# First Circular

## International Conference
## on

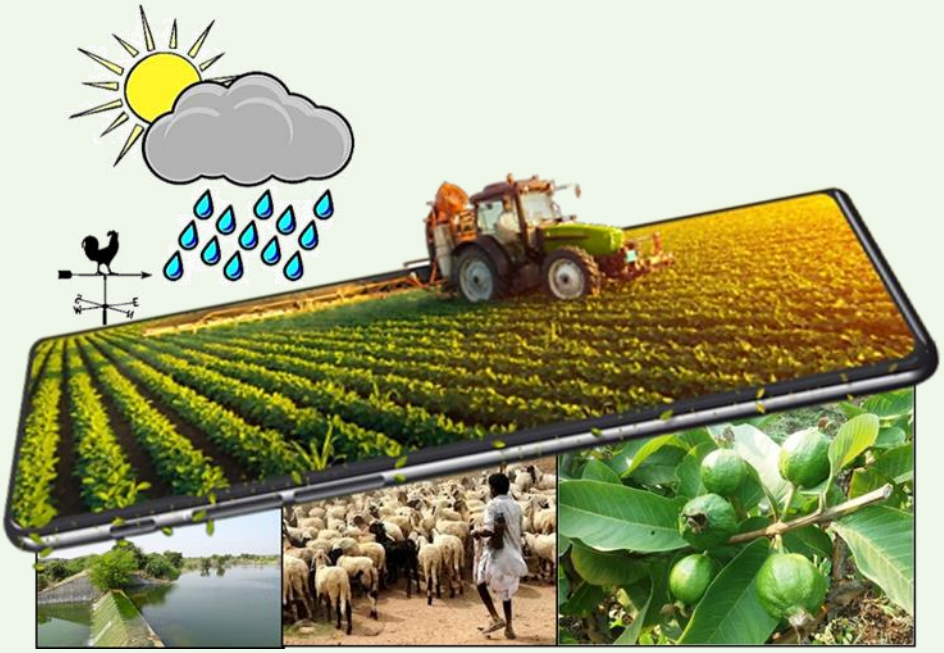
# *Rainfed Agriculture: Building Pathways for Resilience & Sustainable Livelihoods*

## 29-31 January, 2025

**at**

**ICAR-Central Research Institute for Dryland Agriculture**

**Hyderabad, Telangana, India**



**Organised by**

**Indian Society of Dryland Agriculture**

**ICAR- Central Research Institute for Dryland Agriculture**

**In collaboration with**

**Indian Council of Agriculture Research, New Delhi**

**International Conference**

**on**

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Globally, Rainfed farming is practiced in about 80% of cultivated land and contributes 60% of world food. In India, rainfed agriculture occupy about 50% of net cultivated area, practiced in diverse agro-ecologies and contributes 40% of country's food basket and dominant producer of oilseeds, cotton, jute and allied fibres. In India, contribution of rainfed production to nutritious cereals and pulses is about 84-87%, cotton- 60% and 77% in oilseeds and support 60% of livestock and 40% of human population. Globally, investments for irrigation have not increased leading to predominance of rainfed cultivation specially in African countries. Rainfed agriculture would continue to occupy a prominent place in Indian agriculture for a long time to come in view of its contribution to the food and nutritional security. Despite significant strides made in enhancing irrigated area and irrigation potential, dependence on monsoon rainfall continues to be high for agriculture production in India. Though rainfed area is reduced to 46% of net cultivated area in recent years, it continues to attract attention from policy makers and administrators as they experience droughts and floods in the same season, witnessing extreme rainfall events causing significant losses to farming communities, society and to governments. Spatial and temporal distribution of rainfall is one of the major factors affecting the rainfed production systems in the country. While stability and enhancing cropping intensity is observed in irrigated systems, lower cropping intensity and higher risk are prevalent in rainfed systems. Despite the progress made so far, rainfed agriculture in India still encounters multiple risks and constraints relating to biophysical, socio-economic and policy related issues.

Agricultural production, productivity and stability in rainfed areas is being impacted due to changes in the onset of monsoon, improper distribution of rainfall during the season, climate variability, low water holder capacity of soils, dependence on high external inputs such as hybrids, lack of precision technologies for fertilisers based on moisture availability, inadequate capacity of small and marginal farmers, lack of direct policy interventions for promoting rainfed crops etc. Realizing the importance of rainfed production system due to their diversity in production of various commodities, state and national governments and/or civil society organisations are developing and promoting the sustainable practices and encouraging the production of indigenous varieties which are often recognised for their nutritional value and the promising traditional systems which can minimise risk and stabilise production.

The major challenge of rainfed agriculture would be to sustain the livelihoods of the small and marginal farmers and to enhance their income by various means. In the absence of proactive measures, rainfed farming will no longer be attractive and retaining farmers may be difficult. In addition to the traditional problems, of late, climate variability and shrinking land holding size, market driven choices of commercial crops disregarding the available natural resources etc. are some of the new threats for rainfed farming. Failure to address these challenges will lead to substantial shift of rural youth to service sector resulting in huge manpower shortage in farming. While enormous opportunities exist in

high rainfall regions specially in the eastern, parts of central and north eastern region for enhancing the cropping intensity either by effective management of available rainfall through harvesting and reuse or through ground water resources, less endowed regions are the ones which need specific attention. These less endowed regions are the ones significantly contributing to pulses and oilseeds which are very important for a country like India. There is a need to diversify the production of pulses and oilseeds as a second crop in post rainy season either in high rainfall regions or irrigated regions. Preference for growing commercial crops even in less endowed areas is witnessed which are often causing pressure on land and water resources and hastening land degradation and contributing to risk. The challenge therefore lies in balancing the land use and cropping pattern as per the resource endowments and also meeting the demand of market forces as well as the national requirements. Some of the challenges like retaining area under the nutritious cereals can be converted into opportunities by creating awareness on the health benefits of these crops and by way of realising higher profits through value addition.

Drought is a major weather aberration observed in India. Every year, some part of the country is witnessing drought. Production deficiencies are also observed during normal rainfall due to untimely and variable rains. It is not exaggerated to indicate that drought and high intense rainfall lead floods are occurring in the same season specially in western regions of the country. The risk involved in successful cultivation of crops depends on the nature of drought (chronic and contingent); probable duration, intensity and periodicity of occurrence within the season. Inherent constraints such as poor water and nutrient retention capacity, low soil organic matter (SOM), nutrient deficiencies make rainfed agriculture highly vulnerable and less resilient requiring a different outlook and strategy. Besides the three primary nutrients (NPK), deficiency of S and micro nutrients like Zn and B in many of states, and of Fe, Mn and Mo in some states, have become limiting factors for increasing food productivity.

While climate change impacts are more evident in agriculture sector at micro level in general, rainfed agriculture is the one bearing brunt as it is dependent on monsoon and the likelihood of increased extreme weather events due to the aberrant behaviour of south-west (SW) monsoon. The aberrations in SW monsoon which include delay in onset, long dry spells and early withdrawal, are impacting the crops and production systems, are likely to further aggravate in future. Technological interventions (e.g. cropping patterns, crop diversification, soil health management, rainwater harvesting, shifts to drought/salt tolerant varieties etc.) are some of the interventions which can play a significant role in enhancing the current capacity of rainfed farmers to cope with climate change. Biofortification of rainfed crops, particularly millets, to be the hope for future to ensure nutritional security as most of the tribal people and farm labourers of dryland areas are suffering from protein and micronutrient malnutrition.

Yield gaps between research station yields and farmers' fields are significant and bridging them is a priority for rainfed regions. While evolving strategies for bridging yield gaps, due attention must be given to regional imbalances in terms of natural resources and technology intake capacity of farmers. Several civil society organizations have been working with communities for a longer period on natural resource management and for conservation of traditional germplasm across India. A meaningful collaboration between all stakeholders including CSOs is needed to develop and promote sustainable technologies in NARES which would bring in much needed transformation in rainfed systems.

While continuous efforts are being made to augment the water supplies through irrigation systems, the approach should be to increase the water use productivity and efficiency by reducing losses associated with utilization of water, to maximize returns from every drop of harvested water and to enhance cropping intensity. Improving soil health through on-farm generation of organic matter,

management of crop residues and composting need appropriate policy support. Selecting suitable crops and varieties through systematic analysis of long term weather conditions for different locations, will help increase production of crops and cropping systems, in maintaining soil cover for longer period and also to promote short duration based double cropping systems of millets/ pulses/ oilseeds or combination of them. With location specific technologies developed through centres of AICRP on Dryland Agriculture, technologies like rainwater management, choice of crops, short duration varieties, and other agronomical practices, a greater portion of drylands can be put under intensive cropping systems including relay cropping and double cropping by efficiently using the available resources. Conservation agriculture (CA) is gaining importance as an alternative strategy to sustain agricultural production due to the growing resource degradation problems, particularly under rainfed conditions. CA practices contribute towards saving in time, reduce cost of production and contribute to sustainable intensification in resource endowed areas.

Diversification and/or consolidation of farms and farming activities improve the utilization of labour, realizing better values for the produce by aggregation of farmers through farmer producer organisations and further enhance productivity and profitability. Integrated farming systems (IFS) including agro-forestry increase resilience and support livelihoods through simultaneous production of food, fodder and firewood and can mitigate the impact of climate change. Improved access to the farm machinery for sowing, harvesting etc. and other operations is an important adaptation strategy to deal with climatic variability such as late on-set of monsoon, mid-season and terminal droughts and also contributes to timely sowing of post-rainy crops. Custom hiring of agricultural machinery is an important institutional arrangement which can promote mechanization of agricultural operations on small farms.

Extreme weather events such as drought, storms and heat waves have severe effects on agricultural production. The impact of these events on farmer's livelihood can be reduced if farmers have advance information about the probable occurrence of these events in their geographical locations. Monitoring of weather conditions and advance weather information will be of immense use in planning day to day agricultural operations. Technology transfer is one of the weakest links in rainfed agriculture. Efforts are needed for involving multiple agencies/ organisations to meet the demands of the rainfed agriculture which is quite diverse and challenging. One of the approach is to build the capacity of the community-based organizations and farmers groups so that the knowledge acquisition and transfer processes can go in the hands of the community. There is need for developing early warning systems for climate variability such as drought, floods and other extreme weather events and greater use of ICTs for monitoring and dissemination of information in real time. The National Agriculture Research and Extension system is striving to develop, validate location specific technologies. Advances in research and the associated technological interventions are being demonstrated through concerted efforts of national agriculture research and education system through ICAR institutions, state agriculture universities, Krishi Vigyan Kendra's along with state government departments through various initiatives of federal and state governments.

The proposed international conference is aimed to bring together the researchers, farmers, NGOs, policy makers to discuss on research outcomes, the successful initiatives made for development of rainfed regions by state, central governments, NGOs etc, latest technological interventions adopted in different states, policy support needed to support rainfed farmers and to enhance farm income. Opportunities emanating to convert rainfed regions as production hubs of nutritious cereals, pulses, oilseeds, diversified land use promotion for mitigation of climate change impacts would be discussed extensively. Proceedings of the conference would be brought out to provide a direction for development of rainfed areas in the years to come for secured livelihoods and enhanced farm income.

## Theme:

The theme of the International Conference will be **"Rainfed Agriculture: Building Pathways for Resilience & Sustainable Livelihoods"**

Tentatively there will be following sub-themes for the Conference. Each sub-theme will have a separate symposium

## Broad Themes

1. Resource Characterization, Conservation, Management and Governance
2. Livelihood Diversification for Risk mitigation & Ecosystem Services
3. Crop Improvement and Management for Biotic & Abiotic Stress Mitigation
4. Sustainable Soil Management for Resilient Rainfed Agro-ecosystem
5. Next-Gen Technologies: AI & ML, Remote Sensing, Modelling, Drones
6. Enabling Technology & Knowledge Dissemination For Scaling Impacts
7. Resilience Through Livestock and Fisheries in Rainfed Regions
8. Agroforestry and Horticulture for Risk Minimization
9. Mechanization, Processing and Value chains for Rainfed Crops and Systems

## Panel discussions

1. Conservation Agriculture for Rainfed Cropping Systems
2. Carbon Trading in Agriculture

## Interaction sessions

1. Farmer and Scientist interaction on Rainfed Agriculture-Pathways for Resilience & Sustainable Livelihoods
2. Industry-Scientist-Policy Interface on Climate Resilient Rainfed Agriculture

## Presentations

There will be three categories of presentations:

- Plenary
- Invited
- Rapid fire
- Poster

## Plenary Lectures

Eminent Scientists/Administrators in agriculture will be invited to deliver special lectures on the topics related to eco system services, food production and policy, farming systems research, climate change, conservation agriculture, energy, environment, water governance and management, input use efficiency, etc.

## Invited papers

Nine Symposia have been planned on the sub-themes of the Conference as listed above. Selected speakers will be invited to make their presentations on the subthemes of the conference.

Two panel discussions would be held on topics relevant to rainfed agriculture with eminent speakers, practitioners and administrators

## Poster presentations

There will be an organized Poster Session covering the themes identified in the Symposia to encourage wider interaction and information sharing. The papers contributed for Poster Session will be screened and each Poster Session will have a Convener and Co-convener. The Conveners/Co-conveners will prepare and present Summary of the concerned Poster Session. This will permit discussion and help in formulation of meaningful recommendations.

## Exhibition and Advertisement

An exhibition will be organized at the conference venue, the details of the space available and charges etc. will be made available in the second circular. Advertisement can be included in the conference publications.

## Sponsorship

Organizers need sponsorship from different organizations for achieving the objectives of the Conference in wider perspectives.

**Language:** English will be the official language of the Conference.

**Venue:** CRIDA Auditorium, ICAR-CRIDA, Santosh Nagar, Hyderabad, Telangana, India

**Conference duration:** 29th -31st January, 2025

## REGISTRATION FEE

### Foreign delegates:

| S. No | Category | Fee (US$) - till due date | Fee (US$) - after due date |
|---|---|---|---|
| 1 | Scientists | 500 | 600 |
| 2 | Industry and private organizations | 800 | 900 |
| 3 | Students & research scholars | 350 | 400 |
| 4 | Accompanying family member | 300 | 300 |

### Indian delegates:

| S. No | Category | Fee (Rs.) - till due date | Fee (Rs.) - after due date |
|---|---|---|---|
| 1 | ISDA members (In-service) | 7000 | 8000 |
| 2 | ISDA members (Retired) | 5000 | 6000 |
| 3 | Non – ISDA members | 8000 | 9000 |
| 4 | Industry & private organizations | 10000 | 12000 |
| 5 | Students & research scholars | 5000 | 6000 |
| 6 | Accompanying family member | 2500 | 2500 |

Through Hybrid mode: 50% of above for each category

## Currency

Rupee is the national currency of India. All major international currencies can be exchanged at the International Airports, 5-star Hotels and Banks. Major currencies are accepted at the hotels and some major shopping centres. International credit/debit cards are widely accepted.

## Accommodation

The registration fee does not include accommodation charges. Limited accommodation is available in the government guest houses. Most of the delegates will have to stay in hotels.

A wide range of accommodation varying from 5-Star hotels to guest houses is available. The likely tariffs are as follows:

| | |
|---|---|
| 5-Star Hotels | US $ 400-800 (Rs. 6,000 - 8,000) per day diem/night |
| Medium range Hotels | US $ 200-400 (Rs. 2,500 - 5,000) per day diem/night |

5-Star Hotels: Park Hyatt, Taj Krishna, Radisson, ITC Kakatiya, Golkonda, Ashoka, Lemon tree

## Important Dates

| | | |
|---|---|---|
| Notice of 1st Intent (First Circular) | - | 31st August, 2024 |
| Submission of extended summary | - | 31st October, 2024 |
| Acceptance of extended summary | - | 15th November, 2024 |
| Registration fee (without late fee) | - | 30th November, 2024 |

## Internet

The information contained in this circular and all updates are available on WWW.ISDA-RAINBURS.IN

## Second Circular

The second circular with further information will be sent only to those who send the Notice of Intent.

## Tour

Pre-and post-conference tours to tourist spots will be organized for the registered delegates and accompanying persons in and around Hyderabad as well as other places of interest.

## About the City

Hyderabad is the capital of the state Telangana, India. It also goes by its Sobriquet City of Pearls. It is the fourth most populous city and sixth-most populous urban agglomeration in India. Hyderabad was founded by Muhammad Quli Qutb Shah in 1591 on the banks of Musi. Today the city covers an area of approximately 650 square km. Hyderabad has developed into one of the major hubs for the information technology industry in India which has earned it the additional sobriquet "Cyberabad". In addition to the IT industry, various biotechnology and pharmaceutics companies have set up their operations in Hyderabad owing to its established Public sector in Life Science Research and Genome Valley. Located at the crossroads of North and South India, Hyderabad has developed a unique culture that is reflected in its language and architecture. Hyderabad, also known as the 'City of Nawabs' is steeped in rich culture and history.

## Weather

End of January is cool and pleasant. Lighter winter clothing's are required. The day temperature ranges from 26-31°C and night temperature from 16-19°C.

### Chief Patron

**Dr. Himanshu Pathak**
Secretary (DARE) & Director General (ICAR)
Indian Council for Agriculture Research
New Delhi 110012

### Patron

**Dr. S.K. Chaudhari**
Deputy Director General (NRM)
Indian Council for Agriculture Research
New Delhi 110012

### Organizing Committee

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## PARTICIPATION FORM

**International Conference**

**on**

# *Rainfed Agriculture: Building Pathways for Resilience & Sustainable Livelihoods*

**29-31 January, 2025, ICAR-Central Research Institute for Dryland Agriculture**
**Hyderabad 500059, Telangana, India**

**(Please mail this form so as to reach the Organizing Secretary latest by 31st October, 2024)**

Name: Prof./Dr./Mr./Mrs./Ms. _____

(Please underline your last name)

Country: _____

Address:

_____

_____

_____

Tel. No. _____

Fax _____

Email: _____

Sub-theme of interest: _____

I am interested in:

- ☐ Attending the Conference
- ☐ Presenting an Invited paper on .....
- ☐ Presenting a Rapid fire paper on .....
- ☐ Presenting a Poster on .....
- ☐ Post Conference Tour .....

**Signature**

**Mailing address**
**Dr JVNS Prasad**
Project Coordinator, AICRPDA & Organising Secretary
ICAR-Central Research Institute for Dryland Agriculture (CRIDA),
Santosh Nagar, Saidabad, Hyderabad, Telangana, India
Phone: 9490301704
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The Pearl City, Hyderabad with its unmatched blend of history with modernity, hypnotizes everyone who sets his/her foot in this beautiful city. With a history as old as 400 years, Hyderabad promises a unique refreshing experience to all.

The **Charminar** (lit. 'four minarets') is a monument constructed in 1591, the landmark is a symbol of Hyderabad. The iconic symbol of Hyderabad, the very well-known Charminar is located in the Old City. It was built by Sultan Mohammed Quli Qutb Shah in 1591 in the honor of his wife Bhagmati. Also referred to as the 'Arc de Triomphe of the East', Charminar is adorned with four towers in each corner. Lighting in the evening is quite glamorous and makes for a worth watching site. No visit to Hyderabad is complete without witnessing the grandeur of Charminar.

The **Mecca Masjid,** located just 100 m away from the historic Charminar, Mecca Masjid is one of the largest Mosques in the world. With almost 8000 mason involved, it took close to 80 years for its construction to be completed. In 1617 it was built by Sultan Muhammad Quli Qutub Shah, although the construction was completed in 1694 by the Mughal Emperor Aurangzeb. With a height of almost 75 feet and dimensions of 220 feet by 180 feet, it can easily accommodate about 10,000 devotees. Mosque has stunning interiors as well with Belgian crystal chandeliers, beautifully designed five arches on each side, verses from the Quran on arches and the doors.

The **Golconda Fort, b**uilt by Qutub Shahi Kings, Golconda fort presents an impressive structure, with eight gates and 87 bastions. It is only 11 km away from the city and is well connected as well. Along with brilliant architecture, it also captivates visitors with its system of acoustics, water supply system, 'Rahban' cannon and Ramdas' prison which has carved Hindu deity in it. The light and the sound show in English, Hindi and Telugu language narrated by the Bollywood superstar Amitabh Bachchan is something one must not miss when visiting the Fort.

The **Chowmahalla Palace,** with the literal meaning of 'four palaces' in Urdu language was built in the 18th century. It was during the reign of the fifth Nizam, Afzar-ud-Daulah, Asaf Jav V, from 1857 to 1869, that the palace was completed. Initially spread across an area of 45 acres, the palace now covers 12 acres of land. It has been open for public viewing since 2005 and is ranked among the top forts and palaces in Hyderabad.

The **Salar Jung Museum**, one of the popular museums in Hyderabad, Salar Jung Museum is located at the banks of Musi River. With an impressive collection of 43000 art objects, 9000 manuscripts and 47000 printed books, it is considered to be one of the biggest one-man collections of the world. This museum has 38 galleries with 20 galleries on the 1st floor while the rest 18 galleries on the 2nd floor. In 1951, it was opened to the public while in 1968 it was shifted to its current building. There are several valuable items on display at the museum including the famous statue, Veiled Rebecca.

**Shilparamam**, a craft village, Shilparamam is one of the popular tourist attractions of Hyderabad. Spread over 50 acres, it is a popular shopping attraction to visit in the evening. Artisans from all over India showcase their best products here. Handmade artifacts, hand woven, traditional clothes and traditional jewelry often lure visitors. It has many captivating sections such as Crafts Museum, Cultural Museum, Art Gallery & Library, Multi-purpose Auditorium, as well as Workshops and Research & Design Centers. And the best part is you won't have to explore all this empty stomach. There are many food stalls offering mouth-watering snacks as well.

**Birla Mandir**, located atop a 280-foot-high hillock of Kalapahad, the beautiful Birla Mandir has derived its name from the industrialist Birlas who have constructed Birla temples in various parts of the country. It is an ideal place to visit in the evening in Hyderabad. Constructed in 1976, it is said it took close to 2000 tonnes of white marbles to build this stunning temple which was brought from Rajasthan. It has drawn its architecture from the amalgamation of three known architectural designs - South Indian Architecture, Utkal temple Architecture and Rajasthani Architecture. The temple has an 11 ft. tall statue of Lord Lakshminarayana with a magnificent lotus carved around it.

**Nehru Zoological Park**, opened to the public in 1963, Nehru Zoological Park is located near Mir Alam Tank of Hyderabad. Boasting of about 1,500 species of birds, animals and reptiles, it is run by the Forest department, Government of Telangana. With a vast area of about 380 acres, it is quite a popular picnic spot in Hyderabad. The history museum here also attracts many visitors. When here, you can choose from a variety of safaris and treat yourself with a few adventurous moments. Bear Safari, Tiger Safari, Lion Safari, and Butterfly Safari are available here for the visitors.

**Birla Planetarium**, inaugurated by the late Sri N.T. Rama Rao in 1985, dome shaped Birla Planetarium is situated in the heart of the city, at Naubat Pahad. Developed with the technical help from Japan, planetarium contains four sections, each offering a unique opportunity to explore the unknown. The Birla Planetarium in Hyderabad provides both education and entertainment to visitors through high-quality

presentations, and is considered one of the best and most popular planetariums in the world. 'Sky show' and 'Window on Science' are its most attractive features. It is open every day, except the last Thursday of every month. Timings are from 10:30 am to 8:00 pm.

**Tank Bund,** is a popular hangout of the city. Promising its visitors with a breathtaking view of the lake and its monolith of Buddha in the center, it dams the Hussain Sagar Lake. This area showcases not just one or two but 33 bronze statues of various popular figures such as Komaram Bheem, Sri Krishna Devaraya, Nannaya, Tikkana, Erra Pragada, Asaf Jah VI and many more. To its south it has Secretariat buildings, the NTR memorial, the Lumbini Park, and the Hyderabad boat club while to its north it has the Sanjeevaiah Park, Hazrat Saidani Ma Saheba tomb, and the Secunderabad Sailing Club.

**Lumbini Park,** developed in 1994 by the Hyderabad Urban Development Authority, Lumbini Park has been named after the birthplace of Lord Buddha. Located quite close to the Hussain Sagar Lake, it is one of the popular tourist spots of Hyderabad to visit with family and kids. The giant clock designed with varied kinds of captivating flowering plants, which you see at the entrance is one of the prime attractions of the park. The musical fountain and the laser show here mustn't be missed. Visitors to the park can also take a boat ride on Hussain Sagar Lake to see the Buddha Statue located in the middle of the lake.

**Sanghi Temple,** about 25 km away from Hyderabad, Sanghi Temple is located on the hillock Paramanand Giri. Dedicated to Lord Venkateshwara, the architecture of this temple is based on the Chola-Chalukya architectural style. It is said that the idol of Lord Venkateshwara is a replica of the statue in Tirumala. The temple complex also has temples of other Hindu deities, such as Parvathy Temple, temples of Lord Ganesha, Lord Rama, Lord Karthikeya, Lord Shiva, Goddess Kamalambika and Goddess Durga. There is also a garden named Pavitra Vanam which offers flowers for worship.


**Ramoji Film City,** since 1991, Ramoji Film City has been attracting tourists from every corner of the country. One of the largest film studios in the world, it has the capacity to house almost 50 film units within a given point of time. It is also listed in the Guinness Book of World Records as well. It tops the list of most amazing things to do in Hyderabad. Spread over 2500 acres, it is situated about 30 km away from Hyderabad city center. Its brilliant architecture and sound technical facilities make it suitable for all the pre and post production of a film.