Spicing Up The Nation's Progress

भाकृअनुप
ICAR

iiSr

ICAR-Indian Institute of Spices Research
(An ISO 9001:2015 Certified Organization)

Headquarters:

Located on a quaint hilltop 11 km from Kozhikode city (Kerala, India) on the Kozhikode – Kollegal National Highway (NH 766), the main campus houses the major laboratories and administrative offices of the institute.

Vision

Enhancing productivity of spices to meet the growing demand and to make India the global leader in spices export.

Mission

To serve the stakeholders in spices sector including primary producers, farmer collectives, industry constituents and public institutions by conducting goal-directed and peer reviewed research, creating a competent pool of trained manpower and spearheading technology dissemination. The institute shall seamlessly integrate cutting edge research, innovative thinking and global networking into its programmes, activities and services.

Research Portfolio

Smart Spice Farming
Develop, customize and deploy futuristic technologies to ease production techniques, to reduce losses and to enhance the yield and quality of spice crops.

Leveraging Spice Genomics
To develop spice varieties with improved traits utilizing knowledge gained through genomic and classical breeding.

Spices as Functional Foods and Wellness Products
Focus on the evolving role of spices as functional foods.

Strategies for Ensuring Food Safety
Ensuring availability of safe spices from farm to fork and beyond.

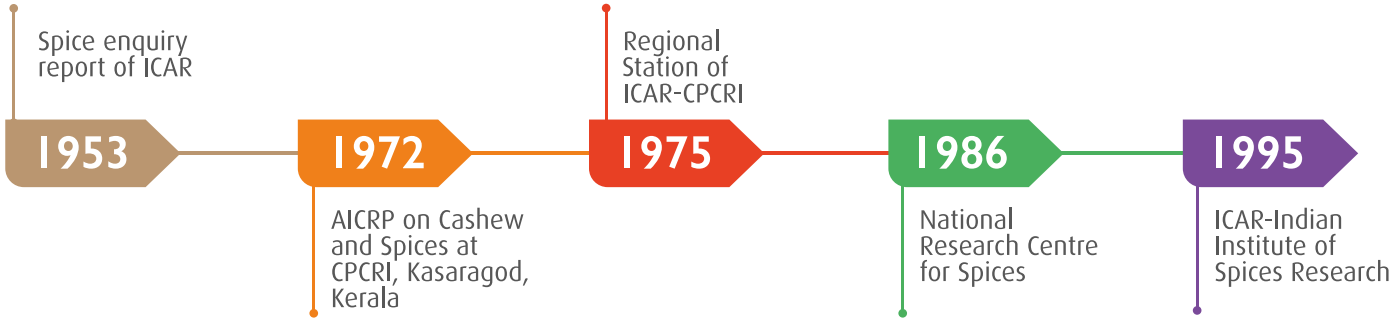
Futuristic Studies on Spices
Understanding technology dissemination and impact pathways, monitoring and influencing socio-economic, technological and institutional changes affecting spice economy

The institute has imbibed a global outlook in designing its interventions, activities and programmes. This outlook is attuned and subsumed to the priorities of the nation and ICAR's organizational vision. We strive to make a meaningful and coherent connection between our sphere of activities and the achievement of these greater goals.

Mandate Crops

- Black pepper
- Ginger
- Nutmeg
- All spice
- Cassia
- Cinnamon
- Cardamom
- Turmeric
- Garcinia
- Paprika
- Clove
- Vanilla

A time line of the institue



IISR Experimental Farm

IISR Regional Station

Krishi Vigyan Kendra

IISR Experimental Farm:

The research farm nestles at the foothills of Western Ghats mountain range, a serene setting 55 km North East of Kozhikode District.

IISR Regional Station:

The station is located at Madikeri, the headquarters of Kodagu District, Karnataka known for its salubrious climate and lush green plantations.

Krishi Vigyan Kendra:

Established in 1992, the KVK has emerged as a critical cog in planned agricultural growth and development in Kozhikode District


NO
POVERTY

Technologies for sustainable livelihoods

Varieties for sustainability and future needs

The genetic gains along with desirable agronomic and plant response traits embodied in the improved varieties developed by the institute have helped the primary producers in enhancing the efficiency of spice production. The crop improvement strategy pursued by the institute has synthesized the needs of the diverse constituents like the primary producer, export sector, industry and households in drafting its remit. The search for desirable traits and higher potentials and improved crop ideotypes suiting our diverse needs and agro-ecologies continues using state of the art tools and facilities.

Putting technology to work for spices

Bio inputs: PGPR consortia for growth promotion and biocontrol, Bioformulation of *Trichoderma, Lecanicillium psalliotae* and *Pochonia* for management of fungal diseases, pests and nematodes.

Designer micronutrient formulations: Crop specific formulations to alleviate deficiency, enhance crop yield and micronutrient content of the crop produce.

Quality declared planting material in spices: Ensuring that farmers have timely access to hi-health, disease free planting material is one of the most important elements of successful spices production.

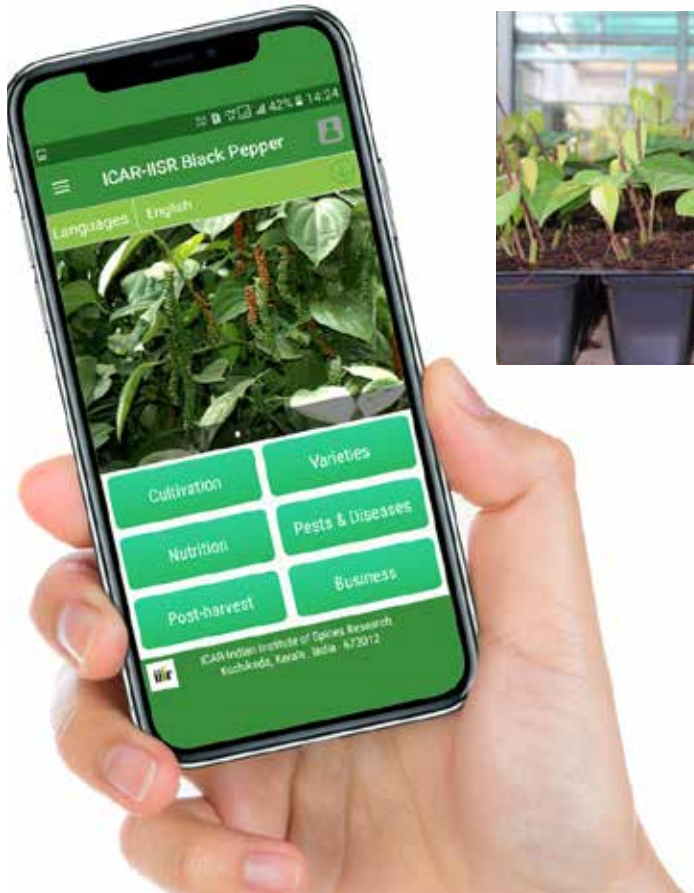
Touching lives, transforming livelihoods

Technology dissemination and handholding support for adoption of cutting-edge technologies can significantly influence the livelihoods of spice farming community. Our customised training programmes and handholding services are designed with an unwavering focus on conferring the benefits of advances in technology to its clientele. We reach out to the stakeholder community through Farm advisory services / Field diagnostic visits / Customized training programmes / Field demonstrations / Technology showcasing events / Digital outreach platforms / Target group programmes / Visitor facilitation services / Technology input delivery / Farmer participatory technology trials / Mass contact programmes / Documentation of farm innovators and progressive farmers / Virtual training programmes / Mobile Applications / Social media platforms etc.


ZERO
HUNGER

Smart spice farming solutions

Our vision for ushering in smart spice farming systems in the country is consistent with our research efforts in delivering smart solutions for the constraints faced by the spice farming community. The unique microbial delivery system involving microbial encapsulation technology and several other path breaking strides including designer micronutrients for spices, mapping of climate analogues for spice farming, input optimization for targeted yield and fertigation scheduling have become the state of the art in modern spice farming systems. These solutions have strengthened the ability of the primary producers across the country to generate higher farm business incomes from cultivation of spices.




LIFE
ON LAND

Conserving biodiversity, preserving our spice heritage

India's natural endowment of rich biodiversity in spices, also places a critical responsibility with us for conserving and cataloguing this priceless asset for the benefit of humankind. Optimizing the use of available germplasm for crop improvement, search for novel traits, pharmacological properties and for advancing our sphere of knowledge has remained one of the core activities, right from the time of establishment of the institute. Over the years, the institute has emerged as the custodian of one of the largest collections of spice germplasm in the world. The germplasm collection serves as a repository of natural variability and can be leveraged to shape and influence the shared destiny of global spice production.

Supporting grass-root conservation efforts in spices

With a history spanning thousands of years, spice cultivation has benefitted from several farmer mediated varietal development and conservation efforts. Our heirloom varieties in spices forms a part of our shared legacy. We are committed to identify, conserve and protect the varieties while ensuring that the individuals and communities behind such efforts get their due credit. The institute has developed the Distinctiveness Uniformity and Stability guidelines for registering of plant varieties in black pepper, ginger, turmeric and cardamom and acts as the nodal centre for DUS testing in these crops.

Microbial culture collections

Microbial diversity is an integral part of an ecosystem and the institute maintains a wide collection of microbes collected from different spice based ecosystem including fungi, bacteria and viruses with biocontrol potential, growth promotion and nutrient solubilization traits. Institute maintains a repository of diverse collection of *Phytophthora* spp. with an objective to undertake basic and advanced research and also to share authentic Phytophthora strains for undertaking research programmes on Phytophthora.

Germplasm conservatory

World's largest Germplasm Repository of Spices:
Indian Institute of Spices Research possesses world's largest germplasm collection in various spices. Germplasms of Blackpepper, cardamom, ginger, turmeric, clove, cinnamon, vanilla, garcinia and all spice are conserved in germplasm conservatory and in vitro gene banks.


GOOD HEALTH
AND WELL-BEING
thema
VANILLA
SOAP
thema

Spicing up lives: Food, form and function

From the time of earliest civilizations, spices have been recognized for its immune-boosting properties. Consumption of spices is innately associated with several health benefits, with its mode and methods spanning from the well-established to the esoteric. Shining a light of informed insight and dispelling ignorance, the institute has brought clarity on several vexing uncertainties in spice biochemistry, bio-chemical pathways and nutraceutical properties. We believe that the spice commodities, their range of secondary metabolites and constituent compounds have a lot to offer for an inclusive and integrated health & wellness management regime.

Deciphering the language of spices

Spices become relevant to humankind through its constituent chemical molecules with unique properties. These molecules, high value compounds, modes of action and their properties are in a way, the language of spices. We have made critical advances in deciphering this language and furthering the understanding about the spice crops producing these molecules and compounds. Our programmes delve deep, starting from the biochemical process of their production in the plant cells to their various applications.

Pepping up lives

Over the years, the institute has paved way for the introduction of many spice infused health and wellness products. We also extend support to start ups and individual innovators to design and develop innovative spice products and applications.

Our research work, leveraging state of the art pesticide residue analytical facility and bio chemical laboratories, have played a stellar role in sensitizing the general public and research community about the need to monitor pesticide residue in spice commodities. We were also instrumental in bringing about a focus on intrinsic quality aspects of commonly consumed spices.


RESPONSIBLE
CONSUMPTION
AND PRODUCTION

Treading lightly and sensibly

We make conscious efforts to minimize our footprints in all technology interventions and the philosophy of responsible production is embedded in all the technologies developed by the institute. This is manifested in an explicit focus on optimizing consumption of energy and natural resources in production and post-harvest processing of spice commodities.

Harnessing renewable energy for aiding spice production and processing

It is appropriate and relevant to base the spices processing technologies on solar energy for operational economics and environmental protection.

The ground-breaking technological innovation implemented by the Institute involves integration of solar energy applications in spices processing technologies using solar boilers and dryers.

Responsible crop production packages

Aiming to introduce the most efficient energy management system for spice cultivation and processing, we focus on seamless integration of economic growth and environment protection to ensure sustainable development. The key elements of sustainable and organic agricultural practices along with input optimization strategies developed by the institute have disseminated at the grassroots level bringing about desirable behavioural changes across major spice production agro-ecologies.

Swachh Bharat Mission

Institute is actively involved in Swachh Bharat Abhiyan or (Clean India Mission) by creating awareness among public farmers and students, cleanliness drives and educating public on management of solid and liquid wastes.


INDUSTRY, INNOVATION
AND INFRASTRUCTURE

Nurturing innovations: From farm to fork and beyond

Synergizing the sustainable development goals with Skill India and Make in India movements, we work with industrious young entrepreneurs and start-up ventures for ensuring a better place for them in the industry. Offering support to give shape to their ideas, post-harvest support, product development lab, spice processing facility and incubation support are arranged at the institute to benefit our incubatees and licensees.

Innovator support facilities at IISR

Spice processing facility and product development lab at Chelavoor, Spice processing facilities at Peruvannamuzhi and Appangala.

Start-up support

The institute offers comprehensive and structured handholding services to support start-up ventures, farmer collectives and entrepreneurs of various hues through the Institute Technology Management - Business Planning and Development (ITM-BPD) Unit. Our range of services ensures that each commercial venture with us is provided a nurturing environment, unsurpassed in quality.

- Business Plan Development
- Infrastructure Support
- Mentoring
- Legal and IP Advisory
- Business Incubation Facility

REDUCED INEQUALITIES

Equity in development: Reaching the unreached

The benefits of growth and development should be equitably shared by all. This philosophy, deeply ingrained in our organizational psyche, has pushed us in striving to reach out to the socially and geographically disadvantaged sections of the community.

Support for tribal farming communities

Under the Tribal Sub Plan, we have set for ourselves distinctive and challenging development goals for our target population, matching their agricultural developmental aspirations with the potential of spice crops in their specific cropping systems. The interventions range from the support for tribal farmer collectives for value addition to activities targeting nutritional security, self-sufficiency, food security and technology dissemination.

North east region development

The NEH region of the country holds significant latent potential as far as spice crops are concerned. Our interventions in the region are designed to realize this potential in a sustainable manner.

- Seed village formation
- Planting material propagation
- Value chain interventions

Women farmer collectives and women owned commercial ventures find a special place as a target group for extending our handholding services.

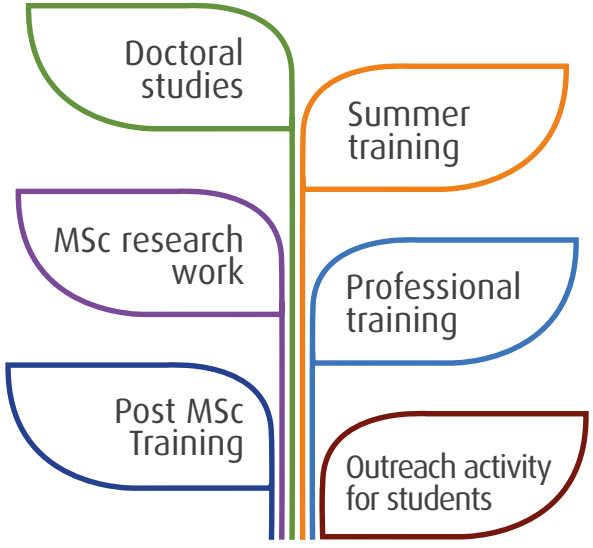

QUALITY
EDUCATION

Sharing knowledge, Nurturing expertise

A steady flow of trained human resources, skilled in scientifically addressing research questions, is a critical cog in maintaining a vibrant research landscape in the spices sector. This understanding has guided us in our endeavours to engage with the scholastic community through diverse means. While we commit considerable efforts and resources in moulding and mentoring the future researchers, we also consider this time well spent in crafting the future of spice research in the country.

How we engage in kindling knowledge and skill

The institute offers its scholars, a unique opportunity to access its labs and facilities to conduct guided research programmes. Several Universities and educational institutions in the country have utilized the institute's academic mentoring programmes.



Partners in Education

- 38 State Agricultural Universities
- MoU with 5 Agriculture Universities
- MoU with 5 Non Agriculture Universities

Partners in Progress

Over time, we have joined hands with several institutional stakeholders with proven capabilities. These partners, including public funded institutions, industry associations, academic institutions, NGOs and development agencies, complement our core competencies and help us in enhancing the efficacy of our interventions. Channelizing these synergies, we have emerged as one of the major influencers in the spices sector and the primary provider of backstopping support for all matters related to spice crop research in the country.

All India Coordinated Research Project on Spices

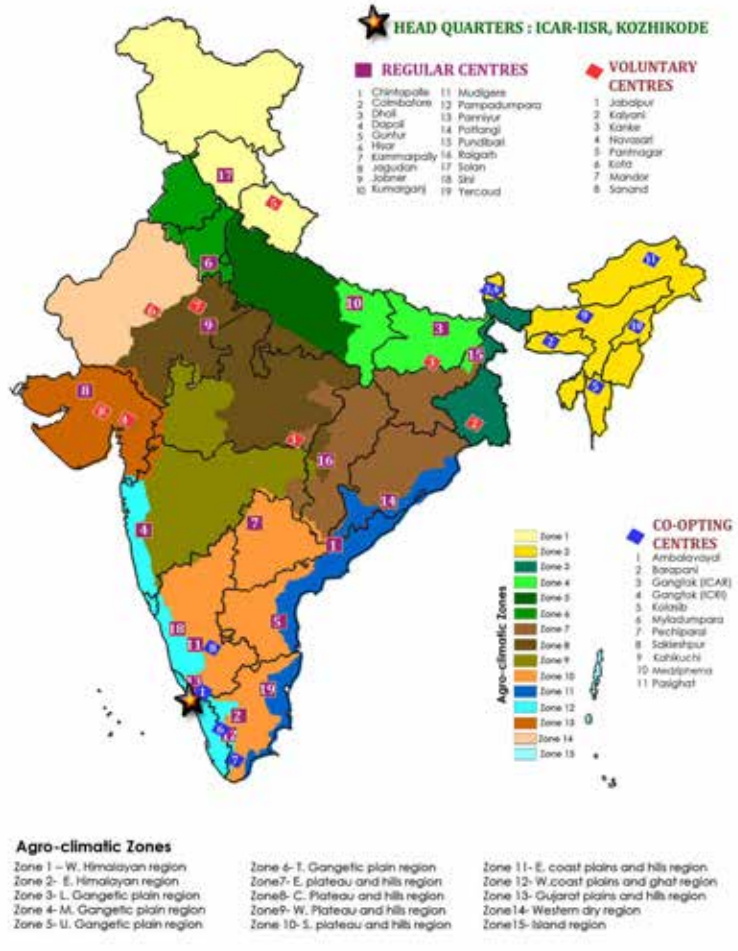
Started in 1971, ICAR-All India Coordinated Research Project on spices (ICAR-AICRPS) is the largest spices research network in the country that engages in nationwide collaborative and interdisciplinary research in Spices. The AICRPS which links ICAR system with the state agricultural universities and central institutions is headquartered at ICAR IISR, Kozhikode

International Pepper Community (IPC)
Spices Board
Directorate of Arecanut and Spices Development
State agricultural universities
Sister ICAR institutes

All India Spice Exporters Forum
World Spice Organization

Indian Society for Spices

Kerala Startup Mission | Agri Innovate
Co-operative societies | Farmer producer organizations



PARTNERSHIPS
FOR THE GOALS

ICAR-Indian Institute of Spices Research
Marikunnu P. O., Kozhikode (Calicut), Kerala, India. Pin: 673012
Tel.: 0495-2731410, Fax: 0495-2731187 | Website: spices.res.in

https://www.facebook.com/IISRCalicut ICAR-IISR, Kozhikode@icar_iisr https://www.youtube.com/user/iisrcalicut

Prepared by:
Praveena R, Lijo Thomas, D Prasath and Santhosh J Eapen
Technical assistance: Sree K M
Photographs: A Sudhakaran

Published by Director,
ICAR- Indian Institute of Spices Research,
Kozhikode, Kerala