1. Agriculture Heritage in India

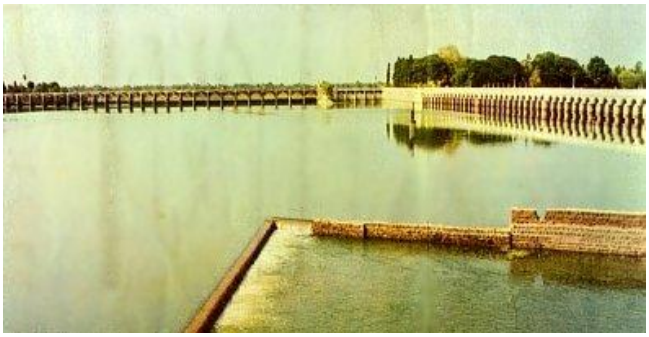
Globally Important Agricultural Heritage Systems (GIAHS), as defined by the FAO (Food and Agriculture Organization of the UNO), are: "Remarkable land use systems and landscapes which are rich in globally significant biological diversity evolving from the co-adaptation of a community with its environment and its needs and aspirations for sustainable development".[1] Worldwide, specific agricultural systems and landscapes have been created, shaped and maintained by generations of farmers and herders based on diverse natural resources, using locally adapted management practices. Building on local knowledge and experience, these ingenious agri-cultural systems reflect the evolution of humankind, the diversity of its knowledge, and its profound relationship with nature. These systems have resulted not only in outstanding landscapes, maintenance and adaptation of globally significant agricultural biodiversity, indigenous knowledge systems and resilient ecosystems, but, above all, in the sustained provision of multiple goods and services, food and livelihood security for millions of local community members and indigenous peoples, well beyond their borders.

For millennia communities of farmers, herders, fishers and forest people have developed complex, diverse, and locally adapted agricultural systems. These systems have been managed with time-tested, ingenious combinations of techniques and practices that have usually led to community food security, and the conservation of natural resources and biodiversity. Agricultural heritage systems can still be found throughout the world covering about 5 million hectares, which provide a vital combination of social, cultural, ecological and economical services to humankind. These “Globally Important Agricultural Heritage Systems-GIAHS” have resulted not only in outstanding landscapes of aesthetic beauty, maintenance of globally significant agricultural biodiversity, resilient ecosystems and a valuable cultural heritage Above all these systems sustainabley provide multiple goods and services, food and livelihood security for millions of poor and small farmers. The existence of numerous GIAHS around the world testifies to the inventiveness and ingenuity of people in their use and management of the finite resources, biodiversity and ecosystem dynamics, and ingenious use of physical attributes of the landscape, codified in traditional but evolving knowledge, practices and technologies. Whether recognized or not by the scientific community, these ancestral agricultural systems constitute the foundation for contemporary and future agricultural innovations and technologies. Their cultural, ecological and agricultural diversity is still evident in many parts of the world, maintained as unique systems of agriculture. Through a remarkable process of co-evolution of

Humankind and Nature, GIAHS have emerged over centuries of cultural and biological interactions and synergies, representing the accumulated experiences of rural peoples.

Indian Agriculture

Indian agriculture began by 9000 BCE as a result of early cultivation of plants, and domestication of crops and animals.[2] Settled life soon followed with implements and techniques being developed for agriculture.[3][4] Double monsoons led to two harvests being reaped in one year.[5] Indian products soon reached the world via existing trading networks and foreign crops were introduced to India.[5][6] Plants and animals—considered essential to their survival by the Indians—came to be worshiped and venerated.[7]



Grand Anicut Dam on river Caveri (1st-2nd Century CE) is one of the oldest water-regulation structures in the world still in use.

The middle ages saw irrigation channels reach a new level of sophistication in India and Indian crops affecting the economies of other regions of the world under Islamic patronage.[8][9] Land and water management systems were developed with an aim of providing uniform growth.[10][11] Despite some stagnation during the later modern era the independent Republic of India was able to develop a comprehensive agricultural program.

Agriculture Heritage in India

Our heritage is unique than any other civilization. As a citizen of India, we must feel proud about our rich cultural heritage. Agriculture in India is not of recent origin, but has a long history dating back to Neolithic age of 7500-4000 B.C. It changed the life style of early man from nomadic hunter of wild berries and roots to cultivator of land. Agriculture is benefited from the wisdom and teachings of great saints. The wisdom gained and practices adopted have been passed down through generations. The traditional farmers have developed the nature friendly farming systems and practices such as mixed farming, mixed cropping, crop rotation etc. The

great epics of ancient India convey the depth of knowledge possessed by the older generations of the farmers of India.

Need and importance for studying Agricultural Heritage

Our agriculture has lot of inherited sustainable practices passed from one generation to other generation. And also agriculture in India is not an occupation; it is a way of life for many Indian populations. Hence the present day generation should be aware about our ancient and traditional agricultural systems and practices. This will enable us to build the future research strategy also.

India has made tremendous progress in agriculture and its allied fields, but the emphasis on intensive use of inputs without considering their adverse impact of long term basis has created several problems related to sustainability of agriculture. Irrational use of chemical fertilizers, insecticides and exploration of natural resources is threatening the agro eco systems. Soil is getting impoverished, water and air getting polluted and there is an increasing erosion of plant and animal genetic resources. Therefore, attention in now shifting to sustainable form of agriculture.

The indigenous technical knowledge (ITK) provides insight into the sustainable agriculture, because these innovations have been carried on from one generation to another as a family technology. There are several examples of valuable traditional technologies in India but unfortunately these small local systems are dying out. It is imperative that we collect, document and analyze these technologies so that the scientific principle/basis behind them could be properly understood. Once this done, it will be easier for us to further refine and upgrade them by blending them with the modern scientific technology.

Objective of the course

- Agriculture in India - Way of life and not an occupation
- To increase awareness of the rich heritage of Indian agriculture which is unique than any other civilization.
- To implant a sense of pride amongst the people, particularly agricultural students as our agriculture has sustainable practices for generations.
- To stimulate scientific research based on traditional technology.

Definitions

HISTORY : Continuous record of past events

HERITAGE : Inherited values carried from one generation to other generation

AGRICULTURAL HERITAGE : Values and traditional practices adopted in ancient India which are more relevant for present day system.

History denotes the continuous record of past events, where as heritage indicates the inherited values carried from one generation to other generation. Agricultural heritage denotes the values and traditional practices adopted in ancient India, which are more relevant for present day system.

List of Available Documents on agriculture during ancient and medieval period

1. Rigveda (c.3700 BC)
2. Atharvaveda (c. 2000 BC)
3. Ramayana (c.2000 BC)

4. Mahabharata (c.1400 BC)

5. Krishi-Parashara (c.400 BC)

6. Kautilya's Artha-sastra (c.300 BC)

7. Amarsimha's Amarkosha (c.200 BC)

8. Patanjali's Mahabhasya (c.200 BC)

9. Sangam literature (Tamils) (200 BC-100 AD)

10. Agnipurana (c.400 ?)

11. Varahamihir's Brhat Samhita (c. 500 AD)

12. Kashyapiyakrishisukti (c.800Ad)

13. Surapala's Vrikshayurveda (c.1000 AD)

14. Lokopakaram by Chavundaraya (1025 AD)

15. Someshwardeva's Manasollasa (1131 AD)

16. Saranghara's Upavanavioda (c.1300 AD)

17. Bhavaprakasha-Nighantu (c.1500 AD)

18. Chakrapani Mistra'sViswavallbha (c.1580 AD)

19. Dara Shikoh's Nuskha Dar Fanni-Falahat (c.1650 Ad)

20. Jati Jaichand's dairy (1658-1714 AD)

21. Anonymous Rajasthani Manuscript (1877 AD)

22. Watt's Dictionary of Economic Products of India (1889-1893 AD)

Formation of Indian – sub continent

Pangaea, the super-continent

250 millions years ago the Earth's seven continents were all grouped together into a super continent (one huge landmass) called '**Pangaea**'. This huge super continent was surrounded by one gigantic ocean called **Panthalassa**.

Laurasia

About 180 million years ago the super continent Pangaea began to break up in the Mesozoic Era into Laurasia and Gondwanaland. **Laurasia** was made of the present day continents of North America (Greenland), Europe, Angara land (Asia) comprising Russia, Siberia and China in the north. **Gondwanaland** was made of the present day continents of South America, Africa, India, Australia, and Antarctica. At this time India was not connected to Asia. The huge ocean of Panthalasa remained.

'The Triple Junction' was formed because of a three-way split in the crust allowing massive lava flows in three directions and poured out lava over hundreds of square miles of Africa and South America. The rocks in these two continents were produced at the same time and in the same place. This tells us that South America and Africa were connected at one time. Today these two continents are separated by the Atlantic Ocean which is over 2000 miles wide.

Laurasia was still moving, and as it moved it broke up into the continents of North America, Europe and Asia (Eurasian plate). In the second stage, the Gondwanan continents separated from each other during the Jurassic and Cretaceous period. In the late Jurassic, South America separated from Africa. This created another narrow basin between these two continents. The eastern coast of North America separated from the Moroccan bulge of Africa. The breakup of the Gondwanaland opened up the Atlantic and the Indian Ocean.

The Indian Subcontinent moved hundreds of miles in 135 million years at a great speed (4 inches per year). The Indian plate crashed into the Eurasian plate (Asia) with such speed

and force that it created the tallest mountain range on Earth, the Himalayas. The Tethys was being squeezed out of existence in the east of the Alpines as India approached Asia.

Physical geography of Indian sub-continent

The most outstanding fact about the physical geography of India is the natural division of the country with three distinct segments of totally dissimilar character: (i) the Himalayas, the great mountain system to the north, (ii) the Indo-Gangetic alluvial plain of northern India extending from the Punjab to Assam, and (iii) the Peninsula of the Deccan to the south of the Vindhyas-a solid stable block of the earth's crust, largely composed of some of the most ancient rocks, which the denudation of ages has carved into a number of mountain ranges, plateaus, valleys and plains.