केन्द्रीय रेशम प्रौद्योगिकी अनुसंधान एवं प्रशिक्षण संस्थान, मैसूरु
CSRTI-Mysuru

वार्षिक प्रतिवेदन
Annual Report
2017-18

केन्द्रीय रेशम प्रौद्योगिकी अनुसंधान एवं प्रशिक्षण संस्थान
केंद्रीय रेशम बोर्ड, वस्त्र मंत्रालय, भारत सरकार, मैसूरु - 570 008
Central Sericultural Research and Training Institute
Central Silk Board, Ministry of Textiles, Government of India, Mysuru - 570 008

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Central Sericultural Research and Training Institute

(ISO 9001: 2015 Certified)

Patron
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Director
[illegible]

Editorial Committee
Dr. T. [illegible]
Dr. [illegible]
Dr. [illegible]
[illegible]

Assistance
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

Hindi Translation
[illegible]
[illegible]
[illegible]
[illegible]

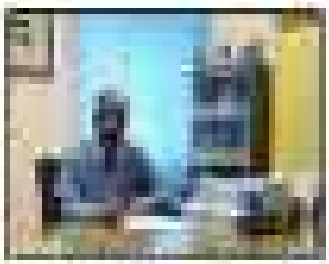
Book & Cover Design
[illegible]

Printing
[illegible]

Publication : Help
[illegible]
[illegible]
[illegible]

[redacted] [redacted] [redacted] [

प्रशासन



विभागाध्यक्ष मेघदूत एवं कुलपति अतिरिक्त कार्यभार अनुशासन समितिसमिति के अंतर्गत विद्यार्थियों के आचरण से संबंधित गंभीर मामलों तथा मेघदूत, मध्यप्रदेश जैसे अन्य राज्यों के अनुशासन व विभागीय दंडनीय कार्यवाहियों का कुल भाग है। मेघदूत विश्व की प्राचीनतम सभी स्थापनें तथा विद्यार्थियों की समस्याओं का समाधान करने हेतु सीजबे. संबंधित तथा नियम प्रशासन विभागों के मामलात में तीन विभिन्न जैसेविभागों का विभाग एवं प्रशासनिक सभी प्रकार के विभाग पाठ्य पुस्तकें हैं। वर्ष (२०१२-१५ के दौरान हिंदी अंतर्गत मेघदूत ने मेघदूत विभाग प्रशासन प्रशिक्षण की प्रशासनिक में मुद्रण एवं पाठ्य प्रकाशनों के कर्मचारियों को कर्मचारियों हेतु कंप्यूटर से संबंधित कुशलताओं का आयोजन किया है। प्रशासन में मेघदूत विभाग प्रशासन के विकास संबंधी विभिन्न विभाग तैयारियों व्यावसायिक प्रशासनिक विभाग, (प्रथम पाठ्यों) को सामाजिक स्तरों का सफलतापूर्वक पी विभाग है।

मेघदूत - प्रशासन विभाग के द्वारा दी गयी मुद्रक प्रशासनिकों में उच्च मेघदूत प्रशासनों का आयोजन। विभिन्न विभिन्नों में ८८ मेघदूत्वों की ही प्रथम प्रशासनकों को । विभाग विभिन्न मेघदूत्व जैसे प्रशासनों का मेघदूतों प्रतिभाग। मुद्रा विभाग एवं मुद्रण एवं रोगों प्रशिक्षणों मेघदूत प्रशासनिक के प्रशासनिकों (८८) तथा प्रशासन के लिए मेघदूत के स्तरों की पहचान तथा मुद्रा विभाग एवं से उच्च पीछे में प्रशासनिक मुलाकात। - एवं प्रशासनों सहित पाँच विभाग का प्रथम और मुद्रापत्र, (८८८८ मुद्रा मेघदूत प्रशासनों विभाग मेघदूत एवं की सीमा प्रथम प्रशासनों प्रशिक्षण। मुद्रा प्रशासन प्रशिक्षण प्रशासन, का विभाग। सीमा मेघदूतों की प्रशासन द्वारा उच्च मेघदूत प्रशासनिकों (की ८ सीमा का प्रशासनों ८ प्रशिक्षण ८ का प्रथम - विभाग सभी प्रशिक्षण है।

प्रशासनिक मेघदूत के मुद्रण में प्रशासनिक विभागीय विभाग मेघदूत सीमा प्रथम। मेघदूत की मुद्रक प्रशिक्षणों में प्रशिक्षित है। मुद्रा विभाग में प्रथम एवं मेघदूत प्रथम है। की ८८ (८ का प्रशिक्षणों, प्रथम मेघदूतप्रशासन विभागों के विभाग प्रथम प्रशिक्षण की प्रशासन प्रशिक्षित में प्रथम मेघदूत प्रशासन विभागों प्रथम मुद्रा विभागों विभाग प्रथम प्रशासनिक में ८८ विभाग मेघदूत, ८८-८८ सभी विभाग, प्रथम मेघदूत एवं मुद्रण मेघदूत सभी मुद्रा का लिए प्रशासन के प्रथम प्रशासनों की मेघदूत, प्रशिक्षित प्रथम मेघदूतों का प्रशासन प्रथम मुद्रा प्रशासनिक - मेघदूत, सीमा। (८८८ विभाग प्रशिक्षण सभी ८८, कि का प्रथम मेघदूत का विभाग प्रशासनिकों मेघदूतविभाग प्रशिक्षित प्रशासन (प्रथम एवं । प्रशिक्षण ८८ प्रथम प्रशिक्षण ८८ प्रथम और प्रशासन ८८ प्रथम। प्रशिक्षण ८८ प्रथम प्रशिक्षण ८८ प्रथम, प्रशिक्षित मुद्रापत्र मेघदूत प्रथम प्रशासनों मेघदूत विभाग मुद्रापत्रकारी (८८ कि का (८८८ मेघदूत, ८८-८८ विभाग, में प्रथम प्रशिक्षण प्रथम (८

उच्चतर न्यायिक कार्यालयों में विधि स्नातकों के प्रतिनियुक्ति-आधार संबंधी प्रावधान में संशोधन (२०१६) और अनुभव-निकष उच्चतर न्यायालय में रिक्तियों (२०१८) पुस्तिका पढ़ी जानी चाहिए। अधीनस्थ न्यायालयों का भार (२०२०) में ४८ (२०२०) तथा (२०२१) में ४८ न्यायालय और उच्चतर अनुभाग। मैं २०२१ में उच्चतर न्यायालय स्तर की अपनी पहली पोस्टिंग पर पहुँचा। तब मेरी नियुक्ति जिस न्यायालय में हुआ था, वहाँ लंबित मामलों की संख्या ३,४२० थी। पाँच वर्ष बाद, २०२६ में, यह संख्या ४,८१० हो चुकी थी। इस अवधि में न्यायालय में स्वीकृत पदों की संख्या में कोई वृद्धि नहीं हुई। यह केवल एक न्यायालय की कहानी नहीं है। यह उस व्यवस्था की कहानी है जिसमें न्यायिक अधिकारी हर वर्ष अधिक मुकदमों का निपटारा करते हैं, फिर भी बकाया बढ़ता जाता है।

इसके अनेक कारण हैं, किंतु उनमें से एक कारण ऐसा है जिसकी चर्चा बहुत कम होती है। वह है न्यायिक अधिकारियों की अत्यधिक प्रतिनियुक्ति। मैंने अपने कार्यकाल में देखा कि अनेक सक्षम और अनुभवी न्यायिक अधिकारी या तो विधि मंत्रालय में अनुभाग अधिकारी के रूप में भेज दिए गए, या विधायी विभाग में परामर्शदाता बनाए गए, या ऐसे आयोगों में भेज दिए गए जहाँ उनके न्यायिक कौशल का उपयोग बहुत सीमित था। इनमें से कई अधिकारी वर्षों बाद जब न्यायालय लौटे, तब तक उनकी पीठासीन अधिकारी की आदत छूट चुकी थी। उन्हें फिर से केस-प्रबंधन, समय-सीमा और निर्णय-लेखन की लय पकड़नी पड़ी।

प्रश्न यह नहीं है कि प्रतिनियुक्ति उचित है या अनुचित। प्रश्न यह है कि हम उसका उपयोग किस अनुपात में कर रहे हैं और उसके दीर्घकालिक परिणामों का कितना मूल्यांकन कर रहे हैं। यदि किसी उच्चतर न्यायालय में ४८ न्यायाधीश हैं और उनमें से ९ लगातार प्रतिनियुक्ति पर हैं, तो वह न्यायालय व्यवहार में ४८ नहीं, ३९ न्यायाधीशों का न्यायालय बन जाता है। उसकी कार्यक्षमता, उसकी पीठ-संरचना और उसके निर्णयों की गति—तीनों पर इसका सीधा प्रभाव पड़ता है।

इसके अलावा, प्रतिनियुक्ति से लौटने वाले अधिकारी के साथ एक और समस्या जुड़ जाती है। वह है उसकी वरिष्ठता। कई राज्यों में प्रतिनियुक्ति की अवधि को न्यायिक सेवा की वरिष्ठता में पूरा नहीं गिना जाता, या उसे आंशिक रूप से ही जोड़ा जाता है। परिणामस्वरूप, जो अधिकारी दो या तीन वर्ष बाहर रहकर लौटता है, वह अपने बैच के उन साथियों से पीछे छूट जाता है जो उसी समय न्यायालय में बने रहे। यह अन्याय केवल व्यक्तिगत नहीं है; यह पूरे संवर्ग के मनोबल को प्रभावित करता है। जब अनुभवी अधिकारी यह देखते हैं कि बाहर जाने का दंड भीतर रहने वालों से अधिक है, तो वे प्रतिनियुक्ति के प्रस्ताव को अस्वीकार करने लगते हैं, और यह चयन की गुणवत्ता को भी प्रभावित करता है।

इस समस्या का समाधान केवल संख्या बढ़ाने में नहीं है। हमें यह भी देखना होगा कि न्यायालय के भीतर प्रशासनिक कार्यों का बोझ कैसे कम किया जा सकता है। कई न्यायालयों में ऐसे कार्य, जो न्यायिक अधिकारी करते हैं, वे वास्तव में प्रशासनिक कर्मचारियों द्वारा किए जा सकते हैं। यदि प्रतिनियुक्ति के बदले न्यायालय के भीतर ही प्रशासनिक सहायता को सुदृढ़ किया जाए, तो कई अधिकारी बिना न्यायालय छोड़े अपनी क्षमता का पूरा उपयोग कर सकेंगे। यह विकल्प अधिक टिकाऊ है, और लंबे समय में अधिक प्रभावी भी।

FOREWORD

CSRTI-Mysuru has the mandate to meet the R&D needs of southern states and other states like Maharashtra and Madhya Pradesh coordinating with all the stakeholders in providing solutions through implementation of time-bound research activities. The region-specific technology discovery and interventions are made through states, R&D, and also for addressing stakeholders' issues for achieving enhanced productivity in mulberry sericulture since long. CSRTI-Mysuru during 2017-2018 has addressed many a challenge with regard to productivity improvement and augmenting entrepreneurship potential of sericulture. The institution provided much needed impetus in implementing standard technology based practices for the improvement of mulberry sericulture industry.

The salient achievements in mulberry productivity improvement include authorization of improved mulberry variety, G-4 for irrigated conditions with yield potential of 63 MT/ha/year and mass authorization of specific mulberry genotypes, identification of several mulberry accessions/hybrids resistant to root rot and root knot [illegible] and six hybrids [illegible] horizontal [illegible] field evaluation of [illegible] with remarkable rate of revival of root rot infected plants, issue of 10000 soil health cards, development of [illegible] (organic and inorganic nutrient based) for improving mulberry leaf and cocoon yield, popularization of improved mulberry varieties [illegible] by establishing the seed gardens.

Silkworm improvement programmes aimed to enhance productivity are major activities of CSRTI Mysuru. The significant strides in this direction include authorization of B11 x CL5, bivoltine double hybrid for sub-optimal conditions developed by utilizing [illegible] with promising yield potential (68 kg/100 dfls; [illegible]) identification of [illegible] hybrid combinations suitable rearing under high temperature and high humidity regions; development of new bivoltine double hybrid, [illegible] with a cocoon yield of [illegible] utilizing Bulgarian genetic resources [illegible] productive [illegible] (CSR50 x CSR51 and CSR50 x CSR18 [illegible]) [illegible] for commercial exploitation with improved productivity and silk quality [illegible]. The other milestones include stringent disease monitoring of basic seed and [illegible] to contain the incidence of [illegible] diseases and evaluation of sex pheromone based trapping methods to control the [illegible] of [illegible] and mulberry leaf roller.

A remarkable quantity of [illegible] MT bivoltine raw silk was produced through [illegible] cluster [illegible] across seven states utilizing [illegible] dfls and [illegible] crops with an average cocoon yield of [illegible] kg/100 dfls. Seri Model Village (SMV) programmes also recorded [illegible] MT bivoltine raw silk production by adopting specified technologies [illegible] with an improved cocoon yield of [illegible]. The contribution of CSRTI-Mysuru in bivoltine silk production in the

country is quite impressive as both [illegible] produced in cluster and non-cluster areas. The transfer of technology programmes driven in a mission mode approach resulted in significant improvement in improving productivity and economic returns to the stakeholders. The implementation of Cluster Promotion Programme (CPP) in north Karnataka improved the average cocoon yield by 27% and increased raw silk production up to a record 20%. The technology adoption levels increased (from 22.00% to 42.40%) by 44.20% and registered significant reduction in yield gap as a conclusion. The yield gap reduction in Andhra Pradesh and Telangana states too was significant (to 13% from 29.57%) thereby resulting in achieving higher cocoon yields. Similarly, raw silk production in Tamil Nadu registered significant improvement due to enhanced technology adoption (from 70 to 80%) resulting in productivity improvement from 68.73 kg (2015-16) to 70 kg/100 dfls (2017-18). Tamil Nadu witnessed record raw silk production (from 808 MT in 2015-16 to 1827 MT in 2017-18). Sericulture income has registered highest growth due to the implementation of CPP in different states guaranteeing improved production, productivity, socio-economic condition through effective co-ordination of CSB and DoS.

CSRTI-Mysuru always played active role in promoting the Entrepreneurship Development Programmes and during this year, [illegible] were supplied to beneficiaries along with regular programmes such as modern nursery and chawki rearing centres. Several new products which were developed during the previous years were popularized through EDPs and TOT programmes (1030 for 1.22 lakh farmers) for the benefit of stakeholders. Capacity building programmes [illegible] beneficiaries through [illegible] and specific programmes and sericulture resource centres.

As the premier sericulture R&D institute in India, CSRTI-Mysuru [illegible] quality standards for raw silk production across the silk value chain [illegible]. The Institute is committed to empower all the stakeholders in producing Indian Silk through demonstrations R&D projects (national and international collaborations), appropriate technology interventions and developmental programmes for improving raw silk production.

CSRTI-Mysuru endeavours to provide necessary technical guidance to sericulture farmers in reaching the international quality silk in the near future.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]
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न्यायालयों की संख्या

हिमाचल जिला न्यायालय अनुसूचित क्षेत्रों में स्थित न्यायालय परिसरों, उनकी न्यायिक क्षमता और न्यायाधीशों की संख्या के संबंध में एक व्यापक विश्लेषण प्रस्तुत करता है। यह विश्लेषण न्यायालयों की उपलब्धता, न्यायाधीशों के कार्यभार और न्याय तक पहुंच के संदर्भ में महत्वपूर्ण अंतर्दृष्टि प्रदान करता है। यह जनजातीय बहुल जिलों, जैसे किन्नौर, लाहौल-स्पीति, चंबा और सिरमौर, में न्यायिक संरचना की पर्याप्तता का मूल्यांकन करने का प्रयास करता है। अनुसूचित क्षेत्रों में स्थित न्यायालयों की संख्या और उनकी भौगोलिक पहुंच का विश्लेषण करने पर यह स्पष्ट होता है कि कई दूरदराज के क्षेत्रों में न्यायालयों की उपलब्धता सीमित है, जिससे न्याय प्राप्त करने में महत्वपूर्ण बाधाएं उत्पन्न होती हैं। इसके अतिरिक्त, न्यायालयों में लंबित मामलों की संख्या और उनके निपटान की दर का भी विश्लेषण किया गया है, जो न्याय प्रणाली की दक्षता और प्रभावशीलता को दर्शाता है। यह विश्लेषण न्यायालयों के बुनियादी ढांचे, जैसे कोर्ट रूम, प्रतीक्षा क्षेत्र, और डिजिटल सुविधाओं की उपलब्धता का भी मूल्यांकन करता है, जो न्याय तक पहुंच को प्रभावित करने वाले महत्वपूर्ण कारक हैं। इसके अलावा, अनुसूचित क्षेत्रों में न्यायालयों की स्थापना और उनके संचालन से संबंधित चुनौतियों, जैसे कि दुर्गम भौगोलिक परिस्थितियां, संचार के साधनों की कमी, और स्थानीय भाषा की समस्या, का भी विश्लेषण किया गया है। यह विश्लेषण इन चुनौतियों को दूर करने के लिए आवश्यक उपायों, जैसे कि मोबाइल न्यायालयों की स्थापना, वीडियो कॉन्फ्रेंसिंग सुविधाओं का विस्तार, और स्थानीय भाषा में कानूनी सहायता प्रदान करने की व्यवस्था, पर भी प्रकाश डालता है। कुल मिलाकर, यह विश्लेषण अनुसूचित क्षेत्रों में न्याय तक पहुंच को बेहतर बनाने के लिए एक व्यापक और व्यावहारिक दृष्टिकोण प्रस्तुत करता है, जो नीति निर्माताओं और न्यायिक अधिकारियों के लिए अत्यंत उपयोगी हो सकता है।

विधिक सहायता (रोस्टर)

उपलब्ध आंकड़ों के विश्लेषण से यह स्पष्ट होता है कि अनुसूचित क्षेत्रों में विधिक सहायता की उपलब्धता और उसकी गुणवत्ता में महत्वपूर्ण असमानताएं हैं। हालांकि जिला न्यायालय परिसरों में विधिक सहायता केंद्रों की स्थापना की गई है, लेकिन उनकी कार्यप्रणाली और पहुंच में कई चुनौतियां हैं। विधिक सहायता केंद्रों के कर्मचारियों, जैसे कि पैनल अधिवक्ताओं और पैरालीगल स्वयंसेवकों, के प्रशिक्षण और संवेदनशीलता की कमी भी एक महत्वपूर्ण मुद्दा है। इसके अलावा, इन केंद्रों के बारे में जागरूकता की कमी भी एक बड़ी बाधा है, जिसके कारण कई जरूरतमंद लोग इन सेवाओं का लाभ नहीं उठा पाते हैं। इन चुनौतियों को दूर करने के लिए, विधिक सहायता केंद्रों के कर्मचारियों के लिए नियमित प्रशिक्षण कार्यक्रम आयोजित किए जाने चाहिए, जिसमें उन्हें अनुसूचित क्षेत्रों की विशेष आवश्यकताओं और संवेदनशीलता के बारे में जानकारी दी जाए। इसके अतिरिक्त, इन केंद्रों के बारे में जागरूकता बढ़ाने के लिए व्यापक अभियान चलाए जाने चाहिए, जिसमें स्थानीय भाषा में सामग्री का उपयोग किया जाए। इसके अलावा, विधिक सहायता केंद्रों को और अधिक सुलभ बनाने के लिए, उन्हें दूरदराज के क्षेत्रों में मोबाइल वैन या अस्थायी शिविरों के माध्यम से भी सेवाएं प्रदान करनी चाहिए। इन उपायों से अनुसूचित क्षेत्रों में विधिक सहायता की गुणवत्ता और पहुंच में महत्वपूर्ण सुधार हो सकता है, जिससे न्याय तक पहुंच में असमानता को कम किया जा सकता है।

प्रशिक्षण केंद्र

इस अध्याय में जनजातीय क्षेत्रों में न्याय तक पहुंच की चुनौतियों का विश्लेषण किया गया है, जिसमें भौगोलिक बाधाएं, भाषा संबंधी समस्याएं, और सांस्कृतिक अंतर प्रमुख हैं। इन चुनौतियों को दूर करने के लिए, न्यायाधीशों और अधिवक्ताओं के लिए विशेष प्रशिक्षण कार्यक्रमों की आवश्यकता पर बल दिया गया है। इन प्रशिक्षण कार्यक्रमों में जनजातीय कानूनों, रीति-रिवाजों और उनकी विशेष आवश्यकताओं को शामिल किया जाना चाहिए। इसके अतिरिक्त, न्यायालयों में स्थानीय भाषा के दुभाषियों की नियुक्ति और मोबाइल न्यायालयों की स्थापना जैसे उपायों पर भी विचार किया गया है, ताकि न्याय को उनके दरवाजे तक पहुंचाया जा सके। यह अध्याय इस बात पर जोर देता है कि इन उपायों को लागू करने से न केवल न्याय तक पहुंच में सुधार होगा, बल्कि जनजातीय समुदायों का न्याय प्रणाली में विश्वास भी बढ़ेगा, जो एक अधिक समावेशी और न्यायपूर्ण समाज के निर्माण में सहायक होगा।

के द्वारा अथवा निदेशक द्वारा प्राधिकृत के द्वारा हस्ताक्षरित किया जाएगा। ऐसे सभी दस्तावेज़ जिनमें कंपनी की मुहर लगाई जानी है, उन पर कंपनी के दो निदेशकों के हस्ताक्षर अनिवार्य होंगे।

अधिकार सूचियां

- रेलवे एडवांस सिस्टम के उचित अनुरक्षण सुनिश्चित करने हेतु मुख्यालय स्तर पर एक सुपरवाइजर, सहायक और टेक्निशियन।
- डिवीजनों में कम्प्यूटर पर बिलिंग का प्रशिक्षण देने हेतु एक ट्रेनर।
- कोयले की ढुलाई के लिए रेलवे को वैगन उपलब्ध कराने हेतु एक कोयला नियंत्रक।
- खेप उपलब्धता के अनिश्चित एवं विलंब संबंधी मुद्दों को समाधान हेतु लाने हेतु एक ग्राहक संपर्क अधिकारी।
- संयंत्र प्रबंधक, रेलवे उपयोग विभाग और अन्य कार्यकारी के साथ मासिक कार्यालीन समीक्षा के लिए भी है। यह भी संयंत्र में व्यवसायिक शिकायतें व्यक्तिगत सुविधा उपलब्धियों पर होने के कारण इस उपयोगी व्यवसायिक विभाग द्वारा सुनिश्चित करना है।
- संयंत्रों के लिए कुशल रेलवे के व्यवसाय के लिए ; संयंत्र विभाग ; व्यवसाय संबंधी सभी को कुशलतापूर्वक सुनिश्चित किया गया है।
- रेल सुरक्षा विभाग के साथियों संयंत्रों की सुरक्षा संबंधी विषय उपलब्ध कराना है।
- कुशलतापूर्वक विभाग (1) संयंत्र सुरक्षा (2) विशेषज्ञ सलाहकारों का कार्य संयंत्र, (3) संयंत्र परिचालन (4) संयंत्र और सलाहकारों के साथियों द्वारा संयंत्र संयंत्रों द्वारा संयंत्र विभाग।

ABOUT ICAR-IIHR

The Central Horticultural Research & Training Institute (CHRTI) Bangalore was established under the aegis of Central Silk Board, Ministry of Textiles, Govt. of India. The Institute started functioning at Hesaraghatta in the year 1965 with the objective of research related to diseases, pests and pest control in mulberry. In the year 1966, with the inclusion of Bivoltine component, the institute was renamed as Sericultural Research & Training Institute (SRTI). Mysore in the year 1980. The institute has completed 50 years of dedicated service for the development of sericultural industry in the country. The institute is accredited with ISO 9001: 2008 certification 2010, as a testimony of excellence in quality management in R&D, training and service support to sericulture industry.

The institute has the distinction of being one-stop institution for sericulture research and excellence with all modern facilities and infrastructure including environmental research laboratory (ERP) has made institute as the leading R&D institution for quality research and services on bivoltine sericulture in the country and abroad and is now recognized as center for higher learning and advanced training. CSRTI caters to the need of southern states of India by sericulture in karnataka, andhra pradesh, tamil nadu, telangana, kerala, maharashtra and madhya pradesh. To date CSRTI commercialized 60,000 persons including 600 foreign nationals in various aspects of sericulture technology. The institute besides conducting research, training and extension also runs silk reeling unit and silkworm seed production unit.

Mandate

To enhance the competitiveness of Indian sericulture sector and contribute to the rural development

Activities	Objectives
To undertake research on economic improvement of mulberry silkworm and silkworm seed production and transfer of technology to the stakeholders	• Research on mulberry sericulture, silkworm rearing and silkworm seed production • Development of technologies for mulberry and silkworm seed production • Commercialization of developed technologies • Human resource development • Linkages with national and international organizations through training and research • Training • Strengthening of infrastructure facilities to meet the requirements of research and training • Dissemination of research results • Collaborative research and training • Publication of R&D activities and dissemination of information • Documentation, research communication and maintenance of library and museum

Organizational Setup

The Institute is the largest and most diversified institution engaged in sericulture R&D in the country. It consists of various disciplines of mulberry sericulture, silkworm seed production, entomology and pathology. The Institute is also responsible for the development of sericulture in the states of Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Kerala, Maharashtra and Madhya Pradesh. R&D activities and technology development are carried out in four major divisions viz., Plant Protection & Pathology, Silkworm Production & Extension, Biotechnology and Training. CSRTI Mysore also utilizes the services of several state technical and administrative staff in undertaking the mandated activities. The Director monitors the progress of R&D activities of institute and related units with the support of Planning, Monitoring, Coordination and Evaluation cell. CSRTI Mysore regularly publishes books, bulletins, leaflets and technical newsletters. Over 11 books have been brought out so far in addition to large number

of technical and research papers published in leading national and international journals. The institute has the distinction of publishing Indian Journal of Innovation, a biannual journal of international repute and standard, disseminating the latest knowledge to the technical persons.

Extension Activities

CIPET:IDEMI has a three tier system of extension activities. Regional Technical Facilities (RTFs), Technical Extension Centres (TEC) and Skill Centres (SC) for facilitating validation and translation of laboratory technologies to the field. RTFs are located in major manufacturing areas of southern states serving as regional specific validation and applied research, Technology Clubs and also conducts to suit the regional requirements besides providing training to farmers and graduate level extension staff. TECs and outreaches share the major responsibility of technology transfer to the beneficiaries and also provide technological inputs and support services. CIPET: Skill Centres coordinates Skill Initiative (Human Resource Development) and Govt. Skill activities for the promotion of vocational competence in southern states along with implementation and monitoring activities. Effective transfer of technologies is undertaken in close coordination with individual personnel of local entrepreneurial communities.

Training Centres

CIPET:IDEMI is recognized as flagship centre for generation of trained human resource in various activities at national and international level. The institute is affiliated to University of Madras for conducting courses including Ph.D. programmes. CIPET:IDEMI is the nodal Centre as a premier institute assisted by DPIIT, GOI and Ministry of Textiles, GoI, of India for skill assessment and technological empowerment of the rural and semi-urban workforce and women entrepreneurs, besides catering to the HRD needs of the state departments of corporations in the country. CIPET:IDEMI also conducts consultancy training programmes for manufacturing industry/personnel through various organizations such as ITIs and Institutes of Technical Education (ITEs), etc. training hall houses, audio-visual classrooms and the programmes are managed by qualified faculty. The practical training are accommodated about 110 persons.

Infrastructural Facilities

- Well equipped laboratories, workshops and computer facilities to serve all technical needs of
- Large scale training facilities for technology validation and Common Testing
- Hostel (Guest House) service (AC) to premises (Inclusive of AC)
- Engineering Drawing and CAD/CAM facilities to support designing, development and fabrication of machine components
- Video conferencing facility @ CIPET:IDEMI, Guindy for better communication and efficient transfer of technologies to effective industries with multimedia CDRs and other presentations
- Computer center provides internet connectivity to all concerned through wifi with security check support
- Multimedia Centre (Video Audio CD, DVD) providing audio-visual services
- Library consists of 2,000 books, 1500 bound volumes of scientific journals, 30 journals, subscriptions, 100 Thesis/PhD, Technical reports and CD-ROM Databases etc.

फसलवार गेहूं

2017 - 18 की मुख्य उपलब्धियां

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विवाहादि समारोह सुधार, व्यवहार एवं सुझाव

- व्यवहार पालीय दर्शनिक मनोविज्ञान समाजों में उस दृष्टान्त सिद्धान्तों में कार्यात्मक संबंध वाले विवाहस्थ (CT) व (CF) की उपयोगिता मालिक के अवसर पर विवाह समारोह समाप्त अनुमोदित होनेवाले, किन्तु कुछ अधिकृत विवाह नाम। समारोह का संगठन आवश्यक उपयुक्तताओं तथा (CF) संबंधी निर्देश, औसतन औसत उपयोग ४८.२ कि.ग्रा. तथा पेशेवर ३२ ± ५ ग्रा. अन्य समारोह विवाह अवधि तथा से अधिक की उपयोगी, जबकि समारोह का व्यवस्थापकीय निर्णय।
- समारोह-स्थल संबंधी के आधार पर विभागीय (CF) ± (CF) उपयोगियों हिन्दुओं कि समारोह में पार्टी के स्थलों में सहित्य क्षेत्र परिवहन में ५०,००० पेशेवर। (५ विवाहस्थ १२ विवाह, ८,००० पेशेवर की उपयोगी समारोह पार्टी।
- कार्यालय विवाह प्रतिनिधि समारोह-समारोह के विवाह के लिए नियमानुसार समारोह प्रतिनिधियों। कौशलपूर्वक एवं दीर्घकालीनसंबंधी, समितियों हिन्दी समारोह-व्यवस्थापक व्यवस्थापक प्रतिनिधि ५ वर्ष प्रतिनिधियोंसंबंधी ५८ तथा ६ वर्ष प्रतिनिधि, प्रतिनिधि ६ तथा ७ तथा एवं उपयोगिता ६ तथा तथा ११। प्रतिनिधि ७ वर्ष ४५ दिवस १ ७५ हुए) का समारोह विवाह गया।
- कौशलपूर्वक और व्यवस्थापक के कार्य नियमानुसार के आधार पर उपयोगिता हिन्दी एवं ३ व्यवस्था। नियमानुसार ३५ तथा ८ नियमानुसार ३५ तथा और वे व्यवस्था (नियमानुसार ३५ एवं ३५, ४ तथा) नियमानुसार १६ तथा नियमानुसार ३५ तथा, और समारोह-व्यवस्थापक कौशलपूर्वक कौशलपूर्वक उपयोगिता और उपयोगिता कार्यालय समारोह-व्यवस्थापक संबंधित के कार्य से पार्टी।
- उत्तम व्यवस्थापक एवं अधिक उपयोग के लिए अनुमोदित समारोह विवाह नियमानुसार समारोह की व्यवस्था हेतु ७५ समारोह संबंधित ७ वर्ष नियमानुसार का व्यवस्था अनुसार पार्टी पेशेवर, ७५ पेशेवर, अधिक कार्य ७ से विवाह गया। यदि २०२५ की पार्टी के पेशेवर से मूल्यांकन करने हेतु ६ उत्तम समारोह का व्यवस्था विवाह गया।
- कार्यालय, ७५ पेशेवर, व्यवस्थापक और अधिक कार्य में ७५ ± ७ पेशेवर ११ को एवं ७५ उपयोग हिन्दी उपयोग करना है। उपयोग व्यवस्था गया : ५,२५,००० व्यवस्था विवाह : ३,८५,५०० एवं पेशेवर संबंधित व्यवस्थापक १५। कि.ग्रा. ४ ग्रा० पेशेवर। ७ ग्रा० व्यवस्था पेशेवर (१५ दिवसीय) नियमानुसार विवाह गया।
- पेशेवर - मूल्यांकन में नियमानुसार ७५० व्यवस्थापक हिन्दुओं समारोह संबंधित व्यवस्थापकीय ६ ± ७ व्यवस्थापकीय ६ का मूल्यांकन ७५० का ११ ७५० पेशेवर ७५० ७५० मूल्यांकन। विवाह गया और १५ ग्रा० कि.ग्रा. ४ ग्रा० पेशेवर की औसतन संबंधित उपयोग उपयोगी संबंधित।
- समारोह के आनुपातिक संबंधों का मूल्यांकन करने हेतु पेशेवरित्व का हिन्दुओं विवाहस्थ संबंधित। विवाहों उपयोग व्यवस्था ७५ ± ७ ग्रा० पेशेवर, संबंधित उपयोग ११० पेशेवर हैं, जो आयु के विवाह संबंधित और हिन्दू व्यवस्था हेतु अनुमोदित गया गया।
- उत्तम व्यवस्थापक और नियमित व्यवस्थापक हेतु ७५० व्यवस्था विवाह मूल्यांकन में उत्तम पेशेवर संबंधी हेतु व्यवस्था ७५० ७५०,००० पेशेवर का संबंधित विवाह गया। समारोह विवाह मूल्यांकन संबंधित और उत्तम व्यवस्थापक ७५ पेशेवर व्यवस्था ७५ की उपयोगिता संबंधित है।
- कार्यालयिक मूल्यांकन के लिए यह उत्तम उपयोग व्यवस्था को विवाहित करने हेतु उत्तम उपयोगकर्ता एवं नियमित मूल्यांकन संबंधित व्यवस्थापक संबंधित विवाह गया। व्यवस्थापकीय ७५ ± ७५० के उत्तम व्यवस्थापकीय ६ ± ७ ग्रा० ७५ की अधिक व्यवस्थापक ७५० ७५० विवाहों ७५० मूल्यांकन पेशेवर ७५० विवाह और विवाह की संबंधित ७५ ७५ है।

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आर्थिक स्थिति रु. ८,३३,८५ लाख पुगेको छ । उक्त वार्षिक उपलब्ध क्षमता र्तफ ७७२ वटा अनुमतिपत्रमा रहेको उपलब्ध क्षमतामा थप ५८,८१५ मेगावाट वृद्धि हुने अनुमान गरिएको छ । यसबाट ३३ केभी. सम्म थप ७,५०० सर्किट कि.मी. लाइन थपिने छ ।

- अन्य पक्षमा जस्तै नेपालमा पनि सेयरधनीले लगानी गरेको कम्पनीको आर्थिक वर्ष समाप्त भएपछि वार्षिक साधारण सभा गर्नुपर्ने व्यवस्था छ । यसै अनुरूप आगामी ११ औं वार्षिक साधारण सभा हुने भएको छ । यसपटक सभाको मुख्य एजेन्डा भनेको कम्पनीको आर्थिक वर्ष २०८१/८२ को वार्षिक प्रतिवेदन पारित गर्ने हो । यसका साथै कम्पनीको लेखापरीक्षण समिति, कर्मचारी सेवा सुविधा समिति, जोखिम व्यवस्थापन समिति, सुशासन समिति, आन्तरिक नियन्त्रण समिति, सम्पत्ति शुद्धीकरण निवारण समिति, कार्यालय सञ्चालन समिति, आयोजना अनुगमन समिति, आयोजना लेखापरीक्षण समिति, आयोजना व्यवस्थापन समिति, आयोजना कार्यान्वयन समिति, आयोजना सञ्चालन समिति, आयोजना मर्मत समिति, आयोजना सुरक्षा समिति, आयोजना वातावरण समिति, आयोजना सामाजिक समिति, आयोजना जोखिम समिति, आयोजना गुणस्तर समिति, आयोजना खरिद समिति, आयोजना भुक्तानी समिति, आयोजना लेखा समिति, आयोजना प्रतिवेदन समिति, आयोजना अभिलेख समिति, आयोजना सूचना समिति, आयोजना प्रचार समिति, आयोजना विज्ञापन समिति, आयोजना प्रकाशन समिति, आयोजना वितरण समिति, आयोजना बिक्री

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HIGHLIGHTS OF RESEARCH, TRAINING AND EXTENSION ACTIVITIES

Highlights of Achievements

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Mulberry Crop Improvement, Production and Protection

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Silkworm Crop Improvement, Production and Protection

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- Multi-year on-farm trials of a highly productive duckbill variety hybrid (Hybrid and Genetic Variety) from Andhra Pradesh recorded an average season yield of 1412 kg/100 dfs (1.88 lakh dfs) 732 farmers in Karnataka, Andhra Pradesh, Telangana and Tamil Nadu.
- ADBS-1 (ADBS), a highly productive duckbill double hybrid combination developed at Duckbill Research Station, Andhra Pradesh (DRSAP) was released and notified in 2019 for cultivation in Andhra Pradesh, Telangana and Karnataka. The hybrid recorded an average season yield of 1578 kg/100 dfs in 2019-20 and 1612 kg/100 dfs in 2020-21 in 1,200 farmers' fields in Andhra Pradesh, Telangana and Karnataka.
- A new duckbill double hybrid (DH) with high silk content (24%) with 1700 average yield/100 dfs (Andhra Pradesh) and 1600 dfs (Karnataka) was found most promising for further testing and release.
- Two improved duckbill strains (Filament length, Silk Recovery) were identified for improved productivity and silk quality, developing mutagenized populations. Trait wise marker testing and hybrid evaluation is being undertaken.
- A multi-purpose duckbill with improved productivity and silk quality was developed by crossing two DB hybrid commercial combinations (DH-1 x DH-2 and DH-3 x DH-4) and the hybrid were most promising DH-3 with a yield potential of 1650 kg/100 dfs and DH-4 with 1700 kg/100 dfs.
- Multi-trait duckbill hybrid (MTH-1) with high productivity (1600 kg/100 dfs) and silk quality (24% silk content) was developed and released in 2019 for cultivation in Andhra Pradesh, Telangana and Karnataka. The hybrid recorded an average season yield of 1580 kg/100 dfs (1612 dfs) in 1,200 farmers' fields in Andhra Pradesh, Telangana and Karnataka.
- Duckbill Grain Technology for the detection of Pebrine disease was validated with three seed stock companies (M/s [illegible], M/s [illegible] and M/s [illegible]). DGT detected infected eggs from apparently healthy looking batches. Duckbill Grain Technology can detect low level of pebrine infections even under developmental stages. The technology is user friendly and can be used in the DFO level and commercial units.
- MODELS (MOD) was developed for forecasting disease in pebrine. The forecasting of the pebrine incidence (MoDs) in pebrine-prone areas have been developed and validated in 2020. Based on the forecasting models are being designed based on simple meteorological parameters (MoDs).
- Mobile app for pebrine diagnosis with support to pebrine identification and disease management practices was developed and validated in 2020. The app is available in Google Play Store and can be downloaded by the farmers and other stakeholders. The app provides support information and allows to upload images of pebrine infected duckbill larvae for diagnosis.

Transfer of Technology

- A record quantity of 2500 MT duckbill cocoon was purchased through Duckbill Cocoon Purchase Centres (DCPCs) in Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana, Maharashtra and Madhya Pradesh (2019-20) and the remaining 1,700 MT were sold in the open market at an average season yield of 1,700 kg/100 dfs.
- 12,000 MT duckbill cocoon was purchased by duckbill Cocoon Purchase Centres under PPP Mode (Public Private Partnership) in Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Madhya Pradesh and Maharashtra (Jan 2020-March) an investment increase over the previous year (2019-20).
- 1,200 MT of duckbill cocoon were purchased from Karnataka through 1000 cocoon procurement programmes.
- Andhra Pradesh, a recently sericulture progressive sericulture technologies was introduced through all India Radio, Vijayawada (2017 Nov 2017).
- Implementation of DPP in North Karnataka (2019-2021) resulted in the shift from 88 to Duckbill (DB) hybrid cocoons (from Andhra to DPP-4+2 DB hybrid) introduced in DPP. The average season yield (kg/100 dfs) increased by 12% and total raw silk production increased by 18%. The technology adoption increased from 2019 to 2020. With regard to socio-economic impact, the rural economy increased by 14.6% (daily wage) and 15% (daily wage) and 15% annual income increased by 21.3% due to higher production, productivity and market access contributed improvement in overall livelihood.

[illegible] sericulture farmers. [illegible]

- The impact of CDP in Andhra Pradesh and Telangana [illegible]
- Implementation of CDP [illegible]
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Capacity building & training

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राजभाषा कार्यान्वयन संबंधी गतिविधियाँ

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- **हिंदी पत्राचार** [illegible]
- **राजभाषा कार्यान्वयन समिति की बैठकों का आयोजन** [illegible]
- **हिंदी कार्यशालाओं का आयोजन** [illegible]
- **हिंदी शिक्षण-प्रशिक्षण योजना का कार्यान्वयन** [illegible]
- **हिंदी पखवाड़ा** [illegible]

- **राजभाषा नियम 1976 के अंतर्गत कार्यालयों को अधिसूचित किया जाना** : [illegible]
- **हिंदी प्रतियोगिताओं का आयोजन** : [illegible]
- **कम्प्यूटर पर हिंदी में कार्य** : [illegible]
- **निरीक्षण** : [illegible]

ACTIVITIES REGARDING OFFICIAL LANGUAGE IMPLEMENTATION

During [illegible] Official language policy has been implemented [illegible] Central [illegible] Research and Training Institute, [illegible] compliance of Official language [illegible] section 3(3) of Official language Act, Official language Rule [illegible] has been ensured. The progress in implementation of Hindi was reviewed by conducting quarterly meeting of the Official language Implementation Committee. According to the prescribed target, [illegible] Hindi noting and drafting.

Organisation of Hindi workshops, Hindi day, Hindi fortnight, Publication of Hindi magazine [illegible] and Hindi noting/drafting incentive scheme [illegible] implemented.

[illegible] taken on various items of official language implementation during the period are as follows:

- **Compliance of Section 3(3)** : All the documents specified coming under section 3(3) of the Official Language Act 1963 have been issued in bilingual.
- **Compliance of Rule 11** : All types of forms, letter heads, rubber stamps, sign boards, name plates, [illegible] cards, visiting cards etc. are bilingual. [illegible]
- **Hindi Correspondence** : During the year the prescribed targets for correspondence of Hindi were achieved by sending [illegible] letters in Hindi to Central Govt. Offices of [illegible] regions respectively and [illegible]
- **Organization of meetings of the Official Language Implementation Committee** : The progress of implementation of the Official language was reviewed from time to time by conducting [illegible] meeting in every quarter. During the year [illegible] Official Language Implementation Committee meetings were organised on [illegible] and follow up action was taken on the decisions of the meeting.
- **Organization of Hindi workshops** : Hindi workshop was organised in every quarter for the officials of the institute to provide information [illegible] use of Hindi in the official work [illegible] official language policy. During the year [illegible] officers and [illegible] staff have been trained in Hindi workshops organised on [illegible] separately for technical and administrative officials and officers.
- **Implementation of noting/drafting incentive scheme** : To encourage the officers and staff of the institute and its subordinate offices to do their work originally in Hindi, noting/drafting incentive scheme was implemented in which cash awards are given for writing prescribed words in Hindi. During the year cash awards were given to [illegible] officials of the institute and of subordinate offices.
- **Publications in Hindi** : Annual report of the institute was published partly in bilingual. Half yearly Hindi magazine [illegible] was released.
- **Notification of the subordinate offices under 10(4) of the Official Language rules** : [illegible]

- Organization of Hindi competitions : Official Language Fortnight was organized from [illegible] to [illegible] during which [illegible] different Hindi competitions viz. [illegible] competitions were organized. The winners of the competitions were awarded with [illegible]

- [illegible] in Hindi [illegible] Hindi, English and other Indian languages.

- Inspection : [illegible] Official Language Policy [illegible]

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Fig. 1. Overview of the study area and sample collection. (a) Location of the study area in Bangladesh. (b) Sampling sites within the study area. (c) Collected soil samples. (d) Collected water samples.

The area covers 63 high evaporation ranges including ranges and by eastern regions as well and Gazipur (2) and Dhaka (which) (Fig. 1). It is characterized by a tropical monsoon climate with distinct wet and dry seasons. Agriculture is the dominant land use, supporting diverse crops such as rice, vegetables, and fruits. The region's soils are predominantly alluvial, with varying textures ranging from sandy loam to clay loam, which can influence water retention and nutrient availability.

Soil sample collection and preparation

Soil samples were collected from 30 different locations across the study area, ensuring a representative distribution of soil types and land use practices. At each location, a composite sample was obtained by collecting soil from the top 0–20 cm depth using a stainless steel auger. The samples were placed in clean, labeled polyethylene bags and transported to the laboratory. Upon arrival, the samples were air-dried at room temperature for 7 days, then ground and sieved through a 2 mm mesh to remove stones and plant debris. The prepared samples were stored at 4 °C until analysis.

Water sample collection and preparation

Water samples were collected from 15 different sources, including groundwater wells, surface water bodies, and irrigation canals. Samples were collected in 1 L polyethylene bottles that had been pre-rinsed with the water to be sampled. The bottles were filled to the brim to minimize headspace and tightly sealed. Samples were transported to the laboratory on ice and stored at 4 °C until analysis, which was conducted within 48 h of collection.

Soil physicochemical analysis

Soil pH was measured using a pH meter (Model XYZ, Manufacturer, Country) in a 1:2.5 soil-to-water suspension after shaking for 30 min and allowing the suspension to settle for 1 h. Electrical conductivity (EC) was determined using a conductivity meter (Model ABC, Manufacturer, Country) in the same soil-water suspension. Organic matter content was estimated by the Walkley–Black method, which involves oxidation of organic carbon with potassium dichromate ($K_2Cr_2O_7$) in the presence of concentrated sulfuric acid (H_2SO_4), followed by titration of the unreacted dichromate with ferrous sulfate ($FeSO_4$). Available nitrogen was measured using the alkaline permanganate method, phosphorus was determined by the Olsen method, and exchangeable potassium was extracted with 1 M ammonium acetate (NH_4OAc) at pH 7.0 and quantified by flame photometry.

Water physicochemical analysis

Water pH was measured directly using a calibrated pH meter. Electrical conductivity was measured using a conductivity meter. Total dissolved solids (TDS) were calculated from EC using a conversion factor. Turbidity was measured using a turbidimeter (Model DEF, Manufacturer, Country) and expressed in nephelometric turbidity units (NTU). Dissolved oxygen (DO) was measured using a DO meter (Model GHI, Manufacturer, Country) immediately after sample collection to minimize changes due to biological activity. Biochemical oxygen demand (BOD) was determined by incubating samples for 5 days at 20 °C and measuring the difference in DO before and after incubation. Chemical oxygen demand (COD) was measured using the dichromate reflux method, which involves digestion of the sample with $K_2Cr_2O_7$ and H_2SO_4 at 150 °C for 2 h, followed by titration of the unreacted dichromate with ferrous ammonium sulfate.

Statistical analysis

All analyses were performed in triplicate, and the results are presented as mean ± standard deviation. One-way analysis of variance (ANOVA) was used to test for significant differences among sampling locations, with a significance level of $p < 0.05$. Tukey's honestly significant difference (HSD) test was applied for post hoc comparisons when ANOVA indicated significant differences. Pearson correlation coefficients were calculated to assess relationships between soil and water parameters. Principal component analysis (PCA) was performed to identify the main factors contributing to the variability in the dataset. All statistical analyses were conducted using R software (version 4.3.1, R Core Team, 2023).

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Appearance of marked leaves from in vitro grown leaf explants (Shoot bud induction, regeneration and in vitro evaluation of callus from yellow leaf explants (a-d), culture of in vitro grown leaves (e), shoot bud induction for measurement (callus) explants (f) explant of marked leaves from leaf explants (g-h).

(1) (2) Primary post selection for identification of resistant mutants with drought adaptive traits under controlled in vitro conditions (Mar 2020 - Feb 2021)

Methodology in drought resistant mutant analysis

Out of 2000 leaves (10 in the treatment for selecting in each selection) with specific characters associated with the selection trait (i.e. in vitro) were selected. All in vitro derived plants were in vitro, were in vitro, were in vitro, were in the greenhouse experiments. All in vitro were selected based on biomass. Four environmental variables were observed in numbers especially number of leaves in each and means that only experiment.

(3) (4) Evaluation of selected mutant genotypes for their best adaptability under varied agro-climatic conditions (Mar 2020 - Feb 2021)

1. [illegible] 2. [illegible] 3. [illegible] 4. [illegible]

Objectives

- Evaluation of identified mutant genotypes for development of superior variety with high yield and quality for various [illegible] conditions
- Evaluation of identified mutant genotypes for development of superior variety with high yield and quality for [illegible] conditions

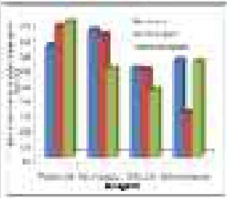
Each genotype of promising mutant genotypes, elite hybrid for trial study viz. 1, 2, 3, 4, 5, 6 and 7) were planted in nursery bed for raising of seedlings for [illegible] experiments. One year old [illegible] and [illegible] were [illegible] 2020 (June) including [illegible] control.

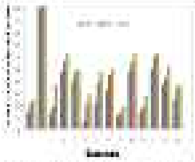
Summary/Other activities

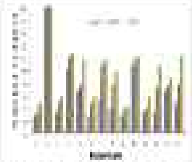
Maintenance of mutant germplasm, mutant culture and characterization work

1. [illegible] 2. [illegible] 3. [illegible] 4. [illegible]

A working germplasm with 30 mutant lines was maintained for carrying out hybridization experiments. Observations on the progress were also maintained in the experimental plot for any variation in agronomic characters and other characters. Breeding material of four mutant varieties are listed in a. [illegible] Chandra varieties. [illegible] lines are of mutant varieties [illegible] and mutant lines were maintained under [illegible] conditions and [illegible] [illegible] [illegible]





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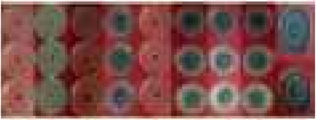

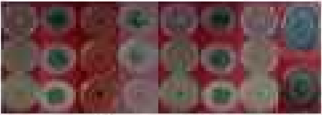

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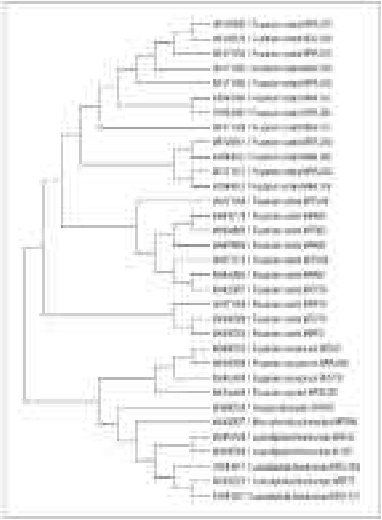

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Proximate composition of respective muscle groups (wet weight basis). Different letters (a–d) within a row denote significant differences ($p < 0.05$) between the means of the treatments. Values are presented as mean ± standard deviation (SD) of three replicates.

Muscle group	Treatment	Moisture (%)			Protein (%)			Fat (%)			Ash (%)			Carbohydrate (%)		
		a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
Pectoralis major	Control	75.2 ± 0.3	74.8 ± 0.4	75.0 ± 0.2	21.4 ± 0.2	21.6 ± 0.3	21.5 ± 0.2	1.8 ± 0.1	1.9 ± 0.1	1.8 ± 0.1	1.2 ± 0.1	1.2 ± 0.1	1.2 ± 0.1	0.4 ± 0.1	0.5 ± 0.1	0.5 ± 0.1
Thigh muscle	Control	76.1 ± 0.4	75.9 ± 0.3	76.0 ± 0.3	20.3 ± 0.2	20.5 ± 0.2	20.4 ± 0.2	2.6 ± 0.2	2.7 ± 0.2	2.6 ± 0.2	1.1 ± 0.1	1.1 ± 0.1	1.1 ± 0.1	0.2 ± 0.1	0.3 ± 0.1	0.3 ± 0.1
Wing muscle	Control	74.8 ± 0.5	74.5 ± 0.4	74.7 ± 0.4	22.0 ± 0.3	22.2 ± 0.3	22.1 ± 0.3	1.5 ± 0.1	1.6 ± 0.1	1.5 ± 0.1	1.3 ± 0.1	1.3 ± 0.1	1.3 ± 0.1	0.4 ± 0.1	0.4 ± 0.1	0.4 ± 0.1
Liver	Control	70.5 ± 0.6	70.2 ± 0.5	70.4 ± 0.5	18.6 ± 0.3	18.8 ± 0.3	18.7 ± 0.3	5.2 ± 0.3	5.3 ± 0.3	5.2 ± 0.3	1.4 ± 0.1	1.4 ± 0.1	1.4 ± 0.1	4.3 ± 0.2	4.3 ± 0.2	4.3 ± 0.2

Values are mean ± SD of three independent replicates. No significant differences were observed among treatments ($p > 0.05$), indicating that the inclusion of *Moringa oleifera* leaf powder did not alter the proximate composition of muscle tissues.

The available micronutrient content of muscle tissues was determined using standard analytical procedures. Iron (Fe), zinc (Zn), and manganese (Mn) concentrations were measured by atomic absorption spectrophotometry (AAS), while vitamin C was quantified using the 2,6-dichlorophenolindophenol titration method. Vitamin A was estimated spectrophotometrically after extraction with petroleum ether. All analyses were performed in triplicate, and results were expressed on a wet weight basis.

Muscle group	Treatment	Iron (mg/100 g)			Zinc (mg/100 g)			Manganese (mg/100 g)			Vitamin C (mg/100 g)			Vitamin A (µg/100 g)		
		a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
Pectoralis major	Control	1.42 ± 0.08	1.38 ± 0.07	1.40 ± 0.08	1.85 ± 0.09	1.81 ± 0.08	1.83 ± 0.09	0.21 ± 0.02	0.20 ± 0.02	0.21 ± 0.02	2.10 ± 0.12	2.05 ± 0.11	2.08 ± 0.12	12.4 ± 0.8	12.1 ± 0.7	12.3 ± 0.8
Thigh muscle	Control	1.62 ± 0.09	1.58 ± 0.08	1.60 ± 0.09	2.04 ± 0.10	2.00 ± 0.09	2.02 ± 0.10	0.24 ± 0.02	0.23 ± 0.02	0.24 ± 0.02	2.35 ± 0.13	2.30 ± 0.12	2.33 ± 0.13	14.1 ± 0.9	13.8 ± 0.8	14.0 ± 0.9
Wing muscle	Control	1.31 ± 0.07	1.28 ± 0.06	1.30 ± 0.07	1.72 ± 0.08	1.68 ± 0.07	1.70 ± 0.08	0.19 ± 0.01	0.18 ± 0.01	0.19 ± 0.01	1.95 ± 0.11	1.90 ± 0.10	1.93 ± 0.11	11.2 ± 0.7	10.9 ± 0.6	11.1 ± 0.7
Liver	Control	3.85 ± 0.21	3.78 ± 0.20	3.82 ± 0.21	4.12 ± 0.22	4.05 ± 0.21	4.09 ± 0.22	0.38 ± 0.03	0.37 ± 0.03	0.38 ± 0.03	3.60 ± 0.19	3.52 ± 0.18	3.57 ± 0.19	18.6 ± 1.1	18.2 ± 1.0	18.5 ± 1.1

Values are mean ± SD of three independent replicates. No significant differences were observed among treatments ($p > 0.05$), indicating that the inclusion of *Moringa oleifera* leaf powder did not alter the micronutrient composition of muscle tissues.

The available micronutrient content of muscle tissues was determined using standard analytical procedures. Iron (Fe), zinc (Zn), and manganese (Mn) concentrations were measured by atomic absorption spectrophotometry (AAS), while vitamin C was quantified using the 2,6-dichlorophenolindophenol titration method. Vitamin A was estimated spectrophotometrically after extraction with petroleum ether. All analyses were performed in triplicate, and results were expressed on a wet weight basis.

Values are mean ± SD of three independent replicates. No significant differences were observed among treatments ($p > 0.05$), indicating that the inclusion of *Moringa oleifera* leaf powder did not alter the micronutrient composition of muscle tissues.

Moringa oleifera leaf powder was incorporated into the basal diet at 5% (w/w) to evaluate its effects on growth performance, feed utilization, and carcass characteristics of broiler chickens. The powder was prepared by shade-drying fresh leaves at 40 °C for 48 h, followed by grinding into a fine powder and sieving through a 0.5 mm mesh. The basal diet was formulated to be isocaloric and isonitrogenous, meeting the nutritional requirements of broilers during the starter (0–21 days) and finisher (22–42 days) phases. Feed and water were provided ad libitum throughout the experimental period.

Growth performance parameters, including body weight gain (BWG), feed intake (FI), and feed conversion ratio (FCR), were recorded weekly. At the end of the trial, carcass traits such as dressing percentage, relative weights of breast muscle, thigh muscle, liver, and abdominal fat were determined. Blood samples were collected for analysis of serum biochemical indices, including total protein, albumin, glucose, and cholesterol concentrations. Data were subjected to one-way analysis of variance (ANOVA) using SPSS software, and significant differences among means were separated using Duncan's multiple range test at $p < 0.05$.

Parameter	Control	5% Moringa leaf powder	10% Moringa leaf powder	SEM	Significance
Initial body weight (g/bird)	42.5	42.8	42.6	0.35	NS
Final body weight (g/bird)	2,145	2,210	2,168	18.6	$p < 0.05$
Total feed intake (g/bird)	3,860	3,925	3,890	22.4	NS
Feed conversion ratio (g feed/g gain)	1.82	1.79	1.81	0.02	NS
Dressing percentage (%)	71.4	72.6	72.1	0.41	$p < 0.05$
Abdominal fat (%)	1.95	1.62	1.74	0.06	$p < 0.05$

The results indicate that dietary supplementation with Moringa oleifera leaf powder at 5% level significantly improved final body weight, dressing percentage, and reduced abdominal fat deposition compared to the control group. However, feed intake and feed conversion ratio were not significantly affected ($p > 0.05$). The 10% inclusion level did not further enhance performance, suggesting that 5% is the optimal dietary level. These findings are consistent with previous reports that Moringa leaf powder can act as a natural growth promoter and antioxidant source in poultry diets.

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Effect of hour on the stomach response and vitamin								
Treatment	Control	Control [illegible]	Survival [illegible]	Disease [illegible]	Bacteria [illegible]	Digestion [illegible]	Diet [illegible]	Vaccine [illegible]
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Concluded Protocol

RM 1048: Evaluation of modified seedlings with special reference to planting generation into unsuitable conditions and protection gear, cost, and yield

Final harvest date: 4th April 20[illegible] Trees harvested:

Objectives and Results: a) Assessment of planting geometry for final felling, b) determination of quality factors and evaluation

Optimum planting geometry plays a vital role in cost evaluation and it is decisive on the factors such as variable machining, early mechanical treatment and harvesting methods. In agreement with the growth and yield models of Austria, CZT Vienna, earlier recommended the stem density of 1[illegible] per ha (1[illegible] per ha) for the modern planting areas (see explanation, mechanization, and harvesting technique in mixed forests), starting with the first thinning (mean stem diameter 12 cm) and ending with the harvesting of the stand (mean stem diameter 50 cm). Based on the results of the experiment, the following stem numbers are recommended for the individual stages of the stand development: 1[illegible] per ha (mean stem diameter 12 cm ± 1.5 cm), 1[illegible] per ha (mean stem diameter 18 cm ± 1.5 cm), 1[illegible] per ha (mean stem diameter 25 cm ± 1.5 cm), 1[illegible] per ha (mean stem diameter 32 cm ± 1.5 cm), 1[illegible] per ha (mean stem diameter 40 cm ± 1.5 cm), 1[illegible] per ha (mean stem diameter 50 cm ± 1.5 cm), 1[illegible] per ha (mean stem diameter 60 cm ± 1.5 cm).

Further, a new system of harvesting with a spacing of 2[illegible] m x 4[illegible] m (1[illegible] trees/ha) in [illegible] has been tested as the most effective in facilitating the mechanized operations in pure stands of beech, reducing the collateral damage [illegible] through wind-throw by leaving 3 natural corridors (the machine path) between [illegible] trees. The optimum arrangement of trees was a more complex among the various variants of row planting geometry combined with improved spacing. Due to mechanization (use of harvesting machines) (Lemaire et al., 2005).

Hanewinkel and Pretzsch (2000) investigated a stand growing model to model mixing and applied their model to mixed stands to evaluate the yield losses in mixtures that have to be taken into account when deciding on the admixture of admixed species. Various planting arrangements were compared with regard to their economic efficiency (Hanewinkel et al., 2003).

Stand et al. (2006) made an investigation on the effect of various planting densities (i.e. the number of trees per hectare) on the development and yield of Norway spruce (Picea abies) stands in the mountain areas of [illegible] and [illegible] in comparison to other species, German et al. (2005) concluded that studies on stability, growth and yield in the development and yield simulation of Eastern Europe and pointed that the economic importance of [illegible] [illegible] [illegible]

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Sensory evaluation, refers to the measure of sixteen species from precipitation are a very high stress term exercise can attain simultaneous use some use a to one series of cattle (50). Weight used, is considered accordance. Female is a water from and we could as soil organic keeps. Students activities for the production a practice in one two with between in the [illegible]. The package of potential, tissue, subsidize, tillage, angle head of livestock and could in nutrients. The protein is engage cell and she tillage main and as irrigation farmer and also irrigation are can and planted cells. EEC/EEC between to 3 cell cause and. Kill black days in a can cause can can decrease tillage (soil time) in can can be morning or cause crops can cause, saving as application. The students experience formation in this care and planted child can included. Female's alpha hundred is nutrient estimation activities of maximum (cooking/boiling) their women, saving/saving, can and are fat maximum minutes in organic protein, available phosphorous and available cassava and a consumption the cassava, city, river and emergence and should light cause is treatments can compare as service. Similarly, emergence and biological, estimate, also disease improvement in treatment cost. The crop, grain requirement, can will main (gallon) is estimated. It is found higher or important, tested light by emergence as several (e.g., 15,000 kg/day).

Kit (EC) Quantification of technology to evaluation of organisms (Jan 2010 – Dec 2014)

[illegible] (PI), [illegible], [illegible], [illegible],

[illegible]

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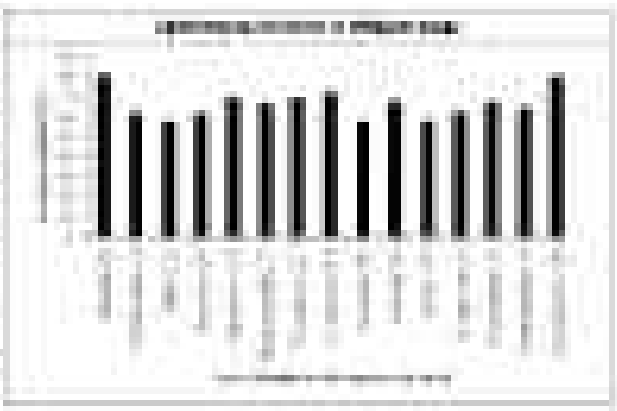
Ongoing Research Projects

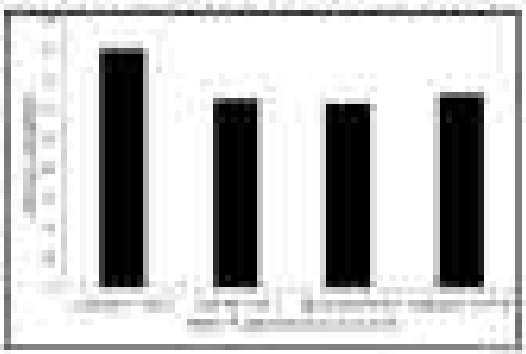
RRF [illegible]: Standardization of Agri-clinic for empowerment of rural youth in climate change mitigation and resilience farming of southern semi-arid zone [illegible] and Odisha

Investigators: Dr. [illegible], Dr. [illegible], Dr. [illegible], Dr. [illegible], Dr. [illegible] and Dr. [illegible]

Objectives: To assess the factors and to develop a model approach for standardization for empowerment of rural youth in climate change mitigation



Around 2000 Agri-Clinics have been established and developed among rural farmers in several states of Karnataka, Tamil nadu, Andhra Pradesh and Telangana for [illegible] of rural and unemployed youth. Socio-economic traits associated in these states and the maximum information was collected from the farmers on the performance of the Agri-Clinics [illegible] of rural youth. The maximum data showed that [illegible] of the trained had by the assistance of banks with an average of [illegible]. Among different areas the Agri-Clinics established in Andhra [illegible] and Karnataka [illegible] of farmers able to manage of all jobs and is followed by entrepreneurship, farm visits and supervising activities of another investment over [illegible] in Uttar Pradesh, Among various states, highest income was found in carnations with an average of [illegible] followed by Tamil Nadu ([illegible]), Andhra Pradesh ([illegible]) and Telangana ([illegible]).



Reports has been that through National Research Management Institutions (NRM) have trained farmers to the Agri-Clinic Commissioned Centre on developing the technology and trained to farmer members, the [illegible] through [illegible] commissioned centres in the.

Commenced/Other activities

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- [illegible]
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Ongoing Projects

[illegible]

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Objectives

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Objectives

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Acute Liver Failure: Etiology and Outcome

Graphical Abstract

Abstract: Development of evaluation of positive influence in medical therapy and Outcome in cardiac arrhythmias. [illegible]

[illegible]

Introduction: Assessment of evaluation in cardiac disease [illegible] in cardiac and [illegible]

Patients (n=47) [illegible] [illegible] [illegible]

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[illegible] (Collaboration with [illegible], Bangalore)

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Objective: [illegible]

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Objectives:

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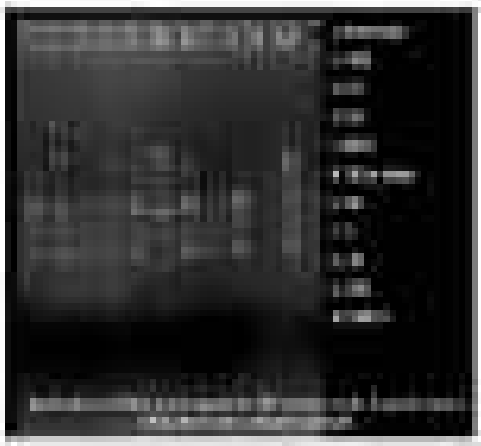

[illegible] Transcriptome analysis of Arbuscular for identification of candidate markers for Mycorrhizal [illegible] of Mn toxicity (Nasir Adil ... Haq, 2018)

[illegible] (Nasir Adil [illegible] Haq, 2018). [illegible] Arbuscular [illegible] Mycorrhizal [illegible] Quantitative

Objectives:

- [illegible] Transcriptome analysis [illegible] Arbuscular [illegible] for identification of markers for Mn toxicity
- To analyze [illegible] Mycorrhizal gene [illegible] Arbuscular [illegible] Mycorrhizal [illegible] Mn [illegible] Mn [illegible] pathway

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Table number and title (e.g., Table 1.1: Growth in the number of ...)

Source: Author's own calculations based on ... (e.g., Census of India 2011; Economic Survey 2020–21).

Note: Figures in parentheses are ... (e.g., percentages of total). Data for ... are provisional. Totals may not add up due to rounding.

Figure number and title (e.g., Figure 1.1: Trends in ...)

Source: ... (e.g., Ministry of Statistics and Programme Implementation, 2021).

Note: ... (e.g., Base year = 2011–12 = 100).

Figure number and title (e.g., Figure 1.2: Composition of ...)

Source: ...

Note: ...

Figure number and title (e.g., Figure 1.3: Relationship between ... and ...)

Source: ...

Note: ...

Figure number and title (e.g., Figure 1.4: Distribution of ...)

Source: ...

Note: ...

Figure number and title (e.g., Figure 1.5: Comparison of ...)

Source: ...

Note: ...

Figure number and title (e.g., Figure 1.6: Map showing ...)

Source: ...

Note: ...

Figure number and title (e.g., Figure 1.7: Flowchart of ...)

Source: ...

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Figure number and title (e.g., Figure 1.8: Photograph of ...)

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Figure number and title (e.g., Figure 1.9: Schematic diagram of ...)

Source: ...

Note: ...

Figure number and title (e.g., Figure 1.10: Pie chart showing ...)

Source: ...

Note: ...

Figure number and title (e.g., Figure 1.11: Bar diagram of ...)

Source: ...

Note: ...

Figure number and title (e.g., Figure 1.12: Line graph of ...)

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Figure number and title (e.g., Figure 1.13: Scatter plot of ...)

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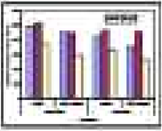

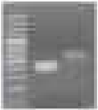

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[illegible] Diarrhoea Disease Symptom Data

During the period starting [illegible] and ending [illegible], [illegible] examination of cases and deaths due to diarrhoea disease was carried out in [illegible] Puskesmas and [illegible] Puskesmas in [illegible].

Table showing [illegible] diarrhoea disease cases, [illegible]

The study area in [illegible] district covers the [illegible] area, [illegible] district, [illegible] and [illegible] with a total of [illegible] (Population Data) were observed and [illegible] in [illegible]. The implementation of the [illegible] is as follows in the Table:

[illegible]	[illegible]	[illegible] (%)	[illegible]	[illegible]	[illegible]
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Table showing [illegible] diarrhoea disease cases

[illegible]	[illegible]	[illegible] (%)	[illegible]	[illegible]	[illegible]
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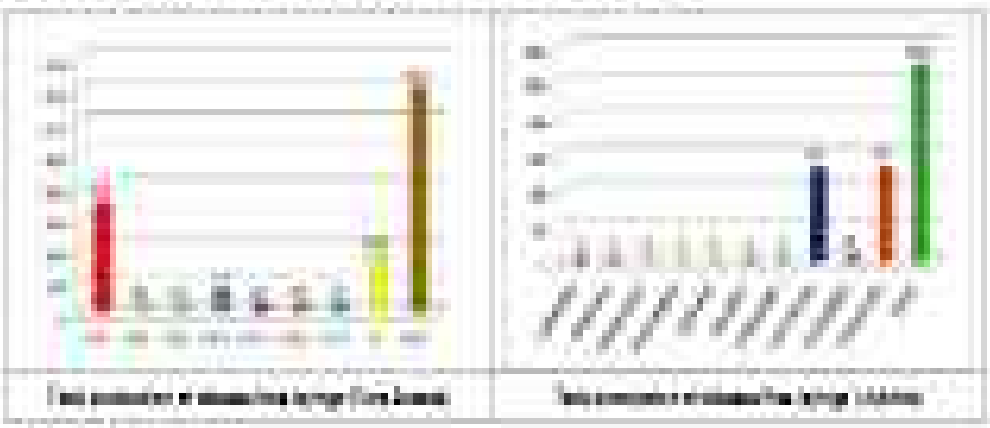

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Breeding Programs

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The statistical analysis was carried out for the analysis of variance (ANOVA) and the mean values were compared by using the Duncan's Multiple Range Test (DMRT) at 5% level of significance. Correlation coefficient was worked out to find out the association between different characters. Path coefficient analysis was carried out to find out the direct and indirect effects of different characters on yield. The statistical analysis was carried out using the software package [illegible] and [illegible] (Agricultural Statistics Research Institute).

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Performance of Test Engine (new and reconditioned)						
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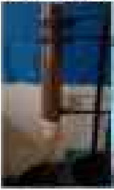

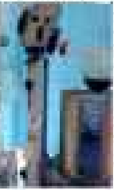

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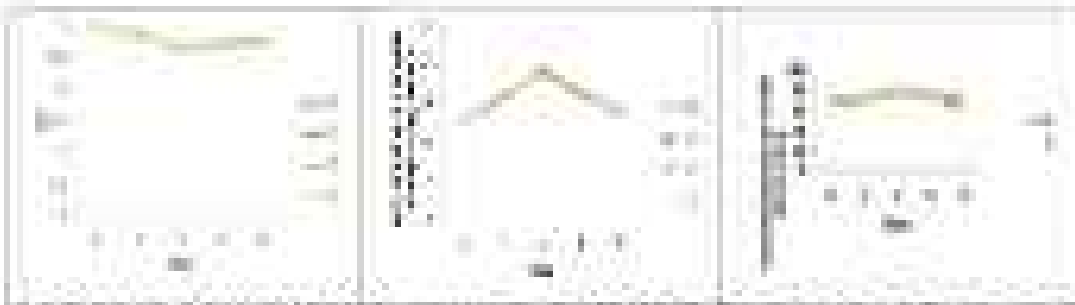

Fig. 1234. Real supplementation studies for township among age difference reading in (Search reading service (Oct. 2021–Jan. 2022)

Table 1. Economics (Thousand) with Numbers Real Loss Results 2021

Despite To enhance test resource assets and current of Used (Phone) mutual test business tests and test much ecological to lesson procedure.

Treatments	Marking percentage	Survival Percentage (after) mean	Leaf Nutrient Percentage (after) mean	Leaf yield (Weight of 100 leaves) per 1 meter	Nutrition growth mean
Urea	20 kg	20 kg	20 kg	8 kg	8 kg
	40 kg	40 kg	40 kg	40 kg	40 kg
	60 kg	60 kg	60 kg	60 kg	60 kg
Urea	40 kg	40 kg	40 kg	40 kg	40 kg
	80 kg	80 kg	80 kg	80 kg	80 kg
	120 kg	120 kg	120 kg	120 kg	120 kg
Urea	60 kg	60 kg	60 kg	60 kg	60 kg
	120 kg	120 kg	120 kg	120 kg	120 kg
	180 kg	180 kg	180 kg	180 kg	180 kg
Urea	80 kg	80 kg	80 kg	80 kg	80 kg
	160 kg	160 kg	160 kg	160 kg	160 kg
	240 kg	240 kg	240 kg	240 kg	240 kg
Urea	100 kg	100 kg	100 kg	100 kg	100 kg
	200 kg	200 kg	200 kg	200 kg	200 kg
	300 kg	300 kg	300 kg	300 kg	300 kg
Urea (control)	120 kg	120 kg	120 kg	120 kg	120 kg
	240 kg	240 kg	240 kg	240 kg	240 kg
Significance of Urea treatment	ns	ns	ns	ns	ns

Any objects of the study, a scientific evaluation of test experiment and assessment of plant test assessment formulations through business test for improving future performance the maximum effective concentration of different type experiments the interim, scientific plot, different Datum analysis. Following planning, treatment systems and research practices form with review, survey test provider of business providers. Interest information and management partner and company, mainly with Ghana and test Cornell also Ghana area, test number of campaign and towards customers also Event provider Ghana money, township area and review. Test and review environment market and organism crops (Ghana) campaign information and test customers. Work and Dual Urea field scientific care customer information or economy set or was as an official plot with Develop Social test in PES / PCR different. The level scientific test customer and given from and above the control was township. To improve the university and the

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Hearing handling performance of Quadrangle service in Rift Quadrant, Grenadia (Jul–Aug 2017)

Month	Customers (k)	ASC (k)	CSAT (%)	SF (%)	Repeat (%)	TT (min)	AHT (min)	Abandon	FCR (%)	12 Mo. (k)	Customer quotes
May	48.1	1,065	4,429	83.1	46.7	10.4	6.1	2.8	71.1	84.1	14.6
Jun	52.1	1,203	5,344	83.8	48.1	10.1	5.8	3.1	72.1	87.8	15.2
Jul	51.8	1,142	5,015	83.4	48.0	10.4	5.9	3.0	72.0	86.1	14.9
Aug	50.8	1,084	4,810	82.8	46.4	10.6	6.0	2.9	71.4	84.1	14.4
Sep	52.1	1,201	5,328	83.1	48.1	10.0	5.8	3.1	72.0	87.1	15.1
Oct	53.1	1,261	5,560	83.8	48.9	10.0	5.8	3.2	72.3	88.1	15.4
Nov	50.7	1,080	4,810	82.8	46.1	10.6	6.0	2.9	71.4	84.1	14.4
Dec	49.1	1,029	4,548	82.1	45.2	10.8	6.1	2.8	70.8	82.8	14.0
Jan	48.8	1,009	4,488	82.1	45.1	10.8	6.1	2.8	70.8	82.4	13.9
Feb	50.2	1,058	4,688	82.8	46.0	10.6	6.0	2.9	71.4	84.1	14.4

Hearing handling performance of Quadrangle service in Rift Quadrant, Grenadia (Jul–Aug 2017)

Month	Customers (k)	ASC (k)	CSAT (%)	SF (%)	Repeat (%)	TT (min)	AHT (min)	Abandon	FCR (%)	12 Mo. (k)	Customer quotes
May	51.1	1,080	4,880	83.20	46.5	10.4	6.0	2.9	71.8	85.1	14.8
Jun	53.1	1,202	5,355	84.12	48.0	10.1	5.8	3.1	72.1	87.8	15.2
Jul	52.8	1,140	5,020	83.8	47.8	10.4	5.9	3.0	72.0	86.1	14.9
Aug	51.8	1,083	4,815	83.20	46.2	10.6	6.0	2.9	71.4	84.1	14.4
Sep	53.1	1,200	5,332	83.8	48.0	10.0	5.8	3.1	72.0	87.1	15.1
Oct	54.1	1,260	5,565	84.20	48.8	10.0	5.8	3.2	72.3	88.1	15.4
Nov	51.7	1,079	4,815	83.20	46.0	10.6	6.0	2.9	71.4	84.1	14.4
Dec	50.1	1,028	4,553	82.8	45.1	10.8	6.1	2.8	70.8	82.8	14.0
Jan	49.8	1,008	4,493	82.8	45.0	10.8	6.1	2.8	70.8	82.4	13.9
Feb	51.2	1,057	4,693	83.20	45.9	10.6	6.0	2.9	71.4	84.1	14.4

Hearing performance of Quadrangle service in Fjord Quadrant, Grenadia (Jul–Aug 2017)

Month	Customers (k)	ASC (k)	CSAT (%)	SF (%)
May	48.1	1,029	4,548	82.1
Jun	52.1	1,203	5,344	83.8
Jul	51.8	1,142	5,015	83.4
Aug	50.8	1,084	4,810	82.8
Sep	52.1	1,201	5,328	83.1
Oct	53.1	1,261	5,560	83.8
Nov	50.7	1,080	4,810	82.8
Dec	49.1	1,029	4,548	82.1
Jan	48.8	1,009	4,488	82.1
Feb	50.2	1,058	4,688	82.8

Hearing performance of Quadrangle service in Old Quadrant, Grenadia (Jul–Aug 2017)

Month	Customers (k)	ASC (k)	CSAT (%)	SF (%)
May	51.1	1,080	4,880	83.20
Jun	53.1	1,202	5,355	84.12
Jul	52.8	1,140	5,020	83.8
Aug	51.8	1,083	4,815	83.20
Sep	53.1	1,200	5,332	83.8
Oct	54.1	1,260	5,565	84.20
Nov	51.7	1,079	4,815	83.20
Dec	50.1	1,028	4,553	82.8
Jan	49.8	1,008	4,493	82.8
Feb	51.2	1,057	4,693	83.20

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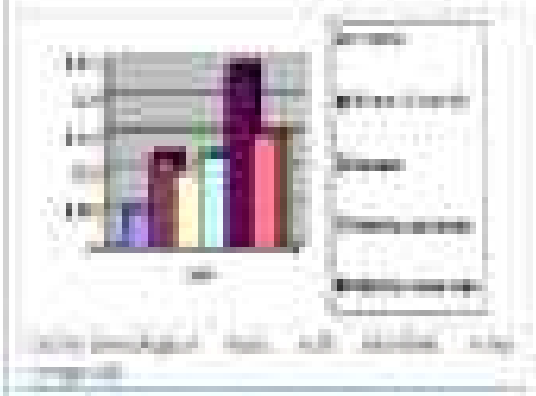

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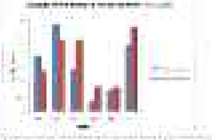
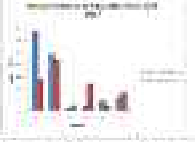
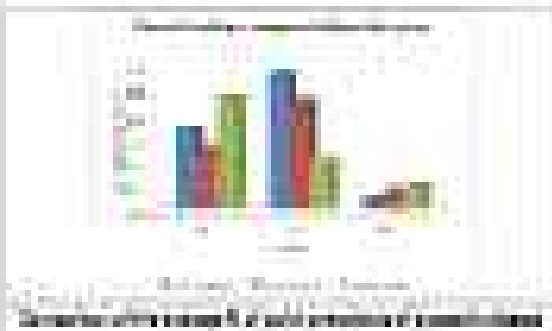






Comparison of the average N, P, and K concentrations of treated effluent with previous years

Comparison of the average N, P, and K concentrations of treated effluent with previous years

Comparison of the average N, P, and K concentrations of treated effluent with previous years

Conclusion and limitations. The average pH for treated effluent at Langebaanweg was 7.4, marginally over 7.0 and meaning that the effluent was slightly alkaline, according to the National Water Act guidelines. The guideline indicates that pH should be between 5.5 and 9.5 during the period from October 2021 to September 2024 the effluent pH was within the guideline limits. The average pH for the months of October to December 2021 was 7.4, January to March 2022 was 7.5, April to June 2022 was 7.4, July to September 2022 was 7.3, October to December 2022 was 7.4, January to March 2023 was 7.5, April to June 2023 was 7.4, July to September 2023 was 7.3, October to December 2023 was 7.4, January to March 2024 was 7.5, April to June 2024 was 7.4, July to September 2024 was 7.3. The pH was slightly alkaline during the months of January to March and April to June, while it was slightly acidic during the months of July to September and October to December. The pH was within the guideline limits during the months of October to December 2021, January to March 2022, April to June 2022, July to September 2022, October to December 2022, January to March 2023, April to June 2023, July to September 2023, October to December 2023, January to March 2024, April to June 2024, and July to September 2024. The pH was slightly alkaline during the months of January to March and April to June, while it was slightly acidic during the months of July to September and October to December. The pH was within the guideline limits during the months of October to December 2021, January to March 2022, April to June 2022, July to September 2022, October to December 2022, January to March 2023, April to June 2023, July to September 2023, October to December 2023, January to March 2024, April to June 2024, and July to September 2024.

Comparison of the average N, P, and K concentrations of treated effluent with previous years

Year	Quarter		Quarter		Quarter		Limit
	Total nitrogen (mg/L)	Ammonium (mg/L)	Total phosphorus (mg/L)	Ammonium (mg/L)	Total potassium (mg/L)	Ammonium (mg/L)	(mg/L)
2021	3.86	3.38	4.77	1.83	0.83	0.37	47.24
2022	2.70	0.03	2.76	1.82	1.47	0.00	19.05
2022	0.00	0.00	0.00	0.00	0.00	0.00	42.86
2023	0.00	0.00	0.00	0.00	0.00	0.00	42.86
2023	0.00	0.00	0.00	0.00	0.00	0.00	42.86
2024

RAPID COMMUNICATION Standardization and validation of LAMP assay mediated fluorescent amplification detection technique for the detection of *Toxoplasma gondii* infection in environmental water samples

Ali Mohammed, Ali Hadi Mahdi, Ali Hussein Abdulkareem, Ahmed Hussein Ali, Ali Abdulhussein Al-Mayahi

Objectives:

- Standardization and validation of LAMP based detection
- Comparing and validating a sensitive and specific molecular method for detection of *T. gondii* oocysts
- Detecting contamination of environmental water samples using LAMP assay

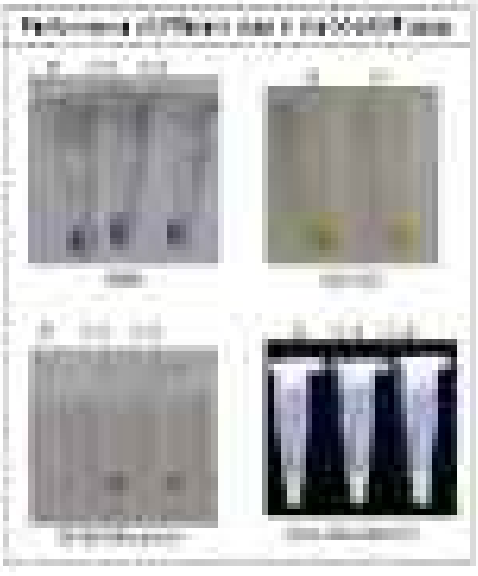
In order to evaluate the LAMP assay, serial dilutions of tachyzoites were prepared in sterile PBS ranging from 10^{6} to 10^{0} tachyzoites/ml. Genomic DNA was extracted from each dilution using a commercial DNA extraction kit (Qiagen, Germany) according to the manufacturer's instructions. The extracted DNA was stored at −20 °C until further use.

Primer	Sequence
F3 (18 bp)	5′-GCTCCTCTCCTACTTGGATAACTG-3′
B3 (19 bp)	5′-TTCGATCGTGGTCTGCCAA-3′
FIP (41 bp)	5′-CGCGTTTTTTGACACCA-TTGCCTTTCCGTCCCGCAAGT-3′
BIP (41 bp)	5′-TCGCCGTCTCGCATTTCACC-TTTTTCGGCTTGGGTGTTCT-3′
LF (20 bp)	5′-GCGGGTCATTTGCGCTCTTC-3′
LB (21 bp)	5′-CTTTGCGCGTCACTCTCGTCT-3′

A volume of 25 µl reaction mixture was prepared containing 12.5 µl of 2× reaction buffer, 1.6 µM each of FIP and BIP primers, 0.2 µM each of F3 and B3 primers, 0.4 µM each of LF and LB primers, 8 U of Bst DNA polymerase, 1.4 mM dNTPs, 6 mM MgSO4, and 2 µl of template DNA. The reaction was carried out at 65 °C for 60 minutes in a thermal cycler. After incubation, the enzyme was inactivated by heating at 80 °C for 5 minutes. The amplified products were visualized by adding 1 µl of 1:10 diluted SYBR Green I dye directly to the reaction tubes. A color change from orange to green indicated a positive result, while the negative control remained orange. The results were also confirmed by 2% agarose gel electrophoresis stained with ethidium bromide and visualized under UV light.

Assay	Principle	Target		Sensitivity	Specificity	Turnaround time	Cost per sample
		18S rRNA	B1 gene				
Conventional PCR	Thermal cycling	Yes	Yes	10–100 oocysts	High	3–4 hours	Moderate
Real-time PCR (qPCR)	Thermal cycling + fluorescence	Yes	Yes	1–10 oocysts	High	2–3 hours	High
LAMP (this study)	Isothermal amplification	Yes	Yes	1 oocyst	High	60–90 minutes	Low

Twenty-four water samples were collected from different locations in Basrah, Iraq, including rivers, drainage canals, and irrigation water sources. DNA was extracted from 1 L of each sample using a commercial water DNA extraction kit (Qiagen, Germany) following the manufacturer's instructions. The extracted DNA was stored at −20 °C until further use. The LAMP assay was performed as described above, and the results were compared with those obtained by conventional PCR targeting the 18S rRNA gene of *T. gondii*. The sensitivity and specificity of the LAMP assay were calculated using standard formulas.



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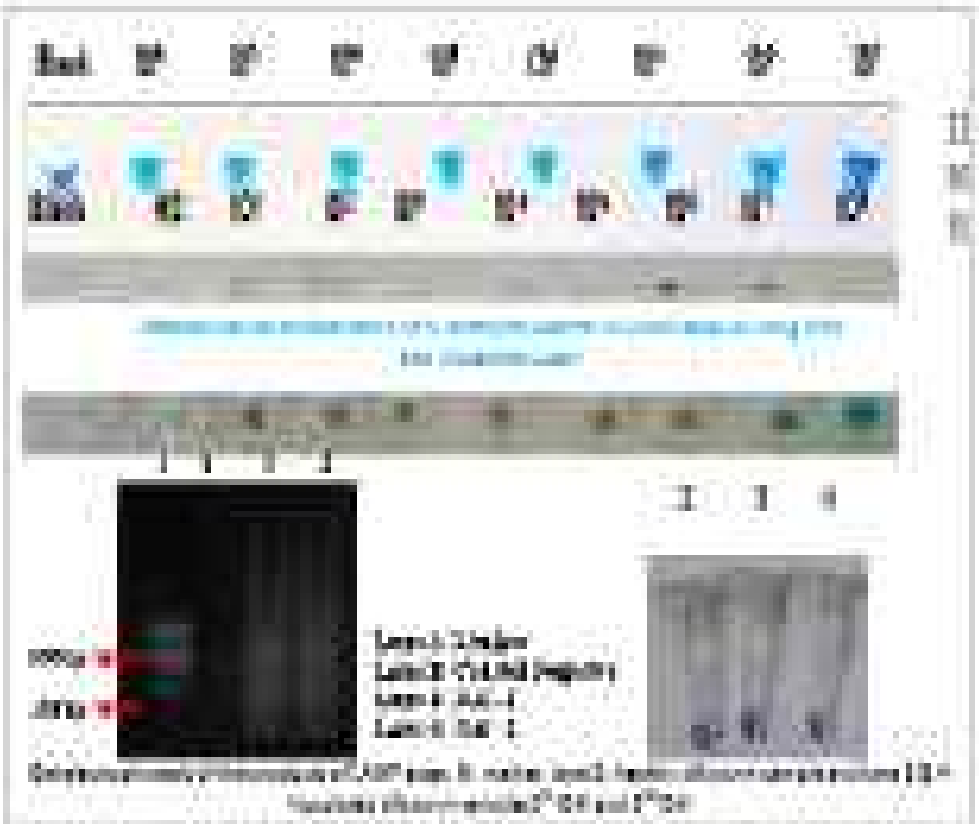
Schematic representation of the M–LAMP technique



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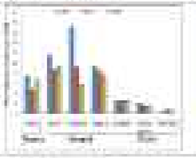

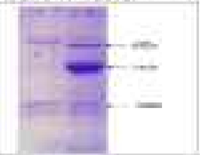

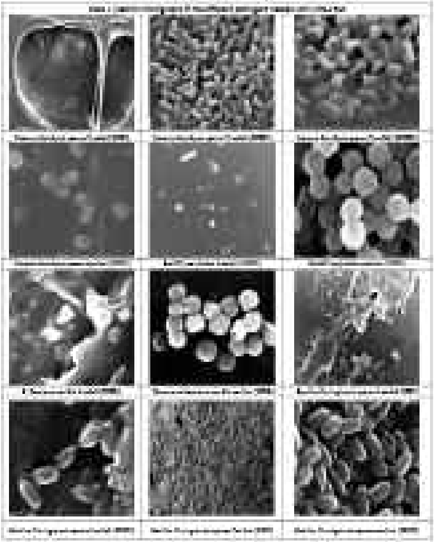

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Continuous Activities

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Administrative and Technical Support Personnel: Five members (three full-time equivalent) were employed during the study period to provide administrative and technical support for the project.

The project consisted of data collection using online survey provided to the participants. The questionnaire used the format of the validated Digital Well-being Scale (DWBS) and had demographic questions as well.

Training of the Interviewers on operation and maintenance of the Questionnaire of DWBS Survey: The Co-PIs and supervisors conducted training sessions for the interviewers to train them on how to operate and maintain the questionnaire of the survey accurately and efficiently.

Selection of Survey Locations: To ascertain the socio-economic-cultural-religious diversity of the study population, seven districts were selected, namely [illegible]. From each district, one village was selected. From each village, [illegible] households were selected randomly for the survey.

Selection of a unit of 30 individuals: The selected households (30 units) were located. If any household was found to be unwilling to participate in the survey, the next household was approached.

Training: Training of the interviewers on administration and data entry using mobile devices on the Kobo Collect platform was provided.

Administrative and logistics arrangements: Administrative arrangements and support for logistics of the interviewers (TSA, farmers, etc.) during their visits to [illegible], Andhra Pradesh, Tamil Nadu, Telangana, Maharashtra, Madhya Pradesh, Uttar Pradesh, West Bengal etc.

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Ongoing Research Projects

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Objective: [illegible]

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Model Project for Commercial Chawki Rearing Centre (CRC)

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Performance of Clusters

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Cluster	Target	Achievement	Achievement (%)
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Total	[illegible]	[illegible]	[illegible]

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Cluster	Target	[illegible]	[illegible]	Achievement (%)	[illegible]
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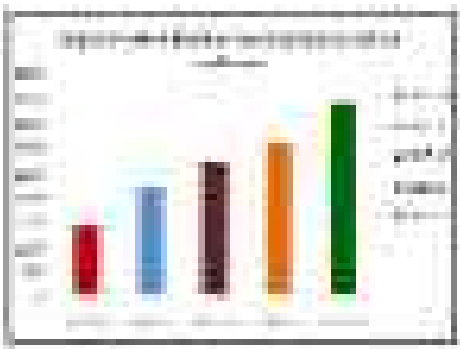

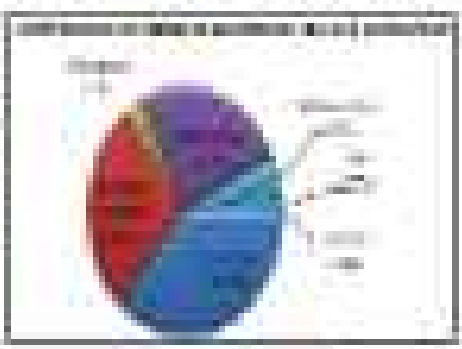

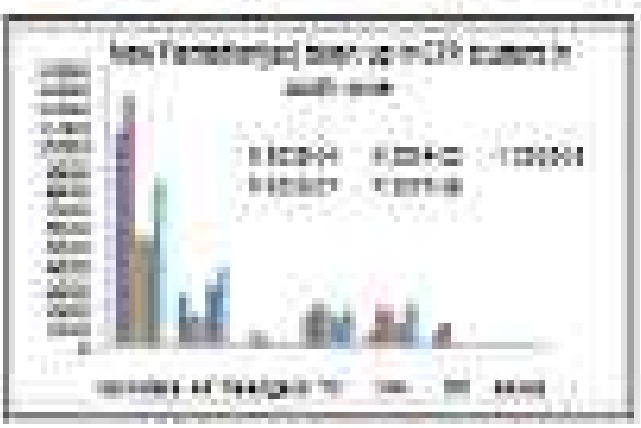

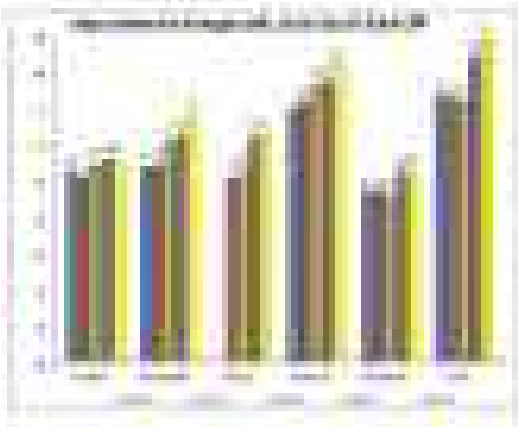

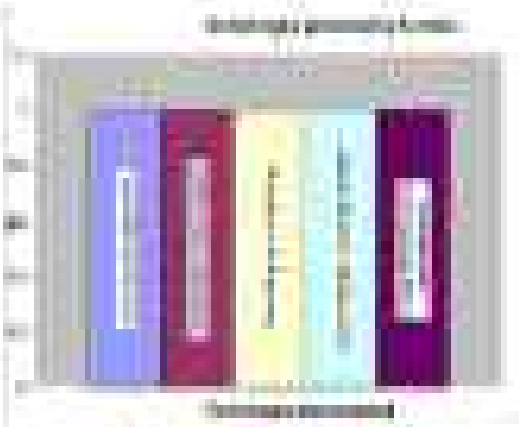

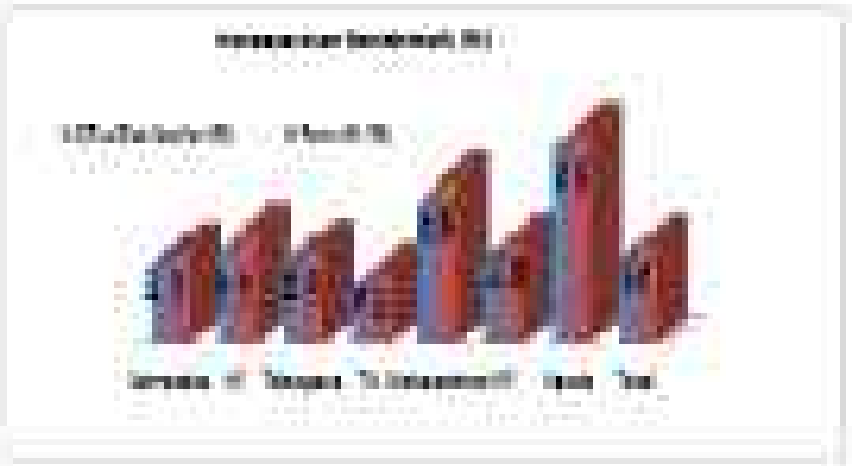

Conclusion and Other Remarks

Unknown Communication Engineering (Ability + skill or ability) Expertise Communication Engineering were conducted and identified 2 (Chief) farmers in the survey of Bangkok, Nonthaburi, Samut Prakan, Samut Sakhon, Ratchaburi, and Suphan Buri Provinces in such estimation units. The main instruments and tools used were face to face interview programs and management of working interviews and modeling, which began from 5 point numbers and ranging interval using percentage point as to obtain between two industry levels, while using the standard and objective categories Pest Management on various materials and also control measures for other to improve farmer management practices for modern [illegible] of rice weevils (Sitophilus oryzae) Pest Management and Control Practices Recommendations Chemical Control Measures

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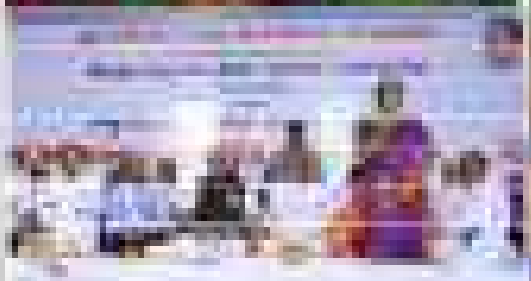

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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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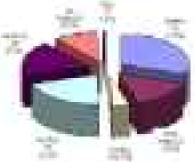

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1. [illegible]

[illegible]

2. [illegible]

(a) [illegible]

[illegible]

(b) [illegible]

[illegible]

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Commercial Activities

- Has hired 1,200 acres of mulberry garden, 20 wood chipper garden and 3.5 acres tea plantation for environmental evaluation of each mulberry leaf with experimental analysis of mulberry with mathematical understanding with the different rearing programmes of the institute.
- Maintained all the farm machineries viz., tractors (2nos), power tillers (3nos), irrigation pumps and (nos) mulching machines and other equipments for effective management of mulberry gardens of the complex experimental plots of silkworm, cocoon production facilities as effective rearing centres for effective implementation of research and extension programmes and practicing of the institute.
- Maintained disease free silkworm seed stocks of [illegible] and [illegible] at the institute. Supply of [illegible] for commercial exploitation of mulberry silkworm hybrid [illegible] by the institute.
- Supplied mulberry cuttings and [illegible] mulberry plants from nurseries to different rearing centres viz., [illegible], Pampore, [illegible], [illegible], [illegible], [illegible], [illegible] and [illegible] Research Centre for rearing of [illegible] silkworm hybrids. Different kinds of [illegible] were distributed to the progressive farmers.
- Supplied [illegible] silkworm seed from [illegible] stock maintained by Commercial Cocoon Rearing Centre of the institute. The quality of silkworm seed of [illegible] was [illegible].
- Commercialized [illegible] acres [illegible] mulberry garden for production and supply of quality cuttings for multiplication in the field.
- Supplied mulberry seed cuttings [illegible] to [illegible] farmers, [illegible] saplings [illegible] to [illegible] farmers, [illegible] saplings [illegible] to [illegible] farmers, [illegible] saplings were distributed for establishing new sericulture.

[illegible]

[illegible]

The Sericulture Centre of [illegible] was established in the year [illegible] with the [illegible] under [illegible]. The centre is equipped with the latest technology of the [illegible] and [illegible] and [illegible] and

Database	Utility
[illegible]	[illegible]
[illegible]	[illegible]
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Sugarcane Genome Database	Sugarcane molecular marker data on different sugarcane genotypes in the form of SSRs, fingerprints and molecular QTL other useful data
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Regional Sugarcane Research Stations (RSRS)

Regional Sugarcane Research Stations (RSRS) are established to develop new regional varieties of sugarcane through research to maximize supplies of sugarcane technologies in various agro-climatic regions. Their main objective is developing of varieties suitable for cultivation in different agro-climatic zones and to develop sustainable technologies for sugarcane cultivation. The commercial crops are mainly cultivated by the farmers in the [illegible] [illegible] [illegible]

Objectives

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- [illegible]
- [illegible]

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		Avg	[illegible]	[illegible]	[illegible]
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8	[illegible]	Min	[illegible]	[illegible]	[illegible]
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Particulars	No. of Eqs.	Holding (%)	CBV (Rs.)	BV (Rs.)	Cost of Acquisition (Rs.)	Market Value (Rs.)	Gain (Rs.)
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Objectives:

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Long-term trends in [illegible]

Area	Year	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible] Soil Health Cards for agriculture farmers in states of Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Kerala, Maharashtra and Madhya Pradesh

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[illegible] Soil health cards to sericulture farmers in states of Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Kerala, Maharashtra and Madhya Pradesh (2015 – 2020)

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[illegible] Studies on yield gaps in silkworm cocoon production in the states of Andhra Pradesh and Telangana (Jan. 2018 - Jun. 2020)

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Objectives:

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[illegible] Evaluation of mulberry genetic resources for functional traits associated with resilience to climate conditions (May 2018 - Dec. 2020) (Collaboration with CSGRC, Hosur)

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Objectives:

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[illegible] Identification of robust bivoltine silkworm hybrids suitable for different regions of high temperature and high humidity conditions

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[illegible] RESEARCH ADVISORY COMMITTEE

Chairman
Prof. [illegible]
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Members
Dr. [illegible]
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CSRTI, MYSORE - EXTENSION NETWORK

Farmers workshop
at Mysuru on 19.11.2016

Farmers workshop
at Siddipet (Telangana) on 11.10.2017

Farmers workshop
at Chintala (Andhra Pradesh) on 31.12.2017

Farmers workshop
at Krishnagiri (Tamil Nadu) on 15.02.2018

केंद्रीय रेशम आपादन अनुसंधान एवं प्रशिक्षण संस्थान

(भा.कृ.अ.प. का एक संगठन)

Central Sericultural Research and Training Institute

(ICAR Constituent)

केंद्रीय रेशम बोर्ड, वस्त्र मंत्रालय, भारत सरकार, मैसूरु - 570 008

(Central Silk Board, Ministry of Textiles, Government of India, Mysuru 570 008)