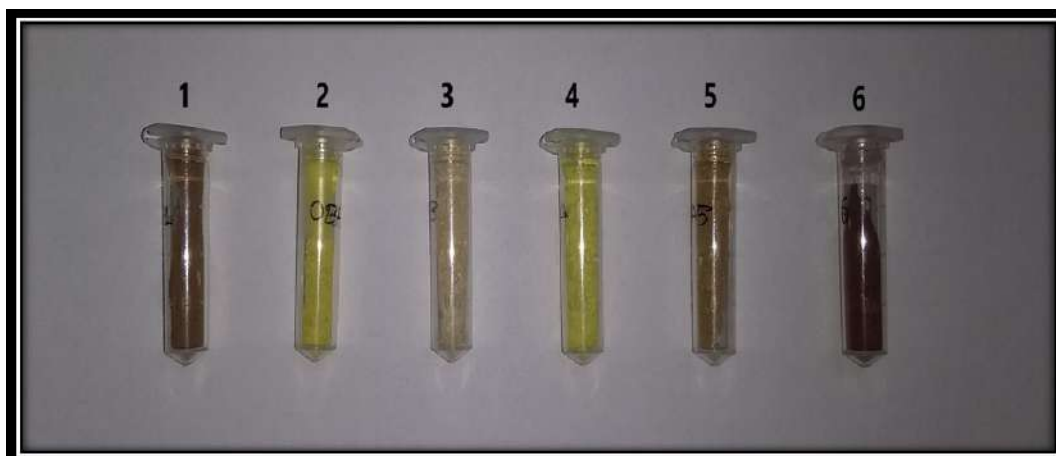
Progress of work:

The colour and photostability of fibres are important qualities, particularly for the production of brilliant white and bright pastel shade products that are essential for new and rapidly expanding casual apparel markets. The photostability of wool is poor compared with cotton and synthetic fibres. Wool has many excellent qualities that other fibres are unable to emulate, but its achievable whiteness and its photostability when exposed to sunlight are both areas where wool compares rather poor. Current commercial bleaching processes for wool are far less efficient than those used on cotton and synthetics and can sensitize the wool to photo yellowing on exposure to sunlight. The use of fluorescent whitening agents (FWAs) on bleached wool improves whiteness significantly, but commercial use of FWAs on wool result into very poor photostability of FWA-treated wool, in particular when garments are wet after laundering and exposed to direct sunlight during line drying.

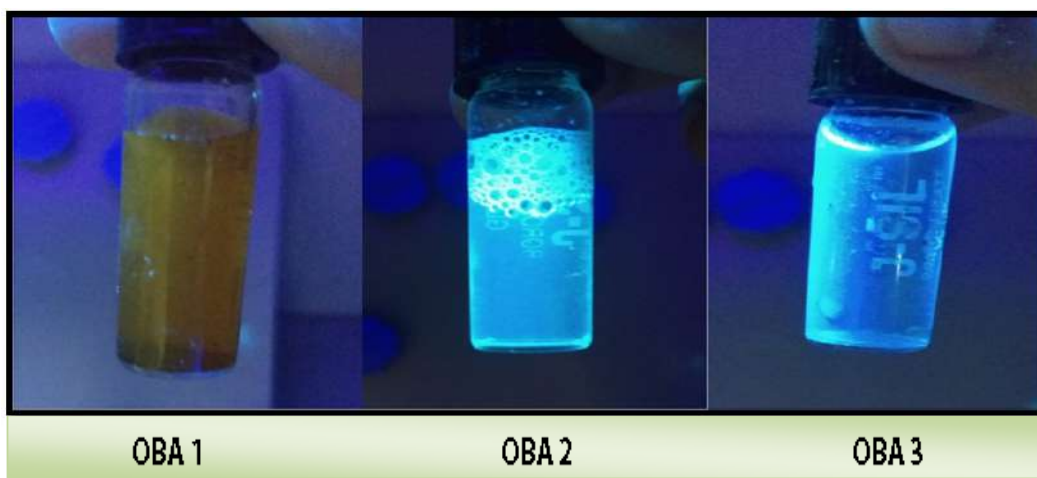
Project work:-

- In this project a total of 6 OBA schemes were studied and synthesized at our lab.
- All the OBA's were checked for their Melting point, Emission and Absorption Spectra.
- Nuclear Magnetic Resonance (NMR) testing was done on the OBA's showing better results. All the targeted structures were achieved.
- Enzymatic Bleaching Process was studied and implemented on wool plain fabric.
- A combination of oxidative bleaching with the bleaching enzyme laccase was implemented; the results were studied and compared to that of normal bleaching type.
- Application of all the OBA's were done on the fabric sample.
- Testings related to Whiteness Index (WI), Accelerated weathering using Xe Arc (UV A+ UV B), tensile strength of the fabric was done.
- Tensile Strength testing shows the amount of fiber damaged during the process, thus affecting the lifespan of the fabric.

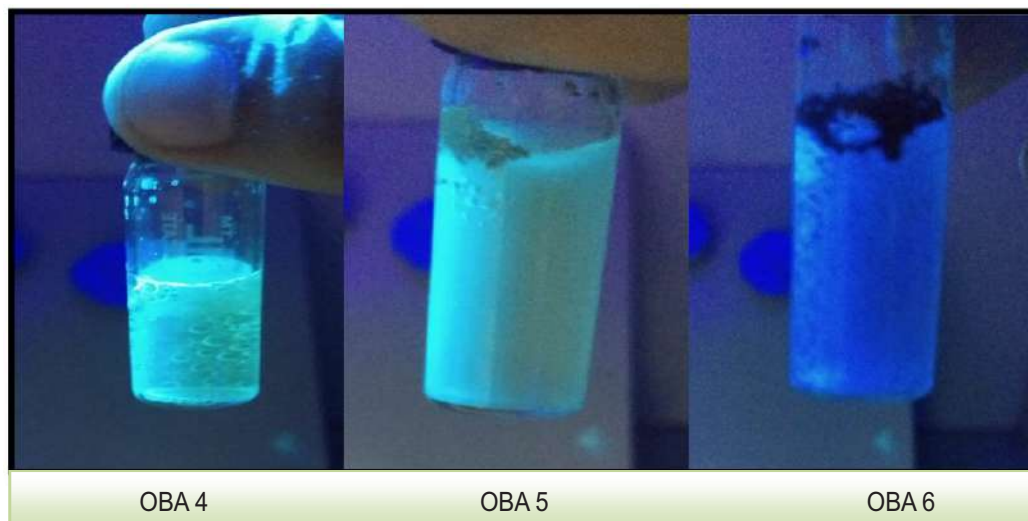
The above work provides information regarding developing novel routes for synthesizing Optical Brightening Agents (OBA/FWA) which would hopefully help the woollen sector in India.



OBA's attempted and synthesized at WRA



Solution State of OBA 1, OBA 2, OBA 3



Solution State of OBA 4, OBA 5, OBA 6

- (ii) **Project Title: Development of sports gears (inner wears, socks, bands, leggings etc.) with controlled release microencapsulated natural essential, herbal oils for therapeutic benefits including protection of health, skincare and recovery of injuries and hygiene of sportsperson.**

Objectives:

- i. Development of sports gears (inner wears, socks, bands, leggings etc.) with controlled release microencapsulated natural essential, herbal oils for therapeutic benefits including protection of health, skincare and recovery of injuries and hygiene of sportsperson.

Progress of work:

Over the last two decades, there has been a huge increase in participation in active sports all over the world. India's participation has also grown considerably over the years. As sports have become more and more competitive, there are more physical as well as mental challenges for a sportsperson. Thus safety and hygiene of sportsperson have also become crucial especially in active sports where he/she has to deal with a lot of physical stress, sweat and dirt on a regular basis. Also during the practice / game, many players gets injured or some serious health problem occurs which require long time of recovery. It is not only important to have appropriate sportswear tailor made to meet requirements of various sports for better performance but his safety and hygiene must also be taken care of while designing these new sports wears.

Since ancient times, natural herbal oils in ayurvedic are used for their various functional and therapeutic properties such as:

- v Arnica oil can help reduce swelling, protect against infections, and relieve pain. Many professional athletes today even use a topical homeopathic preparation of arnica oil as first aid relief for sports- or exercise-related pain or injury.
- v Lemongrass oil can help relax and tone your muscles, as well as relieve muscle pain, rheumatism etc. Lemongrass oil can also help relieve stress, anxiety, irritability, and insomnia, and prevent drowsiness.
- v Roman chamomile is a powerful anti-inflammatory. It is the ideal choice for red, inflamed or sensitive, acne-prone skin. It is also used as a medicine for leg injury.
- v Lavender is the most well-known of the essential oils, and for good reason. It has antiviral and antibacterial properties, which can reduce the healing time for scrapes, bites and stings.
- v Eucalyptus oil exhibits anti-bacterial properties and pain relief. One very important reason why many individuals use eucalyptus oil is its ability to address mental exhaustion through creating a cooling and refreshing effect. As a stimulant, it helps eradicate exhaustion and mental sluggishness, and rejuvenates an individual. Eucalyptus is a powerful antispasmodic, antiviral and antibacterial oil that is ideal for coughs and colds.
- v Peppermint is wonderful cooling oil that can help you beat the heat of a hot day or a fever.
- v Citronella oil is popularly used as an insect repellent. Citronella can help treat and prevent cold, fever, and headaches. It also possesses antiseptic properties.
- v Tea tree oil is powerful antibacterial, antifungal and antiseptic oil.

Topical use of these oils in form of lotions or creams are mostly used in first aid but they are easily washed off during day to day activities and hence do not provide long term exposure to its active ingredients required for healing. In order to have effective healing, affected skin has to be exposed continuously.

Microencapsulation is a well-known technique used in various industries with an advantage of controlled release of any active ingredient over a period of time. This technique could be very well used for prolonging the exposure of active ingredients over affected areas in order to reduce the healing time of the athletes as well as provide safety and hygiene required during active sports.

We had microencapsulated these natural herbal oils and applied on different sports wear which were worn next to skin such as wrist band/ protective wrist band, socks, compression leggings, gloves, head band, sports bra, ankle brace etc. and studied its effect for pain relief and injury recovery, anti-bacterial and other therapeutic properties.

There are few new commercially available sports socks having anti-bacterial anti-fungal properties which uses nano-silver as an active ingredient whereas there are health concerns over the safety of nanoparticles when used in direct contact with skin, whereas natural herbal and ayurvedic oils are safe and have no adverse health effects.

Physical Progress of the Project

Project activities/deliverables	Achievement	Remark
Study of natural essential herbal therapeutic medicine	<ul style="list-style-type: none"> Therapeutic medicinal properties Study of different natural herbal oil were studied. Herbal oils may help to alleviate the muscle pain Rosemary, Lemon grass oil, lavender oil, eucalyptus oil, mint oils, clove oil chosen. 	Achieved
Development of core/sheath chemistry with identified natural essential therapeutic medicine	<ul style="list-style-type: none"> Successful development of core/sheath of herbal agents based on above oils Evaluated based on particle size, uniformity, core sheath content, release pattern Optimization was carried out based on above evaluation parameters. 	Achieved
Development of suitable application methods based on durability and comfort	<ul style="list-style-type: none"> Application of developed natural essential therapeutic on sportsgear comfort inner wears, Socks, Bands, and Leggings. Evaluated based on durability, stiffness, Moisture management properties. 	Achieved
Optimization & standardization of the process parameters, analysis of test results	<ul style="list-style-type: none"> Process parameters were standardized and optimized based on evaluation parameters. Performance of products after application was evaluated based on physical performance such as tearing strength, GSM, Bending rigidity, Overall comfort properties. 	Achieved
Evaluation of developed products	Field trials for Performance Evaluation of developed products under practical conditions have been conducted	Achieved

(iii) Project Title: Development of Novel Detergent Formulation for Wool with immobilized enzymes for enhancing machine wash ability of wool fabric

Objectives:

- i. To develop a novel detergent formulation for wool by incorporation of immobilised enzyme.
- ii. Enhancement of wool washing performance by replacing conventional detergent with advance detergent containing immobilised enzymes as effective stain removal agents.
- iii. Optimization & standardization of the immobilised enzyme synthesis and their incorporation into detergent formulation.
- iv. Optimization & standardization wool washing process with developed detergent.

Progress of work:

A detail literature survey and experiment planning has been have been carried out. From literature survey and analysis of commercially available samples path for development of immobilized detergent enzyme was found.

Immobilization work of commercially available enzymes was studied and elaborated by various methods using alginate, egg albumin and silica carrier.

The effects of reaction parameters such as pH, temperature and detergent components on the immobilized enzymes have been studied.

Based on extensive study, commercially available detergents samples have been procured and analysed for their detergent action and other physical parameters. Commercially available various enzymes such as protease, amylase, lipase and mixture of amylase, cellulose, and lipase have been procured. The activities of these enzymes have been checked. Incorporation of immobilized enzyme in commercial detergent has been studied.

Four new detergent formulations incorporating immobilized enzyme has been studied.

Performance Evaluation of developed detergent is initiated. Commercially available wool fabrics have been procured and various methods of stains have been studied. Washing process parameters were standardized and optimized based on evaluation parameters. Performance of products after washing was evaluated.

Domestic and industrial / commercial trials are conducted.

(iv) Design and development of light weight and high impact resistance sports goods

Objectives:

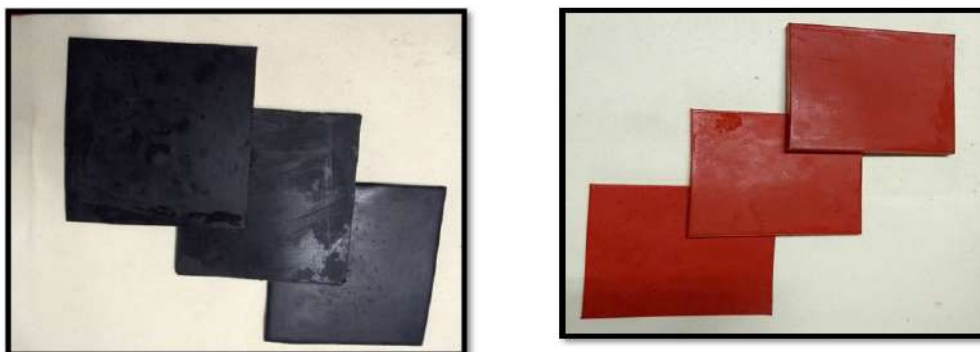
- i. Development of low weight, high efficient cricket gears
- ii. To evaluate the performance of player using the developed products

Progress of work:

Cricket Batting gears are an essential component of any cricket player's protection against the impact of cricket ball.

The earlier gears used different composite foams to make the cricket gears lighter in weight but the impact resistance against the cricket ball was purely depend on the thickness of the foam used. Therefore, in order to achieve the higher impact resistance, higher thickness of the foam is used, which makes the gears thick which consequently increase the flexural rigidity of the gears. Here, cricket gears is made by using innovative technology like shear thickening fluids based on Para Aramid composite, and different light weight composites using different fibers combinations etc. which will not only make the lighter weight cricket gears but also will enhance the impact resistance against cricket ball without increasing the thickness of gears, which in consequence doesn't hamper the range of movement of player and enhance the performance efficiency.

The light weight cricket gears, will not only substitute in replacement of currently used heavy weight cricket gears but also enhance the performance efficiency of the player like: agility of batsman running between the wickets, better protection from the cricket ball impact etc.



Non Newtonian sheets developed for impact resistance in cricket.

(v) Design and Development of sportswear and sports accessories having Thermo Physiological Comfort properties in order to enhance the performance assessed by using a Sweating Thermal Manikin system under different environmental conditions

Objectives:

- i. To develop Suitable Sportswear/active wears for Kabaddi & Kho-Kho sports for Tropical Indian climatic conditions for improved performance of Indian sports persons
- ii. To indigenously develop Balaclava for extremely low climate.

Progress of work:

- **Literature review:**

Active sports like tennis and soccer demands high body movements which in turn increase the heat stress due to high level of metabolic heat generation which is in the range of 800-1200 W. This amount of heat can increase the body core temperature by 2°C. To control the core body temperature of the body, sweat generation takes place and heat of vaporization of water is used to give cooling effect. Hence, the main functional requirement of high active sportswear is sweat absorbing, fast drying and cooling. Therefore, thermo physiological comfort properties of sportswear are very much essential for enhancing the performance of an athlete. In different environmental conditions like from. -20°C upto + 50°C, the results of thermo physiological comfort properties and performance of a sports garment and sports accessories cannot be quantify by using human perception in the field trials. Therefore, it is highly essential to design and develop the sportswear and sports accessories having Thermo Physiological Comfort properties by assessing the performance using a sweating thermal manikin system where the parameters can not only be accurately quantify but also reproduce under different set of environmental conditions for better performance.

- **Development of yarn:**

Polyester, Polyester/cotton and polyester /viscose Blended yarn were developed using different techniques. Testing such as strength, mass evenness etc were carried out for optimization of yarn blend.

- **Development of fabrics:**

Development of Polyester, Polyester/cotton and polyester /viscose Blended yarn and producing the knitted sports jersey.

Testing for thermo-physiological comfort properties such as: quick dry, moisture management, Thermal insulation properties, breathable, high wickability, good handle properties were carried out.

Comparison of results of initial sample developed products (such as thermal insulation properties, moisture management properties) with market available products by established brands.

- **Observations**

It is observed that initial developed sports garments have better heat release properties, moisture management properties, drying rate properties, wicking properties etc. than commercially available garments.

9.0 Completed R&D Projects

9.1 Ministry of Textiles

(i) **Project Title: Synthesis of water soluble fluorescent colorants for high visible hydrophilic textile substrates**

Objectives:

- i. Synthesis of water soluble fluorescent colorants
- ii. Purification and Characterization of synthesized water soluble fluorescent colorants.
- iii. Application of synthesized water soluble fluorescent on Natural Textile substrate
- iv. Measurement and evaluation of fluorescence of developed product

Achievements :

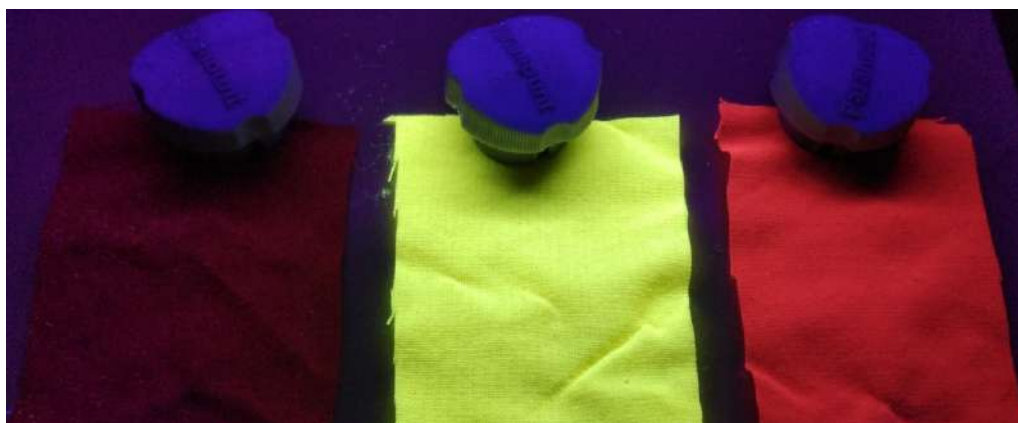
High-visibility (HV) clothing is clothing worn that has highly reflective properties or a colour that is easily discernible from any background. High visible textiles have a privileged position in sports-textiles, high altitude clothing and similar functional textiles. High visible textiles are dyed with fluorescent colorants (dyes, pigments) which are water insoluble therefore these colours can be applied only onto polyester substrate. Water insolubility of fluorescent dyes restricts its use to only polyester substrate and therefore these colorants cannot be applied to natural hydrophilic substrate like wool, silk and cotton though these substrate has better performance properties and offers many advantage over polyester.

Under this project we synthesized benzthiazole, benzimidazole and keto acid based fluorescent acid azo dyes for protein fibre. Synthesized dyes characterised by ¹H NMR, ¹³C NMR, and FT-IR and CHN analysis. Spectral characteristics of these dyes studied in different polarity solvents. Most of the benzimidazole, benzthiazole and keto acid based synthesised dyes shows stoke shift above 50 nm indicating fluorescence behaviour of synthesised molecules. After application on wool and silk, dyed fabric is evaluated under Day light and UV light (366nm). Most of the synthesised dyes show very good to excellent fluorescence under UV Light. Below mention image indicates the yellow and red fluorescence of synthesised dyes. The antibacterial activities of these dyes were tested against *Staphylococcus aureus* (Gram +ve), *Klebsiella pneumonia* (Gram -ve) bacteria by Agar-well diffusion test method. The dyed substrate evaluated for fluorescence nature, UPF, UV-A and UV-B blocking and fastness properties like wash, light, and rubbing fastness. These work envisaged synthesis of new water soluble fluorescent molecules in order to address future needs of textile segment, and keep India on forefront as dye exporter.

Wool Fabric dyed with Synthesised Fluorescent Dyes (Under Daylight)



Wool Fabric dyed with Synthesised Fluorescent Dyes (Under 366nm)



- (ii) **Project Title: Development of active fitness clothing like gym and yoga wear with infrared thermal reflecting property to enhance body fitness**

Objectives:

- i. To develop active fitness clothing like gym and yoga wear.
- ii. To give treatment of infrared reflecting agents on developed clothing

Achievements :

Broader objective of the project was to develop far infrared reflecting garments. The developed far infrared reflecting finish was applied to the fabric and testing was done to study reflection of far infrared radiations to enhance body fitness. This project has led to the optimized process route, which can be implemented at decentralized sector to fetch good value for the apparel fabrics as well as to provide good health to the user. The fabric samples developed in this project are able to provide warmth for the users. All the objectives proposed in the project are successfully achieved. Different knitted fabrics (tops and bottoms) were developed for yogawear/gymwear with different GSMs including body fitted garments. Treatment of infrared reflecting agents on developed clothing were successfully completed with different types of mineral powder. Developed yoga wear/gym wear shows excellent properties and good results when tested for moisture management test, water vapour permeability, air permeability, Far infrared thermal reflection of fabrics.

and other hilly terrains of India. As these woolen and carpet industries are decentralized located at far distances, often it is not possible to have a common effluent treatment plant (CETP) for entire region. Hence most of these industry and CFC have to deal with the effluent problems on their own. Membrane bioreactor has been developed for zero discharge of effluent from woolen carpet sector and common facility centers. The treatability was study with different effluent passing through the MBR reactors. Outcome of the process was studied and the final values of the COD and BOD were under the Pollution Control Board. A pilot scale bio reactor of size of 500 liters per day capacity was developed and industry trials were done.

10.0 **TESTING ACTIVITIES**

- During the year under review, Textile Testing Laboratory, Eco Testing Laboratories of WRA and COE Sportech earned revenue of Rs. 172.09 lakhs
- During the year under review Revenue generated through Pilot Plant : - Rs. 17.50 Lakhs (approx)

11.0 **MAJOR ASSIGNMENTS UNDERTAKEN**

I. **Memorandum of Understanding (MOU) signed between WRA & Industries:**

- Memorandum of Understanding (MOU) was signed with Schoeller Technologies India Pvt. Ltd, Navi Mumbai for development and commercialization of far infrared rays reflecting textiles.
- Memorandum of Understanding (MOU) was signed with Schoeller Technologies India Pvt. Ltd, Navi Mumbai for development and commercialization of Waterproof Breathable Sportswear.
- Memorandum of Understanding (MOU) was signed with M/s Khanna Sports, Mumbai for commercialisation of developed sportsgear treated with natural essential oil microencapsulated particles for therapeutic properties.
- Memorandum of Understanding (MOU) was signed with Mahila Arthik Vikas Mahamandal, Government of Maharashtra to start a Pilot Scale Project for supplementing income to empower women by arranging alternate occupation for economic upliftment to prevent migration in District Chandrapur of Maharashtra.

II. **Consultancy Services rendered:**

- Consultancy work for setting up of Pashmina dehairing plant at Leh. Technical bid evaluation received from LAHDC for deharing machine and other ancillaries machines such as willow, axiflow cleaner, picker, water softening plant, boiler etc.

12.0 PAPERS PRESENTED/PUBLISHED & PATENTS APPLIED**PAPERS PRESENTED/PUBLISHED**

During the year 2019-20 following papers were published by technical staff of WRA.

- ã Mayur Basuk, Evaluating the Far Infrared Rays (FIR) Reflecting Responsive Textiles, published on web portal <https://www.textilemates.com/>; May 2019; <https://www.textilemates.com/infrared-reflecting-responsive-textiles>.
- ã Mayur Basuk, Shishir Tyagi, Devvert Ruhela Non Newtonian fluids & its applications in Textiles : Review International Journal of Emerging technologies & Innovative Research (JETIR), June 2019 Vol. 6, Issue 6, Page 942-945.
- ã Mayur Basuk, Shishir Tyagi, A study of developed membrane bioreactors based effluent treatment plant for woolen sector including carpet; International journal of research and analytical reviews (IJRAR), Volume.6, Issue 4, Page No pp.131-136, October 2019.
- ã Mayur Basuk, Shishir Tyagi, Dr. Choudhari, Recent R & D initiatives and innovative machine at WRA, Textile conclave at VJTI.
- ã Development of various matrices for immobilization of enzymes to be applied as an additive in detergent formulation for wool fabrics .
- ã Smita Bait, Development of sportswear with enhanced Moisture Management properties using cotton and regenerated cellulosic fibres, Indian Journal of Fibres and Textile Research, Vol 44, March 2019, pp24-30 (Impact factor- 0.511).
- ã Smita Bait, Suvidha Shinde, Ravindra Adivarekar, Nagaiyan Sekar, Synthesis, characterization and dyeing performance of UV ray's protective mono azo acid dyes based on 4-hydroxy benzophenone, AATCC Journal of Research, Vol. 7, No. 2, 2020, 19-26 (DOI: 10.14504/ajr.7.2.4) (Impact factor- 0.74).
- ã Smita Bait, Suvidha Shinde, Ravindra Adivarekar, Nagaiyan Sekar, Multifunctional properties of benzophenone based acid dyes: Synthesis, spectral properties and computational study, Dyes & Pigments 2020; DYPI 108420, doi.org/10.1016/j.dyepig.2020.108420 (Impact factor- 4.018).
- ã Smita Bait, Suvidha Shinde, Ravindra Adivarekar, Nagaiyan Sekar Benzophenone based disperse dyes for UV protective clothing: synthesis, comparative study of UPF, light fastness and dyeing properties and computational study, The Journal of The Textile Institute, <https://doi.org/10.1080/00405000.2020.1747165> (Impact factor- 1.063)

PATENTS APPLIED

- ã Provisional Patent applied. "Water soluble fluorescent dyes for protein fibre" Indian Application No.201921045226.
- ã Provisional Patent applied on "Novel Detergent Formulation For Wool With Immobilised Enzymes". Indian Patent Application No. 201921041169
- ã Patent filed "Active fitness clothing with infrared thermal reflecting property for gym and yoga wear" Indian Patent Application No: 201921041822.
- ã Patent filed "Sports gears with controlled release microencapsulated natural, herbal oils for therapeutic benefits" Indian Application No: 201921041172
- ã Patent filed "Membrane Bioreactors as a solution for compact, high quality treatment for Decentralized woollen sector" Indian Application No: 201921041823

13.0 MEETINGS ATTENDED:**Dr. A.K. Sharma, Director, WRA**

- Attended meeting at Ministry of Textiles, Government of India, New Delhi from 12th to 15th April, 2019.
- Attended meeting at Ministry of Textiles, Government of India, New Delhi from 22nd June to 1st July, 2019.
- Attended 51st Executive Committee Meeting of CWDB at Ministry of Textiles, Government of India, New Delhi

Dr. Md. S. Rahman, Director, WRA

- Director alongwith Shri. K.K. Misra visited Chandrapur from 25th to 27th August, 2019 in connection with MAVIM Project sanctioned by Government of Maharashtra.
- Attended 37th Governing Body Meeting of CWDB at Ministry of Textiles, Government of India on 17th September, 2019.
- Attended meetings on 17th September, 2019 at Sports Authority of India and Defence Office, New Delhi.
- Attended Inauguration of MAVIM Project at Chandrapur on 20th January, 2020.

Dr. Mrinal Choudhari, Joint Director, WRA

- Attended meeting of Aparamparic Urja organized by Vastroudyog Aayuktalay , Nagpur on 30th July 2019, at SASMIRA, Worli, Mumbai.
- Attended Technotex 2019, Organised on 29- 31st August 2019, at NSE Complex Goregoan Mumbai.
- Attended 12th PAMC meeting organized at O/O TXC, New Marine lines, Churchgate on 15th November 2019.
- Attended 25th Meeting of Chemical Methods of Tests, Sectional Committee, TXD 05 organised on Friday, 29 November 2019, at Conference Hall, The Synthetic & Art Silk Mills' Research Association, SASMIRA Marg, Worli, MUMBAI - 400030.
- Attended 40th year celebration of India ITME Society on 20th December 2019 at Taj Mahal Palace, Gateway of India, Mumbai.
- Moderator for "Manufacturing Opportunities & Challenges for Sportswear & Active wear industry in India" on 31st January 2020 at VJTI, Mumbai, Organized by Unified Knowledge Services Pvt Ltd. Hariyana, India.

Ms. Seema Patel, Joint Director, WRA

- Attended meeting on 1st April, 2019 with Gujarat Traffic Police.

Mrs. Smita Bait, Assistant Director, WRA

- Attended 13th Meeting of TXD 07 BUREAU OF INDIAN STANDARDS (Textiles Speciality Chemicals and Dyestuffs Sectional Committee, TXD 07) at Conference Hall Bureau of Indian Standards, Andheri (E)
- Attended Technotex 2019 on 29th and 30th August 2019 at Bombay Exhibition Centre, Goregaon
- Visited Schoeller India Pvt. Ltd., Navi Mumbai for taking bulk scale coating trial on 10th July 2019

Mr. Shishir Tyagi, Assistant Director, WRA

- Attended Meeting with Stakeholders on Wool Sector held on 7th February, 2020 at Chandigarh.
- Visited following institutes/establishments to take user trials under Sportsgear project:
 - M/s Khanna Sports, Mumbai
 - Hiranandani College of Pharmacy, Ulhasnagar
 - DPO's Nett College of Physiotherapy, Thane
- Visited carpet training centres at Mul and Pombhurna taluka, Chandrapur Distt., in August 2019, October 2019, November 2019, January 2020 & March 2020.

14.0 WORK BY THE PROJECT TEAM

- Development of plain raised (Kabana fabric & plain raised fabric) fabric on warp knitting machine for Nebco Textile Industry
- Development of elastic medical products on raschel warp knitting machine
- Development of non-elastic fabrics on raschel warp knitting machine
- Designing and preparation of adoptors for beaming of small warp beams of raschel warp knitting machine
- Lighting arrangement on the guide bars of tricot warp knitting machine to run black colour yarn.
- Repairing of electronic card of hot melt coating and laminating machine through industry support
- Designing and preparation of Platform and creel for raschel warp knitting machine
- Fabric development during the visit of Mr. Pissiani of Comez International at WRA.
- Trials of developed sportsgear with therapeutic properties were conducted at Hiranandani College of Pharmacy, Ulhasnagar & at different schools in Navi Mumbai in Association with M/s Khanna Sports, Mumbai.
- Conducted field trials of MBR based effluent treatment plant at M/s Mahadev Woollen Mills, Sundernagar, HP

15.0 SEMINAR/ CONFERENCES /EXHIBITIONS ATTENDED/ CONDUCTED:**● TECHNOTEX 2019 : June 2019**

TECHNOTEX 2019 is India's premier show on technical textiles. This spectacular flagship event comprised of an International exhibition, conference, and seminars. A common platform for interaction amongst stakeholders from across the global technical textile value chain, TECHNOTEX exemplifies the immense potential for trade and investment between India and foreign countries in technical textile sector. The 8th edition of International Exhibition and Conference on Technical Textiles i.e. Technotex 2019 pooled in participants, visitors and other key decision makers from a diverse cross section of the technical textile industry with a view to provide more innovative solutions, identify new business opportunities and create an environment congenial for growth. Organized by Ministry of Textiles, Government of financial capital of India. The theme of this year's conference was "Make in India" initiative of Government of India and it chalked out a roadmap to make India a manufacturing hub for technical textiles.



- Mayur Basuk deliberated Technical Presentation at Sport India 2019 Expo 23rd to 25th September 2019 Pragati Maidan, New Delhi.
- WRA's COE as a knowledge partner organized half day Conclave on Manufacturing Opportunities & Challenges for Sportswear & Active wear industry in India alongwith Unified Knowledge Services Pvt Ltd. Hariyana, India on 31st January 2020 at VJTI, Mumbai. Dr. Mrinal Choudhari participated as a panelist and Mr. Mayur Basuk deliberated technical presentation on "Opportunities and Challenges in Sportswear & Active wear segment in India". Many industry representatives participated and the impact of that conclave has resulted into multiple queries in Sportech segment.



Dr Mrinal Choudhari, Mr Devvert Ruhela and Mr Mayur Basuk during Conclave at VJTI. Matunga



Dr Mrinal Choudhari during Panel Discussion on Opportunities and Challenges in Sportswear & Active wear segment in India

- Mayur Basuk and Shishir Tyagi attended exhibition at Mahalaxmi Saras 2020, MMRDA Ground, BKC, Mumbai to Display and sale of carpets made at Pombhurna carpet training center
- Shishir Tyagi visited Carpet Exhibition at Mumbai in August 2019 & Pune, March 2020.
- Shishir Tyagi attended Carpet exhibition at Congress Maidan Pune, March 2020

16.0 TRAINING PROGRAMME CONDUCTED / ATTENDED :

- FACULTY ORIENTATION, TRAINING AND DEVELOPMENT PROGRAMME FOR NATIONAL INSTITUTE OF FASHION TECHNOLOGY (NIFT)**

Wool Research Association conducted five days faculty orientation, training and development programme for National Institute of Fashion Technology (NIFT) from 30th December 2019 to 3rd January 2020. Ten faculties comprising of Assistant and Associate Professors from different centres such as Chennai, Bangalore, Delhi, Kannur and Mumbai participated in this five day's event. Two M.Tech. and two M. Sc. students from Department of Fibres & Textile Processing Technology, Institute of Chemical Technology, Matunga also attended the sessions.

The training was broadly divided into five days 1st day covered Wet Processing of Textiles, 2nd day Colour Physics and Thermo physiological comfort properties, 3rd day Physical and Ecological testing of sportswear followed by further two days training on Warp Knitting Technology, on Raschel and Tricot knitting machines was delivered by Dr. Mrinal Choudhari.



NIFT faculty members with Wool Research Association's staff



NIFT faculty members with Wool Research Association's staff and Mr. Sumit Gupta, from GOTS alongwith Mr. Mohnish Hasrajani from BASF

- Guided B. Tech and M.Tech & M.Sc. students to complete their master dissertation/ Internship - No. 04

17.0 COUNCIL MEETINGS

Four Governing Council Meetings, One Technical/Research Advisory Committee Meeting and Annual General Meeting were held during the year 2019-2020.

147th Governing Council Meeting

Wool Research Association's 147th Governing Council Meeting was held on 19th July, 2019 at 12.30 p.m in the Committee Room, Indian Woollen Mills' Federation, Churchgate Chambers, 7th floor, 5, New Marine Lines, Mumbai – 400020.

148th Governing Council Meeting

Wool Research Association's 148th Governing Council Meeting was held on 30th August, 2019 at 12.30 p.m. in the Conference Room, Wool Research Association, P.O. Sandoz Baug, Kolshet Road, Thane – 400 607.

149th Governing Council Meeting

Wool Research Association's 149th Governing Council Meeting was held on 27th December, 2019 at 12.30 p.m. in the Committee Room, Indian Woollen Mills' Federation, Churchgate Chambers, 7th floor, 5, New Marine Lines, Mumbai – 400020.

150th Governing Council Meeting

Wool Research Association's 150th Governing Council Meeting of Wool Research Association was held on 20th March, 2020 at 12.30 p.m. in the Committee Room, Indian Woollen Mills' Federation, Churchgate Chambers, 7th floor, 5, New Marine Lines, Mumbai – 400020.

Technical / Research Advisory Committee (TRAC) Meeting

Wool Research Association's Technical / Research Advisory Committee (TRAC) Meeting was held on Friday, 3rd May, 2019 at 2.00 p.m. in the Conference Room, Wool Research Association, P.O. Sandoz Baug, Kolshet Road, Thane – 400 607.

54th Annual General Meeting

54th Annual General Meeting of the Members of the Wool Research Association was held on Friday 27th September, 2019 at 1.00 p.m. in the Committee Room, Indian Woollen Mills' Federation, Churchgate Chambers, 7th floor, 5, New Marine Lines, Mumbai – 400020.

18.0 MEMBERS OF WRA**ORDINARY MEMBERS :**

01. M/s. BSL Ltd, Kolkata
02. M/s. Banswara Syntex Limited, Mumbai
03. M/s. Cashmere Marketing Agencies, Srinagar
04. M/s. Centex International Pvt. Ltd., Ludhiana
05. M/s. Gokalchand Rattanchand Woollen Mills Pvt. Ltd., Mumbai
06. M/s. Grentex & Co. Pvt. Ltd. Mumbai
07. M/s. Gujarat Sheep & Wool Development Corporation., Ahmedabad
08. M/s. Geetanjali Woollens Pvt. Ltd., Mumbai
09. M/s. Jaya Shree Textiles & Industries Ltd., West Bengal
10. M/s. Kapotex Industries Pvt. Ltd., Sarigam
11. M/s. Kusumgar Corporate, Mumbai
12. M/s. Modern Woollens Ltd., Bhilwara
13. M/s. Raymond Ltd., Thane
14. M/s. Shri Dinesh Mills Ltd., Baroda
15. M/s. Saravanabava Mills, Mumbai
16. M/s. Shree Ram Textile Mills Ltd. Mumbai
17. M/s. Thaker Felts Pvt. Ltd., Vadodara
18. M/s. Wooltex Associates, Mumbai

ASSOCIATE MEMBERS :

19. M/s. Indian Woollen Mills Federation, Mumbai
20. M/s. Woolmark Services India Pvt. Ltd, New Delhi

SPECIAL ASSOCIATE MEMBERS :

21. M/s. The Synthetic & Art Silk Mills Research Association, Mumbai
22. M/s. OCM India Ltd, Amritsar

19.0 FOUNDER MEMBERS OF WOOL RESEARCH ASSOCIATION IN 1963

1. Mr. T.N. Khaitan.
Dhruva Woollen Mills Pvt. Ltd.,
Sun Mill Compound, Lower Parel, Bombay
2. Mr. G.K. Singhanian
Raymond Woollen Mills Ltd., J.K. Building,
Ballard Estate, Bombay
3. Mr. B.M. Grover
Modella Woollen Mills,
50, Vulcan Insurance Bldg.,
Veer Nariman Road, Bombay
4. Mr. L.P. Pittie
Bombay Woollen Mills P. Ltd.
20, Hamam Street, Bombay
5. Mr. R.K. Seth
Simplex Woollen Mills
Sadhana Raymond House,
D.N. Road, Bombay
6. Mr. R.B. Kanwar Rajnath
Ahmed Woollen Mills
Amernath C. Rly.
Office : 87, Tamba Kanta
Nakhoda Street, Bombay
7. Mr. T.K. Nagpal
Nagpal Woollen Mills
Old Atlas Mills Compound,
Reay Road, Bombay
8. Mr. R.K. Birla
Shree Digjam Woollen Mills
Aerodrome Road, Jamnagar

20.0 LIST OF PRESIDENTS/SR.VICE PRESIDENTS & VICE PRESIDENTS SINCE INCEPTION

PERIOD/ YEAR	PRESIDENT	SR. VICE PRESIDENT	VICE PRESIDENT
1964/65 to 1968/69	Mr.G..K. Singhanian Raymond Woollen Mills	Mr. T.N. Khaitan Dhruva Woollen Mills	Mr. L.P. Pittle Bombay Woollen Mills
1969/70	Mr. U.M. Patel Dinesh Woollen Mills	Mr. B.M. Grover Modella Woollen Mills	Mr. B.B. Nagpal Nagpal Woollen Mills
1970/71 to 1975/76	Mr. B.M. Grover Modella Woollen Mills	Mr. L.P. Pittle Bombay Woollen Mills	Mr. R.K. Seth Simplex Woollen Mills
1976/77 to 1977/78	Mr. B.M. Grover Modella Woollen Mills	Mr. L.P. Pittle Bombay Woollen Mills	Mr. T.N. Khaitan Dhruva Woollen Mills
1978/79 to 1981/82	Mr. B.M. Grover Modella Woollen Mills	Mr. T.N. Khaitan Dhruva Woollen Mills	Mr. B.K. Kedia Raymond Woollen Mills
1982/83	Mr. T.N. Khaitan Dhruva Woollen Mills	Mr. B.K. Kedia Raymond Woollen Mills	Mr. U.M. Patel Dinesh Woollen Mills
1983/84	Mr. Ravikant Kapur G.R. Woollen Mills Ltd	Mr. U.M. Patel Dinesh Woollen Mills	Mr. K.V. Iyer Raymond Woollen Mills
1984/85 to 1993/94	Mr. B.K. Kedia Raymond Woollen Mills	Mr. U.M. Patel Dinesh Woollen Mills	Mr. Ravikant Kapur Grentex & Co.
1994/95 to 1997/98	Mr. Ravikant Kapur G.R. Woollen Mills Ltd	Mr. U.M. Patel Dinesh Woollen Mills	Mr. K.V. Iyer Raymond Woollen Mills
1998/99 to 1999-2000	Mr. Ravikant Kapur G.R. Woollen Mills Ltd	Shri. Hari Prasad Kedia Raymond Limited	Shri.A.N. Choudhary Jayashree Textiles
2000-2002	Mr. Ravikant Kapur G.R. Woollen Mills Ltd	Shri. V.K. Bhartia Raymond Limited	Shri.A.N. Choudhary Jayashree Textiles
2002-2004	Mr. Ravikant Kapur G.R. Woollen Mills Ltd	Shri. V.K. Bhartia Raymond Limited	Shri.A.N. Choudhary Jayashree Textiles
2004-2006	Mr. Ravikant Kapur G.R. Woollen Mills Ltd	Shri. V.K. Bhartia Raymond Limited	Shri.A.N. Choudhary Jayashree Textiles
2006-2008	Mr. Ravikant Kapur G.R. Woollen Mills Ltd	Shri.S.K. Singhal Raymond Limited	Shri.R.K.Khanna Amritsar Swadeshi
2008-2010	Mr. Ravikant Kapur G.R. Woollen Mills Ltd	Shri.S.K. Singhal Raymond Limited	Shri.R.K.Khanna Amritsar Swadeshi
2010-2012	Mr. Ravikant Kapur G.R. Woollen Mills Ltd	Shri.S.K. Singhal Raymond Limited	Shri.R.K.Khanna Amritsar Swadeshi
2012-2014	Mr. Ravikant Kapur G.R. Woollen Mills Ltd	Shri. S.L. Pokharna Raymond Ltd	Shri.R.K.Khanna Amritsar Swadeshi Shri. R.K. Khandelwal Raymond Ltd
2014-2016	Mr. Ravikant Kapur G.R. Woollen Mills Ltd	Shri. H.K. Chatterjee Raymond Ltd	Shri. Deepak Goel Geetanjali Woollens P. L. Shri. R.K. Khandelwal Raymond Ltd
2016-2018	Shri. H.K. Chatterjee Raymond Ltd	Shri. Deepak Goel Geetanjali Woollens P. Ltd.	Shri. R.K. Khandelwal Raymond Ltd
2018-2020	Shri. H.K. Chatterjee Raymond Ltd	Shri. Deepak Goel Geetanjali Woollens P. Ltd.	-----

21.0 LIST OF DIRECTOR GENERAL /DIRECTORS/ JOINT DIRECTOR /DY.DIRECTORS SINCE INCEPTION

PERIOD (YEAR)	SECRETARY	DIRECTOR GENERAL	DIRECTOR	JOINT DIRECTOR	DEPUTY DIRECTOR
1964/65	Mr. J.N. Chaudhuri	-	-	-	-
1965/66	Mr. A.C. Chaudhuri	-	-	-	Dr.M.G. Kulkarni
1966/67 & 1967/68	Mr. A.C. Chaudhuri	-	-	-	Dr. N.P. Badve
1968/69 & 1969/70	Mr. A.C. Chaudhuri	-	-	-	Dr. N.P. Badve
1970/71 to 1977/78	Mr. A.C. Chaudhuri	-	Mr. Sule Assistant Director (from 1971 to 1975)	-	-
1978/79	Mr. A.C. Chaudhuri	-	Dr.V.G. Kulkarni	-	-
1979/80	Mr. A.C. Chaudhuri	-	-	-	Dr(Mrs) Usha Nandurkar
1980/81 & 1981/82	-	-	Dr.A.D.M. Nath	-	Dr(Mrs) Usha Nandurkar
1983/84 to 1985/86	-	-	Dr(Mrs) Usha Nandurkar	-	-
1986/87 to 1987/88	-	-	Dr.(Mrs) S. Patwardhan (Offg)	-	-
1988/89 to 1998/99	-	-	Dr.(Mrs) S. Patwardhan	-	-
Jan' 2000 - 7 th Sept.2003	-	-	Mrs. G.P. Rane Acting Director (Offg)	-	-
8 th Sept.2003 - 7 th Sept.2006	-	-	Mr. S.C. Agarwal	-	Mrs. G.P. Rane
8 th Sept.2006	-	-	-	-	Mrs. G.P. Rane
2 nd July, 2007 to 2015	-	-	Mr. M.K. Bardhan	-	-
1 st March 2012-15	-	-	-	-	Dr (Mrs) Mrinal Choudhari
January,2016 onwards	-	Mr. M. K. Bardhan	-	Dr. (Mrs.) Mrinal Choudhari	Mr. P.R.Kulkarni
May- Dec,' 2016	-	-	Dr. Suman Bhattacharyya	-	-
June, 2016 onwards	-	-	-	-	Mr. Shivendra Parmar
Feb.'2017 till Sep., 2019 June,2017 onwards August,2017 onwards	-	-	Dr. A.K. Sharma	Dr. (Mrs.) Mrinal Choudhari Ms. Seema Patel Mr. Pawan Sharma	-
July, 2019	-	-	Dr. Md. S. Rahman	Dr. (Mrs.) Mrinal Choudhari Ms. Seema Patel Mr. Pawan Sharma	-
Dec., 2020 onwards	-	-	Shri. K. K. Mishra Director (Officiating)	Dr. (Mrs.) Mrinal Choudhari Ms. Seema Patel	-

22.0 LIST OF DONOR MEMBERS

SR. NO.	NAME OF THE ORGANISATION	YEAR OF DONATION
1	M/s Raymond Woollen Mills	1971-72
2	M/s Modella Woollens Ltd	1971-72
3	M/s Shree Dinesh Mills	1971-72
4	M/s G.K. Nagpal Sons	1971-72
5	M/s Beekay & Sons	1971-72
6	M/s Shree Digvijay Woollen Mills Ltd.	1971-72
7	M/s Dhruva Woollen Mills	1971-72
8	M/s Wool Combers of India	1971-72
9	M/s Bombay Woollen Mills	1971-72
10	M/s Karamchand Tulsidas	1971-72
11	Shri. B.M. Grover - Chairman - Modella (For Physical & Colour Research Laboratory)	1976-77
12	Shri Gopal Krishna Singhania - Raymond (For Chemical Research Laboratory)	1980-81
13	Shri. Upendrabhai M. Patel - Chairman Shri Dinesh Mills Ltd (For Textile Research Department)	1992-93

Also received from M/s R.G. Deshpande and Bros. a donation of Rs. 1.00 lac in the memory of their mother Smt. Laxmibai Gajanan Deshpande towards educational programme and to allot scholarship for the students from the interest of this fund.

23.0 EDUCATIONAL ACTIVITIES

- Mrs. Smita Bait is pursuing Ph.D.

24.0 ACKNOWLEDGEMENT

We are thankful to Ministry of Textiles, Ministry of Finance, Central Wool Development Board, Office of the Textile Commissioner, Department of Science & Technology, Indian Woollen Mills Federation for the help extended to Wool Research Association from time to time.

Carpet training programme for economic upliftment of under privileged women in the rural areas with Mahila Arthik Vikas Mahamandal (MAVIM), Government of Maharashtra

- **A Carpet Training Programme** for providing supplemental income for economic upliftment of under privileged women in the rural areas of Chandrapur District, Maharashtra is undergoing at Two (02) taluka (i.e. Pombhurna & Mul), where **02 nos. of Common Facility Centre (CFC)** were setup for providing handmade carpet manufacturing techniques to rural women's in order to engage them in production of hand made floor covering as an alternate livelihood.

This empowerment programme is coordinated by Mahila Arthik Vikas Mahamandal (MAVIM), Government of Maharashtra, where Wool Research Association, Thane is working as a Technical Partner & Consultant.

Inauguration of Carpet Training Centre, Pombhurna



Women weaving hand knotted Carpet



Women Producing Hand Tufted Carpet



Gallery of Hand Made Carpets , Pombhurna



**J.P.J. ASSOCIATES LLP
CHARTERED ACCOUNTANTS**

Registered Office :
D/401, Shantidwar C & D Wing CHS
Shantivan, Borivali (East)
Mumbai - 400066

Tel : 022 – 2897 0736
Email : jpj@jpjassociates.com

AUDITOR'S REPORT

**To the Members
Wool Research Association
Thane**

Report on the Financial Statements

We have audited the accompanying financial statements of Wool Research Association (“the Society”), which comprise the Balance Sheet as at March 31, 2020, and the Income and Expenditure Account for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation of these financial statements that give a true and fair view of the financial position, financial performance in accordance with the Accounting Standards and Generally accepted accounting principles. This responsibility includes the design, implementation and maintenance Forming an Opinion and Reporting on Financial Statements of internal control relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the Standards on Auditing issued by the Institute of Chartered Accountants of India. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement. An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Society's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion and to the best of our information and according to the explanations given to us, the financial statements give the information required by the Act in the manner so required and give a true and fair view subject to

- a) Note No.3 regarding Balance Confirmations,
- b) Note No. 4 regarding Subscription
- c) Note No. 6 Non provision of diminution of Value of investment.
- d) Note No. 11 Non Provision of Depreciation.
- e) Note No. 16 Non Provision for ESIC

in conformity with the accounting principles generally accepted in India:

(a) in the case of the Balance Sheet, of the state of affairs of the Society as at March 31, 2020;

(b) in the case of the Income and Expenditure Account, the Excess of Expenditure over Income for the year ended on that date; and

Report on Other Legal and Regulatory Requirements

a. we have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purpose of our audit;

b. in our opinion proper books of account as required by law have been kept by the Society so far as appears from our examination of those books;

c. the Balance Sheet, Income and Expenditure Account dealt with by this Report are in agreement with the books of account;

for **J.P.J. ASSOCIATES LLP**

CHARTERED ACCOUNTANTS

FIRM REG.NO. 113012 W/W100296

Sd/-

VAIBHAV VAIDYA

PARTNER

MEM. NO. 157754

WOOL RESEARCH ASSOCIATION, THANE.
BALANCE SHEET AS ON 31st MARCH 2020

AS ON 31/03/2019 Rs.	LIABILITIES	SCHE- DULE	AS ON 31/03/2020 Rs.	AS ON 31/03/2019 Rs.	ASSETS	SCHE- DULE	AS ON 31/03/2020 Rs.
6,41,33,722	CAPITAL FUND	A	7,08,07,121	34,98,01,480	FIXED ASSETS	E	35,30,73,155
7,40,34,847	RESERVES	B	8,29,51,668	11,56,400	<u>INVESTMENT AT COST</u>		11,56,400
3,66,38,715	SUNDRY LIABILITIES	C	3,58,80,489		11564/- Equity shares of Rs.100/- each fully paid up of M/s.Gujarat Sheep & Wool Development Corpn. Ltd., (for break-up value of the shares, please refer to Note 6 the notes on Account schedule "L")		
27,42,80,353	GRANT-IN-AID FROM MOT, KVIC, AIHB, & UNDP TOWARDS CAPITAL EXPS. FOR SPECIAL PROJECTS	D	27,06,68,678				
	<u>COE - SPORTECH</u>						
	OP.Balance 34,215						
	Grant recd. 0						
	Add: Int.recd. on F.D. 0						
	Add: EMD & Other receipts 0						
34,215	34,215			6,89,93,990	CURRENT ASSETS	F	7,22,04,918
	Less : Funds utilised 7,907		26,308	92,58,159	LOANS & ADVANCES	G	96,68,282
	<u>Design & Dev.of Light weight..</u>			2,07,04,691	PROJECTS	H	2,48,35,027
	OP.Balance 7,92,868						
	Grant recd. 0						
	Industry's/Institute:s Share 2,02,948						
	Add: Other receipts 2,512						
	9,98,328						
7,92,868	Less : Funds utilised 9,67,330		30,998				
	<u>MAVIM</u>						
	Grant recd. 1,98,00,000						
	Add: Int.recd. on F.D. 2,70,973						
	Add: Other receipts. 5,41,973						
	2,06,12,946						
	Less : Funds utilised 2,00,40,426		5,72,520				
44,99,14,720	TOTAL		46,09,37,782	44,99,14,720	TOTAL		46,09,37,782

for J.P.J. ASSOCIATES LLP
CHARTERED ACCOUNTANTS
FIRM REG.NO. 113012 W/W100296

NOTE : SEE SCHEDULE 'L' OF NOTES ON ACCOUNTS AS PER OUR REPORT OF EVEN DATE ATTACHED.

Sd/-
VAIBHAV VAIDYA
PARTNER
MEM. NO. 157754

Sd/-
R.V. BHANDARKAR
SR. ACCTS. OFFICER

Sd/-
K. K. MISHRA
CHIEF OPERATIONS OFFICER

Sd/-
H. K. CHATTERJEE
PRESIDENT

PLACE : MUMBAI
DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION, THANE.
INCOME AND EXPENDITURE ACCOUNT FOR NON-PLAN A/C FOR THE YEAR ENDED 31st MARCH 2020

AS ON 31/03/2019 Rs.	EXPENDITURE	SCHE- DULE	AS ON 31/03/2020 Rs.	AS ON 31/03/2019 Rs.	INCOME	SCHE- DULE	AS ON 31/03/2020 Rs.
1,51,48,966	STAFF SALARY	I	1,91,91,494	90,00,000	GRANT-IN-AID FROM MINISTRY OF TEXTILES, GOVT.,OF INDIA TOWARDS RECURRING EXPENDITURE		1,30,00,000
69,78,145	ESTABLISHMENT CHARGES	J	1,04,51,299				
45,000	AUDIT FEES		45,000				
1,73,653	AGM ,SEMINAR & MEETING AND CONFERENCE EXPS.		24,725	1,56,86,420	SCHEDULE - (INCOME) INDUSTRY'S CONTRIBUTION TOWARDS RECURRING EXPS.	K	1,77,86,481
3,708	CHEMICALS AND RAW MATERIAL		11,275				
18,52,655	PROJECT COST INCURRED BY WRA		10,62,688	5,14,026	EXCESS OF EXPENDITURE OVER INCOME CARRIED TO BALANCE SHEET		459,330.00
484,293	DEBTORS W/OFF		-				
5,14,026	DEPRECIATION		459,330				
2,52,00,446	TOTAL		3,12,45,811	2,52,00,446	TOTAL		3,12,45,811

NOTE : SEE SCHEDULE 'L' OF NOTES ON ACCOUNTS AS PER OUR REPORT OF EVEN DATE ATTACHED.

for J.P.J. ASSOCIATES LLP
 CHARTERED ACCOUNTANTS
 FIRM REG.NO. 113012 W/W100296

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PLACE : MUMBAI
 DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020

PROJECT : To develop a smart indigenous sleeping bag with heating property for Adventure/high altitude sports

(SCHEDULE - 1)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
23894.00	Monitoring Review	—	23894.00 (Due)	Grant-in-Aid from Ministry of Textiles, New Delhi	—
—		—			
—		—			
—		—			
23894.00	TOTAL	0.00	23894.00	TOTAL	0.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
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 FIRM REG.NO. 113012 W/W100296

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PLACE : MUMBAI
 DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020

PROJECT : To Design & develop evaporative cooling textiles

(SCHEDULE - 2)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
225853.00	Raw material/consumables	00.00	276603.00 (Due)	Grant-in-Aid from Ministry of Textiles, New Delhi	0.0
22000.00	Overheads/Contigencies	0.00			
28750.00	Others	0.00			
276603.00	TOTAL	0.00	276603.00	TOTAL	0.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
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 FIRM REG.NO. 113012 W/W100296

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PLACE : MUMBAI
 DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020

PROJECT : Development of Membrane Bioreactors as a solution for compact ,high quality effluent treatment to achieve zero-discharge for decentralized woolen and carpet sector and common facility centres

(SCHEDULE - 3)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
146788.00	Salaries/Wages	205025.00	391227.00 (Due)	Grant-in-Aid from Ministry of Textiles, New Delhi	462196.00
5814.00	Raw material/consumables	1300.00			
74337.00	Promotion/Proof of Concept	45871.00			
82988.00	Overheads/Contingencies	0.00			
81300.00	Consultancy	210000.00			
391227.00	TOTAL	462196.00	391227.00	TOTAL	462196.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
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 FIRM REG.NO. 113012 W/W100296

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PLACE : MUMBAI
 DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020

PROJECT : Enhancement of moisture management properties of polyester, polyester/cellulose blend by surface modification using cellulose micro particles

(SCHEDULE - 4)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
23340.00	Raw material/consumables	0.00	359776.00 (Due)	Grant-in-Aid from Ministry of Textiles, New Delhi	0.00
99318.00	Promotion/Proof of Concept	0.00			
196997.00	Consultancy	0.00			
40121.00	Overheads/Contingencies	0.00			
		0.00			
359776.00	TOTAL	0.00	359776.00	TOTAL	0.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
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 FIRM REG.NO. 113012 W/W100296

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PLACE : MUMBAI
 DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020

PROJECT : Development and application of eco friendly microencapsulated moth repellent and antimicrobial finish for pashmina product in decentralized sector

(SCHEDULE - 5)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
58000.00	Salaries/Wages	0.00	170300.00 (Due)	Grant-in-Aid from Ministry of Textiles, New Delhi	0.00
49705.00	Raw material/consumables	0.00			
62595.00	Promotion/Proof of Concept	0.00			
170300.00	TOTAL	0.00	170300.00	TOTAL	0.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
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PLACE : MUMBAI
 DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020

PROJECT : Development of innovative sportech products such as parachute fabric , sailing clothes, ballooning fabrics, high adventure sailing clothes, ballooning fabrics, high adventure sportswear etc. using low energy , environment friendly hot melt application for new entrepreneurs in sportech sector

(SCHEDULE - 6)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
36180.00	Salaries/Wages	0.00	643164.00 (Due)	Grant-in-Aid from Ministry of Textiles, New Delhi	0.00
503852.00	Raw material/consumables	0.00			
47336.00	Promotion/Proof of Concept	0.00			
55796.00	Overheads/Contingencies	0.00			
643164.00	TOTAL	0.00	643164.00	TOTAL	0.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
 CHARTERED ACCOUNTANTS
 FIRM REG.NO. 113012 W/W100296

Sd/-
 VAIBHAV VAIDYA
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 MEM. NO. 157754

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 K. K. MISHRA
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Sd/-
 H. K. CHATTERJEE
 PRESIDENT

PLACE : MUMBAI
 DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020

PROJECT : Development of Novel Detergent Formulation for wool with immobilized enzymes for enhancing machine wash ability of wool fabric.

(SCHEDULE - 7)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
596565.00	Salaries/Wages	0.00	774161.00 (Due)	Grant-in-Aid from Ministry of Textiles, New Delhi (Due)	108812.00 (Due)
22884.00	Raw material/consumables	86445.00			
28400.00	Consultancy	60200.00	331783.00	Industry's/WRA'S contribution towards project expenses	46633.00
—	Promotion/Proof of Concept	8800.00			
458095.00	Overheads/Travelling	0.00			
1105944.00	TOTAL	155445.00	1105944.00	TOTAL	155445.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
 CHARTERED ACCOUNTANTS
 FIRM REG.NO. 113012 W/W100296

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 PRESIDENT

PLACE : MUMBAI
 DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020

PROJECT : Development of active fitness clothing like gym and yoga wear with infrared Thermal reflecting property to enhance body fitness.

(SCHEDULE - 8)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
603000.00	Salaries/Wages	0.00	756810.00 (Due)	Grant-in-Aid from Ministry of Textiles, New Delhi (Due)	858438.00
300128.00	Raw material/consumables	156246.00			
69750.00	Consultancy	338689.00			
6000.00	Promotion/Proof of Concept	499461.00	496467.00	Industry's/WRA'S contribution towards project expenses	367902.00
274399.00	Overheads/Travelling	231944.00			
1253277.00	TOTAL	1226340.00	1253277.00	TOTAL	1226340.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
 CHARTERED ACCOUNTANTS
 FIRM REG.NO. 113012 W/W100296

Sd/-
 VAIBHAV VAIDYA
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 MEM. NO. 157754

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 K. K. MISHRA
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Sd/-
 H. K. CHATTERJEE
 PRESIDENT

PLACE : MUMBAI
 DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020

PROJECT : Synthesis of water soluble fluorescent colorants for high visible hydrophilic textile substrates

(SCHEDULE - 9)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
807696.00	Salaries/Wages	639426.00	1241004.00 (Due)	Grant-in-Aid from Ministry of Textiles, New Delhi	1307471.00 (Due)
167165.00	Raw material/consumables	219073.00			
45550.00	Promotion/Proof of Concept	427532.00			
220083.00	Overheads/Travelling	21440.00			
1241004.00	TOTAL	1307471.00	1241004.00	TOTAL	1307471.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
 CHARTERED ACCOUNTANTS
 FIRM REG.NO. 113012 W/W100296

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 PRESIDENT

PLACE : MUMBAI
 DATE : 15/12/2020

**WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020**

PROJECT : Synthesis of optical whiteners with good photostability and improvements in the bleaching processes to produce photostable bright white and pastels shades woollen casual fashion knitwear, sports and leisurewear products and carpets using Indian and other cheaper imported qualities of wool

(SCHEDULE - 10)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
802842.00	Salaries/Wages	0.00	717929.00 (Due)	Grant-in-Aid from Ministry of Textiles, New Delhi (Due)	354398.00
212971.00	Raw material/consumables	186525.00			
0.00	Consultancy	237400.00			
9800.00	Promotion/Proof of Concept	82357.00	307684.00	Industry's/WRA'S contribution towards project expenses	151884.00
1025613.00	TOTAL	506282.00	1025613.00	TOTAL	506282.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
CHARTERED ACCOUNTANTS
FIRM REG.NO. 113012 W/W100296

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PRESIDENT

PLACE : MUMBAI
DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020

PROJECT : Development of sports gears (inner wears, socks, bands, leggings etc.) with controlled release microencapsulated natural essential, herbal oils for therapeutic benefits including protection of health, skincare and recovery of injuries and hygiene of sportsperson

(SCHEDULE - 11)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
605772.00	Salaries/Wages	0.00	784199.00 (Due)	Grant-in-Aid from Ministry of Textiles, New Delhi (Due)	129142.00
151944.00	Raw material/consumables	291103.00			
258272.00	Promotion/Proof of Concept	34600.00			
142224.00	Overheads/Travelling	0.00	374013.00	Industry's/WRA'S contribution towards project expenses	196561.00
1158212.00	TOTAL	325703.00	1158212.00	TOTAL	325703.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
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PLACE : MUMBAI
 DATE : 15/12/2020

**WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020**

PROJECT : Use of Indian wool in development of technical textiles like nonwoven mesh for moisture management, filtration fabrics, wipe, insulating mats, roof-liners, sport shoe liner etc.

(SCHEDULE - 12)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
294068.00	Raw material/consumables	0.00	317047.00	Grant-in-Aid received from Central Wool Development Board, Joghpur	0.00
37209.00	Travelling Exp.	0.00			
—	Overheads/Contingencies	—			
—	Other costs (Trial/Testing	—	14230.00	Industry's/WRA'S contribution towards project expenses	0.00
331277.00	TOTAL	0.00	331277.00	TOTAL	0.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
CHARTERED ACCOUNTANTS
FIRM REG.NO. 113012 W/W100296

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PLACE : MUMBAI
DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
(R & D PROJECT)
INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020

PROJECT : Design & Development of Indian Wool based smart textiles having thermoregulatory properties using phase change material (PCM)

(SCHEDULE - 13)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
37970.00	Travelling expenses	0.00	355602.00	Grant-in-Aid received from Central Wool Development Board, Joghpur	0.00
20,000.00	Overheads/Contingencies	0.00			
299029.00	Other costs (Trial/Testing)	0.00	1397.00	Industry's/WRA'S contribution towards project expenses	0.00
356999.00	TOTAL	0.00	356999.00	TOTAL	0.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
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PLACE : MUMBAI
 DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION**(R & D PROJECT)****INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2020**

PROJECT : Design and Development of sportswear and sports accessories having Thermo Physiological comfort properties in order to enhance the performance assessed by using a Sweating Thermal Manikin system under different environmental conditions

(SCHEDULE - 14)

PREVIOUS YEAR (Rs.)	EXPENDITURE	CURRENT YR. (Rs.)	PREVIOUS YEAR (Rs.)	INCOME (Rs.)	CURRENT YR. (Rs.)
795408.00	Salaries/Wages	678214.00	676276.00	Grant-in-Aid from Ministry of Textiles, New Delhi	685995.00 (Due)
14100.00	Promotion/Proof of Concept	134208.00			
—	Raw material/consumables	32421.00			
16600.00	Consultancy	135150.00	289832.00	Industry's/WRA's contribution towards project expenses	293998.00
140000.00	Overheads/Travelling	0.00			
966108.00	TOTAL	979993.00	966108.00	TOTAL	979993.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
CHARTERED ACCOUNTANTS
FIRM REG.NO. 113012 W/W100296

Sd/-
VAIBHAV VAIDYA
PARTNER
MEM. NO. 157754

Sd/-
R.V. BHANDARKAR
SR. ACCTS. OFFICER

Sd/-
K. K. MISHRA
CHIEF OPERATIONS OFFICER

Sd/-
H. K. CHATTERJEE
PRESIDENT

PLACE : MUMBAI
DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION
PROJECT A/C - COE-SPORTECH

(SCHEDULE - 15)

PREVIOUS YEAR (2018-19) (Rs.)	RECEIPTS (Rs.)	CUREENT YEAR (2019-20) (Rs.)	PREVIOUS YEAR (2018-19) (Rs.)	PAYMENTS (Rs.)	CUREENT YEAR (2019-20) (Rs.)
42,428	Opening Balance	34,215	152,98,029	Machinery/Lab Instruments	22,63,357
14,91,936	Interest on FD	11,58,360	1,48,211	TDS receivable	1,15,794
111,58,314	Fixed Deposits	—	57,400	Consultancy Charges	—
54,541	Accrued Interest		420,000	EMD Refund	39,036
50,64,524	Sundry Creditors	29,748	—	Fixed Deposits	10,72,314
752,006	TDS receivable 15-16 (RECD)	14,28,677	8,243	Bank Charges	2,508
—	Sundry Creditors	866,207	25,98,251	Sundry Creditors	—
600.00	Misc. Receipts	58,852	—	Forex loss	56,742
		—	34,215	Bank Balance	26,308
185,64,348	TOTAL	35,76,059	185,64,348	TOTAL	35,76,059

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
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FIRM REG.NO. 113012 W/W100296

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PLACE : MUMBAI
DATE : 15/12/2020

**WOOL RESEARCH ASSOCIATION
PROJECT A/C - LAB UPGRADATION**

(SCHEDULE - 16)

PREVIOUS YEAR (2018-19) (Rs.)	RECEIPTS (Rs.)	CUREENT YEAR (2019-20) (Rs.)	PREVIOUS YEAR (2018-19) (Rs.)	PAYMENTS (Rs.)	CUREENT YEAR (2019-20) (Rs.)
8,76,123	Opening Balance	—	3,865	TDS Receivable	—
70,00,000	Fixed Deposit	—	248	Bank Charges	—
1,22,263	TDS receivable 15-16 (RECD)	124,604	12,64,237	Sundry Creditors	—
484,147	Sundry Debtors	—	31,70,183	Interest on FD including Interest refunded	—
			40,44,000	Refund of unspent Grant - in aid	—
			0.00	Sunday Debtors	124,604
			0.00	Bank Balance	—
84,82,533	TOTAL	124,604.00	84,82,533	TOTAL	124,604.00

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
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FIRM REG.NO. 113012 W/W100296

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H. K. CHATTERJEE
PRESIDENT

PLACE : MUMBAI
DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION

PROJECT A/C. - Design and Development of Light Weight and high Impact resistance sports goods

(SCHEDULE - 17)

PREVIOUS YEAR (2018-19) (Rs.)	RECEIPTS (Rs.)	CUREENT YEAR (2019-20) (Rs.)	PREVIOUS YEAR (2018-19) (Rs.)	PAYMENTS (Rs.)	CUREENT YEAR (2019-20) (Rs.)
—	Opening Balance	792,868	310,885	Salary Expenses	756,420
776,728	Grant from MOT	—	4,750	Consultancy Charges	57,054
332,884	Industry/Institutes Share	202,948	1,276	Consumables	152,204
403	Sundry Creditors	2,512	236	Bank Charges	1,652
			7,92,868	Bank Balance	30,998
1,110,015	TOTAL	998,328	11,10,015	TOTAL	9,98,328

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
CHARTERED ACCOUNTANTS
FIRM REG.NO. 113012 W/W100296

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MEM. NO. 157754

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K. K. MISHRA
CHIEF OPERATIONS OFFICER

Sd/-
H. K. CHATTERJEE
PRESIDENT

PLACE : MUMBAI
DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION

PROJECT A/C. - Mahila Arthik Vikas Mahamandal (MAVIM)

(SCHEDULE - 18)

PREVIOUS YEAR (2018-19) (Rs.)	RECEIPTS (Rs.)	CUREENT YEAR (2019-20) (Rs.)	PREVIOUS YEAR (2018-19) (Rs.)	PAYMENTS (Rs.)	CUREENT YEAR (2019-20) (Rs.)
—	Grant from MAVIM (Govt. of Maharashtra)	198,00,000	—	Fixed Deposit	10,188,315
—	Sundry Creditors	541,973	—	Mandays/Salary Expenses	3,882,744
—	Interest earned	270,973	—	Fixed assets	2,732,691
			—	LC margin money	1,98,408
			—	Travelling expenses	323,467
			—	Raw material	1,148,947
			—	Interest accrued	27,104
			—	Sundry Debtors	363,281
			—	Misc. exps.	216,480
			—	Interest Accrued on Fixed Deposits	55,554
			—	Bank Charges	3,436
			—	Bank Balance	572,519
—	TOTAL	206,12,946	—	TOTAL	206,12,946

Note : See schedule 'L' of Notes on Accounts as per our report of even date attached.

for J.P.J. ASSOCIATES LLP
CHARTERED ACCOUNTANTS
FIRM REG.NO. 113012 W/W100296

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CHIEF OPERATIONS OFFICER

Sd/-
H. K. CHATTERJEE
PRESIDENT

PLACE : MUMBAI
DATE : 15/12/2020

WOOL RESEARCH ASSOCIATION, THANE.**SCHEDULE "A"**

AS ON 31/03/2019 Rs.	CAPITAL FUND	AS ON 31/03/2020 Rs.
5,10,82,986	Balance as per last Balance sheet.	6,29,77,322
5,10,82,986		6,29,77,322
11,894,336	Add : Project Assets taken over during the year	6,673,399
6,29,77,322		6,96,50,721
-		-
6,29,77,322		6,96,50,721
11,56,400	a) EARMARKED CAPITAL FUND : [Being donation received from members for investment in M/s. Gujarat Sheep & Wool Development Corporation Ltd., in terms of resolution passed in 23rd G.C. meeting held on 26th August. ' 1971.]	11,56,400
6,41,33,722	TOTAL	7,08,07,121

WOOL RESEARCH ASSOCIATION, THANE.**SCHEDULE "B"****RESERVES**

AS ON 31/03/2019 Rs.	PARTICULARS	AS ON 31/03/2020 Rs.
	<u>I. DEPRECIATION RESERVE A/C.</u>	
1,10,44,314	a] Depreciation upto last year	1,15,58,340
5,14,026	b] Depreciation for the year	4,59,330
1,15,58,340		1,20,17,670
	<u>II. RESEARCH AND DEVELOPMENT AND REPLACEMENT / UPGRADATION RESERVE</u>	
1,10,00,508	Balance as per last balance sheet.	1,10,00,508
—	Add : Addition during the year.	—
1,10,00,508		1,10,00,508
	<u>III. EDUCATION FUND.</u>	
3,29,045	Balance as per last balance sheet.	3,42,230
13,185	Add : Interest received during the year	13,290
3,42,230		3,55,520
	<u>IV. CORPUS FUND</u>	
4,47,29,481	Balance as per last balance sheet.	5,11,33,769
69,18,314	Add : Addition during the year.	86,97,641
5,16,47,795		5,98,31,410
5,14,026	Less : Excess of expenditure over income transferred.	4,59,330
5,11,33,769		5,93,72,080
	<u>V. DONATION CORPUS FUND</u>	
0.00	Balance as per last balance sheet.	0.00
0.00	Add : Received during the year	2,00,000
0.00	Add : Interest received during the year	5,890
0.00		2,05,890
7,40,34,847	TOTAL (I+II+III+IV+V)	8,29,51,668

WOOL RESEARCH ASSOCIATION, THANE.**SCHEDULE "C"****OUTSTANDING LIABILITIES**

AS ON 31/03/2019 Rs.	PARTICULARS	AS ON 31/03/2020 Rs.
59,47,886	For the year 2017-2018	59,47,886
6,94,382	For the year 2018-2019	31,605
—	For the year 2019-2020	9,36,878
25,000	Security Deposit (EMD)	25,000
44,68,001	Gratuity provision.	36,82,324
33,19,809	Leave salary provision.	30,44,497
26,14,111	Sundry liabilities (WRA)	31,66,250
1,50,49,391	COE - Sportech	13,640,714
13,42,551	Amount Refundable to MOT	13,42,551
—	Duties and taxes	3,97,314
	<u>PROJECT LIABILITIES :</u>	
—	MAVIM Project A/c.	3,63,281
31,77,585	Lab Up-Gradation A/c (For L.C.margin money)	33,02,189
3,66,38,715	TOTAL	3,58,80,489

WOOL RESEARCH ASSOCIATION, THANE.**SCHEDULE "D"****ASSETS OF PROJECT (MINISTRY OF TEXTILES)**

NAME OF THE PROJECT	PARTICULARS	AS ON 31/03/2019 Rs.	ADDITION DURING THE YEAR Rs.	TAKEN OVER DURING THE YEAR Rs.	ASSETS AS ON 31/03/2020 Rs.
SPENT GRANT					
1) UNDP-Pasmina Project	Machinery	53,17,564	-	53,17,564	-
2) COE - Sportech	Lab equipments/Machinery	21,27,84,390	2,263,357	-	21,50,47,747
3) COE - Sportech	Books & Journals	59,50,058	-	-	59,50,058
4) COE - Sportech	IT -Infrastrure/Web Site	11,99,237	-	-	11,99,237
5) Dev. Effective & eco-friendly electroflocculation ..	Lab equipments/Machinery	8,73,285	-	8,73,285	-
6) Dev. Waterproof Breathable sports wear..	Lab equipments	4,82,550	-	4,82,550	-
7) DST Project Fibre Length Measurent Instrument	(Including adv.paid)	4,33,968	-	-	4,33,968
8) DST Project Instrumentto Determine...	(Including adv.paid)	7,65,763	-	-	7,65,763
9) Lab Upgdadation- Equipments	Lab equipments	3,59,36,858	-	-	3,59,36,858
10) Synthesis & Application of Solar Ultraviolet	Lab equipments	1,003,268	-	-	10,03,268
11) Innovation of Bulky yarns of woolenised Jute....	Machinery	705,050	-	-	7,05,050
12) To design & develop evaporative cooling textiles	Lab equipments	4,02,713	-	-	4,02,713
13) Dev.and appl.of eco friendly microencapsulated..	Lab equipments	5,06,990	-	-	5,06,990
14) Dev.of high performance,smart sportswear...	Lab equipments	4,18,653	-	-	4,18,653
15) Enhancement of Moisture management properties ..	Lab equipments	202,960	-	-	2,02,960
16) To develop light sensitive Photo-Chromic Smart	Lab equipments	57,605	-	-	57,605
17) Design & Dev.of Indian Wool based Smart Textiles...	Lab equipments	20,66,147	-	-	20,66,147
18) Design & Dev.of Indian Wool based Tech.Textiles.	Lab equipments	9,22,630	-	-	9,22,630
19) Dev. of innovative sportech products...(Hot melt)	Lab equipments	7,18,697	-	-	7,18,697
20) Development of Membrane Bioreactors	Lab equipments	565,921	-	-	5,65,921
21) Dev.of Novel Detergent Formulation for wool	Lab equipments	1,132,800	-	-	11,32,800
22) Dev.of fitness clothing like gym and Yoga wear with	Lab equipments	401,613	-	-	4,01,613
23) Development of sports gears (inner wears,socks,etc)	Lab equipments	88,500	329,500	-	4,18,000
24) Synthesis of water soluble fluroscent colorants for	Lab equipments	301,810	-	-	3,01,810
25) MAVIM project	Lab equipments	-	574,491	-	5,74,491
	TOTAL	27,32,39,030	31,67,348	66,73,399	26,97,32,979
NOTE : 1) Grant-in-Aid due has been shown under the head of "Current Assets." 2) Balance in grant shown in liability side is as follows :					
UNSPENT GRANT		CAPITAL	RECURRING		TOTAL (RS.)
a) Computer Aided Designing for Textiles (Interest Rs.4,154.40/-)		1,34,534	500	-	1,35,034
b) Woven design for khadi.(old)		-	30,000	-	30,000
c) Carpet weaving programme (Old)		2,102	-	-	2,102
d) Designing of wool (Old)		-	621	-	621
e) Extraction of various dyes from vegetable origins.		745	-	-	745
f) Tecno economic study of shoddy industry.		-	1,000	-	1,000
g) Study of scouring.		-	680	-	680
h) UNDP (Doller A/c.) (23638.05)		23,638	-	-	23,638
i) Sirofast (Interest Rs. 5,02,754/-)		56,424	-	-	56,424
j) Software for garment designing.		200	-	-	200
k) Development of machine tufted carpets (ICAR)		27,653	-	-	27,653
l) CAD knitwears.		2,00,000	-	-	2,00,000
m) Role of enzymes in wool processing.		5,734	-	-	5,734
n) To Improve aesthetic value.		158	-	-	158
o) UNDP angora.		3,91,631	-	-	3,91,631
p) Carpet weaving programme (Old)		1,06,127	-	-	1,06,127
q) DST Project Fibre Length Measurent Instrument		-	4,56,036	-	4,56,036
	TOTAL	9,48,946	4,88,837	0	14,37,783
TOTAL OF SPENT AND UNSPENT.					21,11,70,762
LESS : INDUSTRIES COTRIBUTION TOWARDS CAPITAL EXPS.					5,02,084
			TOTAL		27,06,68,678

WOOL RESEARCH ASSOCIATION, THANE.

SCHEDULE 'E' 2019-2020

SR. NO.	PARTICULARS	RATE %	GROSS BLOCK				DEPRECIATION				NET BLOCK	
			AS ON 01.04.2019	ADDITION DURING THE YEAR	DEDUCTION DURING THE YEAR	AS ON 31.3.2020	UP TO 01.04.2019	DEPRECIATION FOR THE YEAR	ADJUSTMENT DUE TO SALE/ LOSS	TOTAL UPTO 31.3.2020	AS ON 31.3.2020	AS ON 31.3.2019
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1)	LAND		5,83,883	—	—	5,83,883	—	—	—	—	5,83,883	5,83,883
2)	BUILDING (Old)	2.5	26,43,986	—	—	26,43,986	16,56,127	24,696	—	1,680,823	9,63,163	9,87,859
3)	FURNITURE AND FIXTURE	15	5,68,713	20,000	—	5,88,713	5,20,273	8,766	—	529,039	59,674	48,441
4)	LAB EQUIPMENT	15	36,66,126	—	—	36,66,126	32,84,273	57,278	—	3,341,551	3,24,575	3,81,853
5)	OFFICE EQUIPMENT	15	6,32,740	9,850	—	6,42,590	4,15,495	34,064	—	449,559	1,93,031	2,17,245
6)	AIRCOND. WDG. PLANT	15	1,77,025	—	—	1,77,025	1,76,912	17	—	176,929	96	113
7)	ELECT. INSTALLATION	15	7,13,148	—	—	7,13,148	6,95,140	2,701	—	697,841	15,307	18,008
8)	LAB FURNISHING	10	14,72,715	—	—	14,72,715	9,62,058	51,066	—	1,013,124	4,59,591	5,10,656
9)	WATER COOLER	15	12,182	—	—	12,182	7,488	704	—	1,013,124	4,59,591	5,10,656
10)	AIR CONDITIONER	15	2,52,856	54,687	—	3,07,543	1,84,274	18,490	—	8,192	3,990	4,694
11)	FIRE FIGHTING EQUIPMENTS	15	59,232	—	—	59,232	35,290	3,591	—	202,764	1,04,779	68,582
12)	WATER TANK	15	31,600	—	—	31,600	31,307	44	—	38,881	20,351	23,942
13)	MOPED (LUNA)	15	11,300	—	—	11,300	11,196	16	—	31,351	249	293
14)	BUILDING (New)	2.5	13,37,551	—	—	13,37,551	5,89,895	18,691	—	11,212	88	104
15)	BUILDING (WRA'S CONTR. FOR PILOT PLANT)	2.5	7,50,000	—	—	7,50,000	3,30,770	10,481	—	608,586	7,28,965	7,47,656
16)	MOTOR CAR (BUS & CAR)	15	24,82,764	—	—	24,82,764	17,29,705	1,12,959	—	341,251	4,08,749	4,19,230
17)	AIR CONDITIONING PLANT FOR COE LAB	15	14,96,477	—	—	14,96,477	8,32,483	99,599	—	1,842,664	6,40,100	7,53,059
18)	CCTV INSTALLATIONS	15	193,535	19,790	—	2,13,325	95,655	16,166	—	932,082	5,64,395	6,63,994
										111,821	1,01,504	97,880
	Total		1,70,85,835	1,04,327	—	1,71,90,162	1,15,58,341	4,59,330	—	12,017,671	51,72,492	55,27,492

Note : 1 : Rate of depreciation consistent since 1970-71.

WOOL RESEARCH ASSOCIATION, THANE.**SCHEDULE "E" (1)****PROJECT ASSETS TAKEN OVER ON COMPLETION OF PROJECTS**

SR. NO. (1)	NAME OF THE PRODUCTS (2)	FURNITURE (3)	LAB EQUIPMENTS (4)	AIR CONDITIONER (5)	BUILDING (6)	TOTAL (7)
1	Dying of wool	4,156	30,628	—	—	34,785
2	Blending of wool	7,074	1,36,211	—	—	1,43,285
3	Chemical finishing of carpet	6,622	87,345	—	—	93,967
4	Designing of wool	—	4,49,307	—	—	4,49,307
5	Color Research project	—	54,637	—	—	54,637
6	Carpet Weaving programme	23,997	3,438	—	—	27,435
7	Standardisation of yarn.	—	2,85,481	—	—	2,85,481
8	Computer Aided Designing (Old)	—	5,44,495	—	—	5,44,495
9	Evaluation of Wool Jute.	—	5,00,000	—	—	5,00,000
10	Techno Economic study of shoddy.	—	4,77,130	—	—	4,77,130
11	Development of cheap furnishing.	—	3,00,000	—	—	3,00,000
12	Software for garment designing.	—	9,34,800	—	—	9,34,800
13	Extraction of various dyes.	—	24,255	—	—	24,255
14	Cad for Textiles.	—	10,34,620	—	—	10,34,620
15	To set of norms (Siro Fast)	—	9,93,851	—	—	9,93,851
16	Pilot Plant.	—	—	—	7,50,000	7,50,000
17	Modification of reactive dyeing.	—	2,25,134	—	—	2,25,134
18	Development of Eco-friendly.	—	1,76,956	—	—	1,76,956
19	Eco-Testing Lab.	1,27,829	31,42,640	—	—	32,70,468
20	Angora Rabbit Wool	—	2,05,060	—	—	2,05,060
21	To Investigate the factors.	47,310	1,03,191	—	—	1,50,501
22	To Make the Natural dyeing.	4,400	1,70,601	—	—	1,75,001
23	To Develop the Software.	49,210	1,36,288	—	—	1,85,498
24	Development of Design for carpet.	8,743	4,56,774	—	—	4,65,517
25	Value Added.	11,257	65,112	—	—	76,369
26	Computer Aided Emproidary.	31,131	5,94,775	—	—	6,25,906
27	Development of Instrumental.	1,16,760	12,83,985	—	—	14,00,745
28	To Develop Software Prediction.	—	1,75,350	—	—	1,75,350
29	Role of Enzymes.	—	45,552	—	—	45,552
30	Study of Technical Aspects.	—	25,097	—	—	25,097
31	To Develop Different Type of Knitwear	—	66,062	—	—	66,062
32	To Improve Aesthetics Value	—	1,99,842	—	—	1,99,842
33	Textiles committee	—	64,68,437	—	—	64,68,437
34	To Dev. Innovation Yarn	—	5,50,000	—	—	5,50,000
35	To Dev. Cotton Core	—	2,75,000	—	—	2,75,000
36	Enrichment of Painting	—	2,00,000	—	—	2,00,000
37	Dyeing of Wool	—	50,000	—	—	50,000
38	Information Technology	—	2,89,550	—	—	2,89,550
39	CAD Jaquard	—	2,70,650	—	—	2,70,650
40	Design and Fabricate	—	14,22,816	—	—	14,22,816
41	To Improve Processing	—	7,38,812	—	—	7,38,812
42	UNDP -GOI project	2,25,350	1,17,82,004	1,05,000	25,02,829	1,46,15,183
43	To Develop Itch free woollen(Plasma)....	—	12,00,717	—	—	12,00,717
44	Ultra Sound assisted...	—	7,99,191	—	—	7,99,191
45	To assesas Quality norms....	—	45,39,900	—	—	45,39,900
46	Blind dyeing..	—	10,64,885	—	—	10,64,885
47	Softening..	—	3,66,593	—	—	3,66,593
48	Preloom processing.....	—	3,46,747	—	—	3,46,747
49	Dev.of Composites....	—	2,15,543	—	—	2,15,543
50	To evolve feasible...	—	51,150	—	—	51,150
51	To Synthesise wool dyes....	—	24,23,882	—	—	24,23,882
52	Dev.of Internet based...	—	37,19,940	—	—	37,19,940
53	Surface Topographical...	—	4,04,438	—	—	4,04,438
54	To Dev.cost effective ETP	—	6,04,685	—	—	6,04,685
55	Efflunet treatment system for Power generation	—	1,50,849	—	—	1,50,849
56	Upgradation of Indian wool	—	12,26,307	—	—	12,26,307
57	Dev.of Thermal Responsive HighAltitude(CWDB)	—	2,12,653	—	—	2,12,653
58	Negative ion finishing for woollen carpets...	—	12,17,367	—	—	12,17,367
59	Dev.of pollutin free and eco-friendly dry scouring.	—	6,49,624	—	—	6,49,624
60	Dev.of Multifunctional finish with anti bacterial..	—	10,63,034	—	—	10,63,034
61	To impart superwash properly to Indian wool..	—	2,21,557	—	—	2,21,557
62	UNDP-Pasmina Project	—	53,17,564	—	—	53,17,564
63	Dev. Effective & eco-friendly electroflocculation ..	—	8,73,285	—	—	8,73,285
64	Dev.Waterproof Breathable sports wear..	—	4,82,550	—	—	4,82,550
	Total Rs.	6,63,839	6,21,28,346	1,05,000	32,52,829	6,61,50,014
	WRA Assets. Project Assets taken over upto 2019-2020. Assets of existing projects.					1,71,90,162 6,61,50,014 26,97,32,979
	TOTAL (Rs.)					35,30,73,155

WOOL RESEARCH ASSOCIATION, THANE.**SCHEDULE "F"**

AS ON 31/03/2019 Rs.	PARTICULARS	AS ON 31/03/2020 Rs.
	<u>FIXED DEPOSITS</u>	
	<u>Corpus Fund/R & D Replacement Fund</u>	
5,47,92,926	Fixed Deposits with State Bank of India	5,76,10,120
15,00,000	Fixed Deposits with Central Bank of India	6,00,000
21,36,823	Fixed Deposits with Axis Bank	22,52,867
33,96,552	Interest accrued on FD (SBI)	36,24,929
12,975	Interest accrued on FD (CBI)	7,174
18,63,460	LC margin money kept in FD with SBI	—
	<u>CASH & BANK BALANCES</u>	
5,01,689	Current Account with S.B.I. (A/c. 11100522024)	1,51,544
34,215	ESCROW A/C with S.B.I. (A/c. 32424163025)	26,308
3,787	Cash on hand	8,894
78,615	Ministry Project Accounts. C.B.I. (A/c. 1334639360)	1,06,759
11,68,125	Central Bank Of India (WRA Income) (A/c. 1334641891)	19,60,108
7,963	WRA Trustee's Account. C.B.I. (A/c. 1334698893)	5,957
0	MAVIM project A/c. with SBI (A/c. 39012931052)	5,72,520
7,92,868	Axis Bank Ltd. (A/c. 061020003285)	31,220
36,78,587	Axis Bank Ltd. ((Project; Light weight..)) (A/c. 918020094870444)	30,998
		28,94,307
	<u>SUNDRY DEBTORS.</u>	
15,20,380	<u>Testing Fees outstanding considered good</u>	51,13,431
	<u>OUTSTANDING SUBSCRIPTION</u>	
5,750	Considered Good for the year (2017-2018)	—
86,536	Considered Good for the year (2018-2019)	—
92,286	— Considered Good for the year (2019-2020)	102,090
6,89,93,990	TOTAL	7,22,04,918

WOOL RESEARCH ASSOCIATION, THANE.**SCHEDULE "G"****ADVANCE RECOVERABLE**

AS ON 31/03/2019 Rs.	PARTICULARS	AS ON 31/03/2020 Rs.
4,44,128	Deposits with MSSED/MIDC/Excise dept.etc..	4,44,128
35,24,648	Gratuity fund with L.I.C.	31,14,125
15,000	UNDP (GOI) Deposit with M.S.E.B.	15,000
10,300	Deposit with Gas agencies (Eco-Lab)	10,300
4,25,000	Other Advances	3,02,000
3,33,287	Industry contribution for project design & Dev.of light weight..	5,36,235
2,53,777	Service tax and Krishi Kalyan cess paid in advance/ GST	1,56,556
1,24,838	Prepaid expenses	1,14,380
1,97,498	TDS Receivable (10-11)	1,97,498
6,95,666	TDS Receivable (15-16)	-
7,29,126	TDS Receivable (16-17)	7,29,126
12,06,654	TDS Receivable (17-18)	12,06,654
12,98,237	TDS Receivable (18-19)	12,98,237
-	TDS Receivable (19-20)	15,44,042
92,58,159	TOTAL	96,68,282

WOOL RESEARCH ASSOCIATION, THANE.
SCHEDULE "H"
CURRENT ASSETS (PROJECT)

AS ON 31/03/2019 Rs.	PARTICULARS	AS ON 31/03/2020 Rs.
	<u>GRANT-IN-AID DUE FOR RECURRING EXPENSES.</u>	
11,69,881	Dev.waterproof breathable sportswear....	11,69,881
12,27,674	Dev. effective & eco-friendly electroflocculation ..	12,27,674
12,38,790	Dev.of keratin based bio-composite fils and electro spun..	12,38,790
15,53,475	Dev.smart indigenous sleeping bag with heating property..	15,53,475
13,54,516	Synthesis & Application of Solar Ultraviolet	13,54,516
19,75,150	Dev.of high performance,smart sportswear...	19,75,150
17,34,744	To develop light sensitive Photo-Chromic Smart	17,34,744
11,95,275	To design & develop evaporative cooling textiles	11,95,275
6,28,369	Development of Membrane Bioreactors as a solution for compact....	10,90,565
11,08,155	Enhancement of Moisture management properties of polyester....	11,08,155
12,46,359	Development and application of eco friendly microencapsulated moth..	12,46,359
13,42,071	Dev. of innovative sportech products...(Hot melt)	13,42,071
9,08,593	Development of sports gears (inner wears,socks,bands,leggiings ets.)	13,67,235
11,36,956	Dev.of Novel Detergent Formulation for wool with immobilized enzymes..	12,45,768
7,37,999	Synthesis of optical whiteners with good photostability	10,92,406
8,78,797	Dev.of fitness clothing like gym and Yoga wear with	17,37,236
12,67,888	Synthesis of water soluble fluroscent colorants for	25,75,359
-	Design & Dev.of sportswear having Thermo Physiology..	5,80,371
2,07,04,691	TOTAL	2,48,35,027

WOOL RESEARCH ASSOCIATION, THANE.**SCHEDULE "I"****STAFF SALARIES**

AS ON 31/03/2019 Rs.	PARTICULARS	AS ON 31/03/2020 Rs.
1,42,68,187	Salaries & Allowances (Includes PF/FPF, ADMN. charges & EDLIS premiums)	1,85,26,910
1,944	Maharashtra Labour Welfare Fund.	1,944
44,804	Staff Medical Expenses.	1,40,855
1,79,676	Staff Welfare Expenses	2,85,355
43,060	Staff Leave Travel Concession.	84,331
6,11,295	Group Gratuity Scheme	1,52,069
1,51,48,966	TOTAL	1,91,91,494

WOOL RESEARCH ASSOCIATION, THANE.**SCHEDULE “J”****ESTABLISHMENT CHARGES**

AS ON 31/03/2019 Rs.	PARTICULARS	AS ON 31/03/2020 Rs.
2,59,082	Printing & Stationery.	2,01,350
1,40,433	Postage, Telegram & Telephones.	1,86,000
27,42,750	Electricity & Water Charges.	37,70,456
-	Advertisement & Publicity	16,284
2,53,986	Repairs & Maintenance	16,58,276
27,123	Rates & Taxes.	27,123
1,49,709	Insurance Exps.	1,43,373
9,02,371	Conveyance & Travelling.	4,70,975
1,26,176	Foreign Travelling	-
6,977	Entertainment Exps.	3,921
18,604	Bank Charges.	28,977
-	Journals & Periodicals.	2,096
24,575	Subscription to the other Association.	15,000
37,747	Miscellaneous exps.	5,05,983
10,55,438	Security Service Charges.	9,69,448
3,75,015	Motor car exps.	5,82,528
2,75,647	Professional charges.	7,66,821
33,359	Testing charges.	177,878
5,45,027	Labour charges/wages to casual workers	9,19,973
1,625	Interest on delay payments	2,336
2,500	Employer's contribution to MPT	2,500
69,78,145	TOTAL	1,04,51,299

WOOL RESEARCH ASSOCIATION, THANE.**SCHEDULE “K”****INCOME**

AS ON 31/03/2019 Rs.	PARTICULARS	AS ON 31/03/2020 Rs.
3,18,776	Members Subscription.	3,21,117
1,23,76,638	Testing Fees Income.	1,72,09,378
6,71,216	Consultancy Service charges and R & D	46,02,328
9,235	Miscellaneous receipts.	13,520
15,12,641	Liability written back	—
55,000	Educational & Technical Training ...	2,20,000
74,21,825	Interest on Fixed Deposites.	38,86,483
2,39,403	Interest credited by LIC for Gratuity fund	2,31,295
2,26,04,734	TOTAL	2,64,84,122
6,918,314	Less: Transferred to Corpus Fund	8,697,641
1,56,86,420	Transferred to Income & Expenditure A/c.towards Industry's contr.	1,77,86,481

WOOL RESEARCH ASSOCIATION

SCHEDULE 'L'

NOTE ON ACCOUNTS

1. Significant Accounting Policies

Accounts have been prepared under the historical cost convention. The significant account policies are as under:

- a. Fixed Assets: Fixed assets are stated at cost of acquisition inclusive of expenses relating to acquisition.
- b. Depreciation: Depreciation is provided on Assts acquired by the Association, out of its own funds by the WDV method at the following rates.

Building	-	2.5 %
Furniture, Fixtures & Equipments	-	15 %
Furnishing	-	10 %
- c. Investment: Investments acquired out of donation from members are valued at cost of acquisition.
- d. Inventory: Consumable items such as Laboratory chemicals and Wool Consumables, Color Software development and computer stationery and other consumables purchased during the year are treated as consumed during the year.
- e. Retirement Benefits
 - i. Provident fund contribution is funded with Regional Provident Fund Commissioner.
 - ii. Provision of Leave Salary:
Provision of leave salary is made by the Association on the basis of leave accumulated to the credit of employee at the year end.
 - iii. Liability for gratuity is provided on the basis of calculation made by the Association as per the payment of Gratuity Act, 1972 on Balance Sheet date. However, valuation has been estimated by the WRA at Rs. 36,82,324.00 The premium paid to LIC for the Group Gratuity Trust is shown as Deposits as Rs. 31,14,125.00.
- f. Foreign currency transaction: All foreign currency transaction during the year are converted at the standard rate as specified by Grant Sanctioning Authority.
- g. Grant-inAid :
 - 1) Grant-in-aid from Government authorities is accounted for on the basis of amount sanctioned.

- 2) Grant-in-aid for recurring expenses (WRA as well as specific projects) is adjusted as and when the expenses are incurred.
 - 3) Grant-in-aid of Capital nature on WRA account is transferred to capital fund on purchase of fixed assets.
- h) a) Interest on Fixed Deposits is accounted for on accrual basis and is shown under income
- b) Subscription and testing fees are accounted for on accrual basis and consultancy service charges and other income are accounted for on receipt basis and the same is first utilized for off setting the industry's contribution to meet capital expenses as well as revenue expenses and the balance has been transferred to R & D Replacement Fund.
- i) Corpus Fund :
- As per Ministry of Textiles O.M. No. 20/21/98/A & MMT dated 9th September, 1998 – Minutes of the 13th Meeting of the Co-ordination Council for Textile Research Association (TRA) held on 11th August, 1998. TRAs' are authorized to retain 100 % of the earned income by building a Corpus Fund from such retained income and utilize interest from such Corpus Fund to meet their need based requirement.
- j) Education Fund :
- Education fund has been created out of donation received for the purpose of enhancing the educational facilities at Training Centre and improving the level of training.
- k) Donation Corpus Fund :
- As per the decision taken in the 148th Governing Council Meeting, Donation Corpus fund has been created from the Donation received from Ex. Director, Shri M.K. Bardhan for giving reward to the best Paper published by WRA staff from the interest earned from the fund.
- l) All expenses are accounted for on accrual basis. Allocation of various recurring expenses to the various projects is done on the basis determined by the Management.
- 2 a) In the opinion of the Governing Council, subject to these note, current assets, loan and advances, including grant receivable, have value on realization in the ordinary course of activities of the Association, not less than at which these are stated in the Balance Sheet, except subscription and testing fees of previous years which may prove irrevocable for which no provision has been made. Provision for all known liabilities has been made in the accounts and the same is not in excess of what is reasonably necessary.
- b) During the year the management has carried out physical verification of fixed assets. However there are some discrepancies found with book record and the management is in the process of reconciling the same with book record.

3. No confirmations from creditors, deposits and in respect of loan and advances have been obtained. Confirmations in respect of debtors fixed deposits placed bank are being obtained. WRA is in the process of reconciliation of Goods and Service Tax (GST) balances as per books of accounts and as per GST returns filed.
4. The provision of subscription receivable from ordinary and Special associate members and the details of the installed capacity of the member mills on the basis of which calculation of subscription is made is as prepared by the management and is relied upon by the auditors without verification for want of relevant records.
5. The mutual adjustment of grant for capital to revenue and vice versa are made and not yet confirmed by the granting authorities for relevant years.
6. Investment in M/s Gujarat Sheep & Wool Development Corpn. Ltd. Rs. 11,56,400/- represent the contribution from industry through WRA in sheep breeding program of M/s Gusheel. Audited Accounts of Company are still awaited. In the absence of audited accounts, the net worth, diminution in value of investment can not be ascertained.
7. The apportionment of staff salaries, freight charges, raw material, traveling, spares and other overheads including testing charges between the Association and various projects is made as per the advice from the respective project-in-charge/Director in this regard.
8. Unspent Government Grant: As per release orders for unplanned or planned Government Grant, as one of conditions for releasing the grant, the unspent grant should be returned to the Government. No specific time period is mentioned for such refund. It is observed that the association has not returned such unspent grant of various projects.

It is explained by the Management that since the grant on various projects is due from the Government it can be adjusted provided permission from proper authorities is given.
9. Depreciation on fixed assets amounting to Rs.4,59,330/- for the current year (Previous year Rs.5,14,026/-) on WRA assets has been provided for and shown under depreciation reserve.
10. Impairment of Assets.
The carrying amount of assets, other than inventories is reviewed at each balance sheet date to assess whether there is any indication of impairment in respect of such asset or group of assts. If such indication exists, the recoverable amounts of such assets or group of assets is estimated. If such recoverable amount of asset or group of assets is less than it carrying amount, an impairment loss is reckoned by reducing the carrying amount to its recoverable amount. If there is an indication at the balance sheet date that the previously assessed impairment loss no longer exists, the recoverable amount is reassessed and the asset is reflected at the recoverable amount subject to a maximum of depreciable historical costs.
11. Fixed Assets: The Association has purchased assets worth Rs 3.30 Lakhs, Rs.22.63 Lakhs, Rs. 5.74 Lakhs and Rs. 661.50 lakhs as on 31.03.2020 out of the Projects funded by MOT, COE Sportech Project, MAVIM and other agencies respectively. These assets are being used by the Association to carry out the activities. However, no depreciation has been provided during the year as well as during the earlier years on such assets. The impact of depreciation is not quantified.

- 12 The Association has not identified the creditors having registration under Micro, Small and Medium Enterprises Act 2006 and the Small Scale Industries Act. Hence the disclosure as required is not made in the accounts.
- 13 During the year, excess expenditure incurred on project of Rs. 10,62,688/- has been shown as project cost incurred by WRA as expenditure of WRA.
14. Capital Commitments: Association has kept aside Rs.10,98,408/- for procurement of Equipments under MAVIM Project(letter of credit).
- 15 Assets Of Bikaner and Kullu purchased by WRA : As per the sanction letter received from Central Wool Research Board, Ministry of Textiles, the WRA is implementing agency for the "Upgradation and strengthening of existing Wool Testing Laboratory of CWDB at Bikaner and Kullu". Fixed assets are purchased for this project which are not recorded as "Fixed Assets" in the Books of WRA and the same is shown under amount spent for the project.
16. The society has obtained registration under ESIC Act. However, the Society has not provided in the books of accounts the amount to be payable towards ESIC and accordingly the impact is not quantified.
17. Previous year figures are re-grouped/re-arranged wherever necessary to make them comparable with those of current years.

SIGNATURES TO SCHEDULES 'A' TO 'L'

FOR J.P.J.ASSOCIATES LLP
 CHARTERED ACCOUNTANTS
 FIRM REG.NO. 113012 W/W100296

For & on behalf of the
 GOVERNING COUNCIL

Sd/-

VAIBHAV VAIDYA
 PARTNER
 MEM. NO. 157754

Sd/-

H.K. CHATTERJEE
 PRESIDENT

Sd/-

R.V. BHANDARKAR
 SR. ACCOUNTS OFFICER

Sd/-

K. K. MISRA
 CHIEF OPERATIONS OFFICER

PLACE : MUMBAI
 DATE : 15/12/2020