

CSA – CUTM IN COLLABORATION

Centre for Sustainable Agriculture works scientifically on developing Sustainable Agriculture practices to support the Farming Community. It works across Andhra Pradesh & other states too. During 2019, Centurion University signed MoU to work on Sustainable Agriculture course curriculum developed with our eminent faculties of School of Agriculture. Also students visit and internship program at their centre. Later in a process of developing course curriculum, we have developed and started a domain course named as Organic Farming.

Domain Track: Organic Farming

Teacher
Dr. Saurav Barman

Category
Domain Courses

- Description
 - Teachers
 - Attendees
 - Reviews
-

Domain Track Title : Organic Farming

Track Total Credits (T-P-P): 3-15-11 (29 credits)

Courses Division:

Track courses: 09 credits

- 1. Organic Farming. (1-2-0)**
2. Certification and Inspection Systems in Organic Farming in India. (1-2-0)
3. Biopesticides and Biofertilizers. (1-2-0)

Practice Courses: 09 credits

1. Organic Production- Field Crops. (0-3-0)
2. Organic Production- Horticultural Crops. (0-3-0)
3. Biofertilizer and Biopesticide Production Technology. (0-3-0)

AELP Linked with Domain: 11 credits

Domain Track Objectives:

1. Traditional
2. Innovative
3. Scientific

Domain Track Learning Outcomes:

1. Skilled Practitioner
2. Expert/ Consultancy
3. Agri.-Entrepreneur

Domain Syllabus:

Track courses:

- 1. Organic Farming. (1-2-0)**

Theory:

Module 1.1: Organic Farming: Principles, Developing Organic farm, Conversion of Soil to Organic.

Module 1.2: Soil Cultivation and Tillage: Creating good growing conditions, Minimum disturbance, Soil compaction, and Types of Soil Cultivation.

Module 1.3: Crop Planning and Management: Crop rotation, Intercropping, Cover crops, Crop- Animal association, Designing cropping systems.

Module 1.4: Mulching: Selection of Mulch materials, Source of Mulching materials, Recommendation while using Mulches, Application of Mulch.

Module 1.5: Organically Manage: Live fencing, Water, Nutrient, Weed, Pest and Disease.

Module 1.6: Plant Propagation: Criteria for Seed evaluation, characterization and multiplication, Importance of Traditional Varieties, Seed conservation and its Certification.

Module 1.7: Animal Husbandry: Animal Housing, Animal Feeding, Animal Health, Breeding Goals.

Module 1.8: Introduction of Forest Trees: *Azadirachta indica*, *Pongamia pinnata*, *Tamarindus indica*, *Sesbania grandiflora*, *Dalbergia latifolia*, *Terminalia chebula* etc.

Module 1.9: ITKs of Gajapati: Collection, Study and Implementation.

Module 1.10: Other forms of Organic Management: Biodynamic Agriculture, Rishi Krishi, Natural Farming, Panchgavya Krishi, Natueco Farming. Homa Farming and EM-Technology.

Practical:

Practical 1.1: Preparation of Enrich Compost.

Practical 1.2: Preparation of Vermicompost.

Practical 1.3: Preparation of Green manures, Liquid manures, Panchgavya, Biodynamic and NADEP.

Practical 1.4: Preparation of different organic Insecticides/ Pesticides.

Practical 1.5: Identification and use of Mulch materials.

Practical 1.6: Water Management

Practical 1.7: Weed Management.

Practical 1.8: Seed Multiplication, conservation and Certification process.

Practical 1.9: Practical on Animal Husbandry.

Practical 1.10: Collection of ITKs.

Practical 1.11: Practical on Conversion of Soil to Organic

2. Certification and Inspection Systems in Organic Farming in India. (1-2-0)

Theory:

Module 2.1: Organic Certification: The Certification Process, Certification and Product Labelling, Certification around the World.

Module 2.2: Regulatory Mechanism for Organic Certification in India: Scope and Operational Structure of National Programme for Organic Production.

Module 2.3: National Standards for Organic Production: Conversion requirements, Maintenance of Organic Management, Crop Production, Animal Husbandry, Food Processing and Handling, Labelling, Storage and Transport.

Module 2.4: Inspection and Certification Process:

Inspection and Certification Agency.

Annual Surveillance and Review of Inspection and Certification Agencies.

Inspection and Assignments.

Inspection visit and Reports.

Methods and Frequency.

Analysis and Residue Testing.

Inspection Regime for Part Conversion and Parallel Production. Inspection for use of Genetically Engineered Products.

Inspection and Certification of Grower Group.

Procedure for Implementation of Internal Control System.

Certification Process.

Mandatory checks to be undertaken by the Authorized Inspection and Certification Agency during Inspection.

Practical:

To Visit and Document on

Practical 2.1: Different Organic certification Agencies in Odisha.

Practical 2.2: Hands on learning on Packaging & Labelling.

Practical 2.3: Organic Cold Storage in Odisha.

Practical 2.4: Certified Organic Farmer.

Practical 2.5: Certified Organic Grower group.

Practical 2.6: Food Processing & Handling Unit.

Practical 2.7: Animal Husbandry Unit

3. Biopesticides and Biofertilizers. (1-2-0)

Theory:

Module 3.1: Introduction, status and scope.

Module 3.2: Concepts and classification of biopesticides viz. pathogen, botanical pesticides and biorationales.

Module 3.3: Botanicals and their uses.

Module 3.4: Mass production technology of bio-pesticides Virulence, Pathogenicity and symptoms of entomopathogenic pathogens and nematodes.

Module 3.5: Methods of application of biopesticides. Methods of quality control and Techniques of biopesticides. Impediments and limitation in production and use of biopesticide..

Module 3.6: Introduction, status and scope.

Module 3.7: Structure and characteristic features of bacterial biofertilizers- Azospirillum, Azotobacter, Bacillus, Pseudomonas, Rhizobium and Frankia.

Module 3.8: Cynobacterial biofertilizers: Anabaena, Nostoc and Hapalosiphon.

Module 3.9: Fungal biofertilizers: AM mycorrhiza and ectomycorhiza.

Module 3.10: Nitrogen fixation: Free living and symbiotic nitrogen fixation, process of nodule formation, role of different genes (Nod and Nif), enzymes and Bio chemistry of Nitrogen fixation.

Module 3.11: P-Solubilizer and K-mobilizer: Mechanism of P- solubilization, phosphate mobilization and K solubilisation.

Module 3.12: Production Technology: Strain selection, sterilization, growth and fermentation, mass production of carrier based, liquid biofertilizers and EM.

Module 3.13: FCO specifications and quality control of biofertilizers.

Module 3.14: Application: Soil, Seeds, Seedlings and Tubers etc.

Module 3.15: Biofertilizers: Factors influencing the efficacy of biofertilizers, Storage, Shelf life, Quality control, Certification and marketing.

Practical:

Practical 3.1: Hands-on Training on Laboratory Equipments

Practical 3.2: Isolation and purification of Azospirillum.

Practical 3.3: Isolation and Purification of Azotobacter.

Practical 3.4: Isolation and Purification of Rhizobium.

Practical 3.5: Isolation and Purification of P-solubilizers.

Practical 3.6: Isolation and Purification of cyanobacteria.

Practical 3.7: Isolation of AM fungi by Wet sieving method.

Practical 3.8: Isolation and Purification by sucrose gradient method.

Practical 3.9: Isolation and purification of Trichoderma.

Practical 3.10: Isolation and purification of Pseudomonas.

Practical 3.11: Isolation and purification of Bacillus.

Practical 3.12: Isolation and purification of Metarhizium.

Practical 3.13: Layout of Bio fertilizer Laboratory.

Practical 3.14: Layout of Bio pesticide Laboratory.

Practical 3.15: Market Survey and Marketing.

Practice courses:

1. Organic Production- Field Crops. (0-3-0)

Practice:

Practice 1.1: Components: Organic farm.

Practice 1.2: Implement: Conversion of Soil to Organic.

Practice 1.3: Seed: Multiplication of Adopted and Resistant Varieties, Conservation and Certification.

Practice 1.4: Water Management: Reduce evaporation, Increasing Infiltration, Planting Pits, Contour bunds, Catchment strips, Drip irrigation systems and Water Storage.

Practice 1.5: Organic Nutrient production, Analysis and its Application: Green manures, Liquid manures, Panchgavya, Biodynamic, NADEP and Vermicompost etc.

Practice 1.6: Organic Pesticides production, Analysis and its Application: Neemashta, Agniashastra, Brahmashastra, Jeevamrutam and Neem Oil etc.

Practice 1.7: Weed Management.

Practice 1.8: Harvest and Post-Harvest Management.

Practice 1.9: Formulating Good Agricultural Practice (GAP).

Practice 1.10: Field trials of ITK's to assess their effectiveness (Gajapati context).

Practice 1.11: Hazard analysis and Critical Control Point. Documentation for certification.

Practice 1.12: Visit to Organic farm/field.

2. Organic Production- Horticultural Crops. (0-3-0)

Practice:

Practice 2.1: Field Preparation.

Practice 2.2: Selection of Adopted and Resistant Varieties.

Practice 2.3: Seed Treatment.

Practice 2.4: Raising of Seedling and Nursery Management.

Practice 2.5: Mulching.

Practice 2.6: Identification and Use: Natural Plant Growth Regulators and Micronutrients.

Practice 2.7: Management: Water, Nutrient, Weed, Pest and Disease

Practice 2.8: Harvest and Post-Harvest Management.

Practice 2.9: Visit to Organic fields and marketing centers.

3. Biofertilizer and Biopesticide Production Technology. (0-3-0)

Practice:

Practice 3.1: Isolation and purification of important biopesticides.

Practice 3.2: Mass multiplication of Trichoderma Pseudomonas, Bacillus, Metarhizium etc. and its production.

Practice 3.3: Identification of important botanicals.

Practice 3.4: Field visit to explore naturally infected cadavers.

Practice 3.5: Identification of entomopathogenic entities in field condition.

Practice 3.6: Quality control of biopesticides.

Practice 3.7: Visit to biopesticide laboratory in nearby area.

Practice 3.8: Isolation and purification of Azospirillum, Azotobacter, Rhizobium, P-solubilizers and cyanobacteria.

Practice 3.9: Mass multiplication and inoculums production of biofertilizers.

Practice 3.10: Isolation of AM fungi by Wet sieving method and sucrose gradient method.

Practice 3.11: Mass production of AM inoculants

AELP Linked with Domain (0-0-11).

1. Scaling Production and Marketing
2. Field Trials (Gajapati context)
3. Project Based Learning
4. Publication

Track courses:

1. Organic Farming (1-2-0): Theory and Practical: Session Plan

Session 1.1: Organic Farming: Principles, Developing Organic farm, Conversion of Soil to Organic.

Practical 1: Practical on Conversion of Soil to Organic.

Organic Farming Module-1

Video- Principles

Session 2: Soil Cultivation and Tillage: Creating good growing conditions, Minimum disturbance and Soil compaction and Types of Soil Cultivation.

Practical 1.2: Ploughing with Country plough, field level understanding of Physical nature of Soil for Crop growth.

Organic Farming Module-2

Document- Tillage

Video- Soil Compaction

Land Preparation 1

Land Preparation 2

Ploughing

Session 1.3: Crop Planning and Management: Crop rotation, Intercropping, Cover crops, Crop- Animal association, designing cropping systems.

Practical 3: Raising of Crops with different Cropping systems.

Organic Farming Module-3

Video- Crop rotation 1

pdf- Crop rotation 2

pdf- Cropping System

Video- Multiple Cropping 1

Video- Multiple Cropping 2

Document- Crop Rotation 3

Session 1.4: Mulching: Selection of Mulch materials, Source of Mulching materials, Recommendation while using Mulches, Application of Mulch.

Practical 4: Identification and use of Mulch materials.

Organic Farming Module-4

Session 1.5: Organically Manage: Live fencing and Water, Nutrient, Weed, Pest and Disease.

Practical 5: Identification and Multiplication of Live fencing Plants, Preparation of Enrich Compost, Vermicompost, organic Insecticides/ Pesticides.

Organic Farming Module-5

Video- Weed

Video- Nutrient Management

Video - Integrated Nutrient Management

Video- Pest Management

Visit site for Manure study materials (Wageningen University)

Video- Live Fence

Video- Live Fence 2

Video-Water management 1

Video-Water management 2

Session 1.6: Plant Propagation: Criteria for Seed evaluation and characterization. Importance and Multiplication of Traditional Varieties, Seed conservation and its Certification

Practical 6: Seed Multiplication, conservation and Certification process.

Organic Farming Module-6

Visit Seed Center of Wageningen University

Session 1.7: Animal Husbandry: Animal Housing, Animal Feeding, Animal Health, Breeding Goals.

Practical 7: Designing Animal Shed, Organic Feed Formulation, Visit to Animal Husbandary Farm.

Organic Farming Module-7

Session 1.8: Introduction of Forest Trees: Azdirachta indica, Pongamia pinnata, Tamarindus indica, Sesbania grandiflora, Dalbergia latifolia, Terminalia chebula etc.

Practical 8: Identification and Multiplication of Forest Trees

Organic Farming Module-8

Session 1.9: ITKs of Gajapati: Collection, Study and Implementation.

Practical 9: Collection of ITKs.

Organic Farming Module-9

Session 1.10: Other forms of Organic Management: Biodynamic Agriculture, Rishi Krishi and Natural Farming, Panchgavya Krishi, Natueco Farming. Homa Farming and EM-Technology.

Practical 10: Preparation of Green manures, Liquid manures, Panchgavya, Biodynamic and NADEP

Organic Farming Module-10

2. Certification and Inspection Systems in Organic Farming in India (1-2-0): Theory and Practical: Session Plan

Session 2.1: Organic Certification: The Certification Process. Certification and Product Labelling, Certification around the World.

Practical 1: To visit and document different Organic certification Agencies in Odisha.

certification Module-1

Session 2.2: Regulatory Mechanism for Organic Certification in India: Scope and Operational Structure of National Programme for Organic Production.

Practical 2: Hands on learning on Packaging & Labelling.

certification Module-2

Session 2.3: National Standards for Organic Production: Conversion requirements and Maintenance of Organic Management.

Practical 3: Visit to Certified Organic Farmer for documentation.

certification Module-3

Session 2.4: National Standards for Organic Production: Crop Production.

Practical 4: Visit and document to Certified Organic Grower group

certification Module-3

Session 2.5: National Standards for Organic Production: Animal Husbandry.

Practical 5: To visit and document in Animal Husbandry Unit.

certification Module-3

Session 2.6: National Standards for Organic Production: Food Processing and Handling.

Practical 6: To visit and document in Food Processing & Handling Unit.

certification Module-3

Session 2.7: National Standards for Organic Production: Labelling, Storage and Transport.

Practical 6: To visit and document Organic Cold Storage in Odisha.

certification Module-3

Session 2.8: Inspection and Certification Process: Inspection and Certification Agency, Annual Surveillance and Review of Inspection and Certification Agencies.

Practical 7: To document and understand the compliance standards.

certification Module-4

Session 2.9: Inspection and Certification Process: Inspection and Assignments, Inspection visit and Reports, Methods and Frequency.

Practical 8: To document and understand the compliance standards.

certification Module-4

Session 2.10: Inspection and Certification Process: Analysis and Residue Testing, Inspection Regime for Part Conversion and Parallel Production.

Practical 9: To document and understand the compliance standards.

certification Module-4

Session 10: Inspection and Certification Process: Inspection for use of Genetically Engineered Products, Inspection and Certification of Grower Groups.

Practical 10: To document and understand the compliance standards.

certification Module-4

3. Biopesticides and Biofertilizers (1-2-0): Theory and Practical: Session Plan

Session 3.1: Introduction, status and scope. Concepts and classification of biopesticides

Practical 1: Hands on Training on laboratory equipment and Layout of Biopesticides laboratory.

Video

PDF1.

Session 3.2: Pathogen, Botanical pesticides. biorationales. Botanicals and their uses.

Practical 2: Identification of some important botanicals.

Video

PDF2.

Session 3.3: Mass production technology of bio-pesticides.

Practical 3: Process involved in the Production of Biopesticides.

Video

PDF3.

Session 3.4: Virulence, Pathogenicity and symptoms of entomopathogenic pathogens and nematodes.

Practical: Identification of Pathogens and nematodes used as bio pesticides.

Video

PDF4.

Session 3.5: Methods of application of biopesticides. Methods of quality control and Techniques of biopesticides. Impediments and limitation in production and use of biopesticide.

Practical 5: Methods of application of biopesticides.

Video

PDF5.

Session 3.6: Biofertilizer- Introduction, status and scope.

Practical 6: Hands on Training on Laboratory Equipments and Layout of Biofertilizer Laboratory.

Video

Introduction and Structure of Biofertilizers

Session 3.7: Structure and characteristic features of bacterial biofertilizers-

Azospirillum, Azotobacter, Bacillus, Pseudomonas, Rhizobium and Frankia;

Cynobacterial biofertilizers: Anabaena, Nostoc and Hapalosiphon. Fungal biofertilizers:

AM mycorrhiza and ectomycorrhiza.

Practical 7: Isolation and Purification of Azospirillum, Azotobacter, Bacillus, Pseudomonas, Rhizobium and Frankia; Cynobacterial biofertilizers: Anabaena, Nostoc and Hapalosiphon. Fungal biofertilizers: AM mycorrhiza and ectomycorrhiza.

Video

Video

Video

Video

Video

Write up on Practical

Introduction and Structure of Biofertilizers

Structure of Biofertilizers

Session 3.8: Nitrogen fixation: Free living and symbiotic nitrogen fixation, Process of Nodule formation, Role of different Genes (Nod and Nif), Enzymes and Biochemistry of Nitrogen Fixation.

Practical 8:

Video

Write up on Practical

Nitrogen Fixation

Session 3.9: P- solubilizer and K- mobilizer: Mechanism of phosphate solubilization, phosphate mobilization and K solubilization.

Practical 9: Isolation and Purification of P- solubilizers and K- mobilizers.

Video

Write up on Practical

P and K Solubilizers

Session 3.10: Production Technology: Strain selection, sterilization, growth and fermentation, mass production of carrier based, liquid biofertilizers and EM. FCO specifications and quality control of biofertilizers. Soil, Seeds, Seedlings and Tubers etc. Factors influencing the efficacy of biofertilizers, Storage, Shelf life, Quality control, Certification and marketing.

Practical 10: Mass Production, Market Survey and Marketing of Biofertilizers.

Video

Video

Video

Video

Video

Write up on Practical

Mass Biofertilizers Production

Practice courses:

1. Organic Production- Field Crops (0-3-0): Practice: Session Plan

Practice 1.1: Components: Organic farm, Conversion of Soil to Organic.

Practice 1.2: Seed: Multiplication of Adopted and Resistant Varieties, Conservation and Certification.

Practice 1.3: Water Management: Reduce evaporation, Increasing Infiltration, Planting Pits, Contour bunds, Catchment strips, Drip irrigation systems and Water Storage.

Practice 1.4: Organic Nutrient production, Analysis and its Application: Green manures, Liquid manures, Panchgavya, Biodynamic, NADEP and Vermicompost etc.

Practice 1.5: Organic Pesticides production, Analysis and its Application: Neemashttra, Agniashtra, Brahmashtra, Jeevamrutam and Neem Oil etc.

Practice 1.6: Application of different methods to Manage Weeds.

Practice 1.7: Harvest and Post-Harvest Management.

Practice 1.8: Formulating Good Agricultural Practice (GAP).

Practice 1.9: Field trials of ITK's to assess their effectiveness (Gajapati context).

Practice 1.10: Hazard analysis and Critical Control Point. Documentation for certification.

2. Organic Production: Horticultural Crops (0-3-0): Practice: Session Plan

Practice 2.1: Field Preparation.

Practice 2.2: Selection of Adopted and Resistant Varieties.

Session 2.3: Seed Treatment.

Practice 2.4: Raising of Seedling and Nursery Management.

Practice 2.5: Mulching

Practice 2.6: Identification and Use: Natural Plant Growth Regulators and Micronutrients.

Practice 2.7: Management: Water, Nutrient, Weed, Pest and Disease

Practice 2.8: Harvest and Post-Harvest Management.

Practice 2.9: Visit to Organic fields and marketing centers.

3. Biofertilizer and Biopesticide Production Technology (0-3-0): Practice: Session Plan

Practice 3.1: Isolation and Purification of important Biopesticides.

Practice 3.2: Mass multiplication of Trichoderma Pseudomonas, Bacillus, Metarhizium etc. and its production.

<https://youtu.be/rwaFKXFUVdo>

Practice 3.3: Identification of important Botanicals.

<https://youtu.be/mhBVwMVoG3s>

Practice 3.4: Isolation and purification of Azospirillum, Azotobacter, Rhizobium, P-solubilizers and cyanobacteria.

Video

Video 2

Video 3

Video 4

Practice 3.5: Mass multiplication and inoculums production of biofertilizers.

Video

Practice 3.6: Isolation of AM fungi by Wet sieving method and sucrose gradient method.

Video

Practice 3.7: Mass production of AM inoculants.

Video

Practice 3.8: Field visit to explore naturally infected cadavers.

Practice 3.9: Identification of entomopathogenic entities in field condition.

<https://youtu.be/CnylR4reS74>

Practice 3.10: Visit to biopesticide laboratory in nearby area.

A. List of Projects/ Case Studies to be taken up under Organic Farming Domain:

1. Farmers Market
2. Biofertilizer Production in Odisha and Andhra Pradesh.
3. FPOs
4. ITKs
5. Organic Grower in Odisha and Andhra Pradesh.

B. Scaling Production:

1. Higher Production.
2. Awareness Program.
3. Marketing

C. Field Trials (Gajapati Context):

1. Application.
2. Generates Results.
3. Publications.
4. Supports Awareness and Mobilization.



GENERAL AGREEMENT FOR COLLABORATION

between the

Centurion University, Odisha

and the

Centre for Sustainable Agriculture, Secunderabad

WHEREAS, Centurion University is an education and research institution and Centre for Sustainable Agriculture is a development organization working on food, farming, environmental and public policy issues, and whose mission includes providing quality learning opportunities for students, scientists and communities, as well as promoting academic research and making fruits of research reach the needy people;

WHEREAS, both institutions consider the promotion and support for training and research and community outreach to be of primary importance in the fulfillment of their mission, goals and objectives;

WHEREAS both institutions consider that increasing opportunities for cooperation and exchange increases understanding of the subject deeper and appreciation;

NOW, THEREFORE, the **Centurion University of Technology and Management, Odisha** (hereafter **Centurion University**) and the **Centre for Sustainable Agriculture, Secunderabad** (here after **CSA**), agree to promote mutual cooperation in training,

FIRST: This general agreement for Collaboration shall establish the criteria under which Centurion University and CSA will carry out joint collaborative activities of mutual interest.



research and outreach in agriculture and rural livelihoods, according to the following clauses:

FIRST: This general agreement for Collaboration shall establish the criteria under which Centurion University and CSA will carry out joint collaborative activities of mutual interest.

SECOND: Both Institutions agree to consider and discuss the following forms of potential cooperation, within areas and on terms that are mutually acceptable:

- (a) Design courses on organic/natural farming, rural livelihoods, Farmer Producer Organizations for students, Policy issues in agriculture and rural development;
- (b) CSA will organize teachers trainings on organic/natural farming, FPOs, policy issues etc. where and when required.
- (c) Exchange of academic personnel for mutual learning;
- (d) Cooperative research and development activities;
- (e) Joint organization of conferences, symposia, short-term courses, training and Farm advisory services;
- (f) CSA will provide training and internship to the students of Centurion University
- (g) Use the each other's facilities
- (h) Exchange of academic or scientific materials and publications of common interest; and
- (i) Any other mutually agreed activity that would benefit both institutions.

THIRD: All proposed courses, projects, programs or work agreements including anything contemplated under (a) through (g) above, arising from this General Agreement and its respective terms and conditions including budgets and financial aspects shall first be discussed and if agreed upon, will then be implemented as "Specific Agreements" of collaboration. The Specific Agreements will implement this General Agreement and shall be signed by authorized representatives of both institutions.

FOURTH: Each institution will designate its own personnel to liaise with each other and administer any activities associated with this General Agreement, as well as the development and implementation of any Specific Agreement.

FIFTH: The institutions may, jointly or separately, endeavor to obtain financial resources from other institutions, government agencies and national and international organizations for the development of activities associated with the implementation of any Specific Agreement.



A handwritten signature in blue ink, consisting of stylized cursive letters.

SIXTH: The present General Agreement will become valid upon signature by authorized persons of both institutions and shall remain in effect for a period of five (5) years from its effective date. It may be renewed or amended at any time before the actual expiration date by a written agreement signed by authorized representatives of both institutions.

SEVENTH: This General Agreement may be terminated by either institution upon six (6) months prior written notice to the other partner; however, termination shall not affect the implementation of activities that have already commenced pursuant to a Specific Agreement. Those Specific Agreements will remain in effect until the required associated activities are completed.

EIGHTH: By signing this document, the institutions acknowledge that they have reviewed and understood the content and extent of each of its clauses, and agree to carry out the actions necessary to implement it. Two copies of this document will be signed in English and both versions with the same content and validity.

CENTURION UNIVERSITY

Odisha, India

CENTRE FOR SUSTAINABLE AGRICULTURE

Secunderabad, Telangana, India

Prof. Anita Patra

Registrar

Anita Patra



Date: 31.01.2020

A handwritten signature in blue ink, appearing to read "Dr. G.V. Ramanjaneyulu".

Dr. G.V. Ramanjaneyulu

Executive Director,

Date: 31.01.2020.



GENERAL AGREEMENT FOR COLLABORATION

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CENTURION UNIVERSITY

Odisha, India

Prof. Anita Patra

Registrar

Anita Patra



Date: 31.01.2020

CENTRE FOR SUSTAINABLE AGRICULTURE

Secunderabad, Telangana, India

Dr. G.V. Ramanjaneyulu

Executive Director,

A handwritten signature in blue ink, appearing to read "Dr. G.V. Ramanjaneyulu", written over a horizontal line.

Date: 31.01.2020.