

STATUS OF ICAR INSTITUTES AND CENTRES IN NORTHEAST INDIA: A PROFILE

5.0 INTRODUCTION

India as a mainly agricultural country attributes a major part of its total growth to the agriculture sector. Agriculture, as the mainstay of Indian economy, plays the most vital role in socio-economic scope of the country. Indian agriculture is a diverse and widespread subdivision comprising a large number of stakeholders. India has one of the most important and institutionally most multifaceted agricultural research schemes in the world. Agriculture sector occupies the center phase of India's social security and whole economic wealth. In the meantime of Independence, India has perceived substantial growth in food grain production (green revolution), oilseeds (yellow revolution), milk (white revolution), fish (blue revolution), and fruits and vegetables (golden revolution). Altogether these became potential remaining to the use of cutting edge of science joined with the progressive policy maintenance, and hard labour of Indian farmers. ICAR, a zenith organization for directing and coordinating agricultural research, has been at the front to lead these agricultural revolutions in the country, creating India not merely self-reliant in food but similarly with surplus. By way of forward looking organization, completely understanding the developing complex challenges, ICAR has established a vision to achieve Rainbow Revolution covering the whole range of actions or activities in agriculture which will mark India a developed nation free of poverty, hunger,

malnutrition and environmental protection. On the way to this objective, it is functioning two significant and mega projects, viz. National Agricultural Technology Project with stress on production system research, association and management reorganizations and revolutions in technology sharing and another one is the Agricultural Human Resource Development Project with emphasis on enlightening the value of agricultural education. Generally, the Indian agricultural research system is the impact of a process which started in the 19th century and which give rise to the establishment of the Imperial (now Indian) Council of Agricultural Research on the recommendation of a Royal Commission on Agriculture in 1929. Subsequently, there has been an evolution of agri-cultural research in India. At present the Union Minister of Agriculture is the President of the ICAR Society. The Director-General (DG) is the Principal Executive Officer and is also the Secretary to the Department of Agricultural Research and Education (DARE). DARE is the nodal department for all associated scientific and development activities and joint scientific collaborations with other countries. The Council has its Headquarters at New Delhi, and a massive network of institutes all over the country, consisting of 45 Institutes, 6 National Bureaux, 18 National Research Centres, 25 Project Directorates and 61 All India Coordinated Research Projects, 138 substations of ICAR Institutes, 8 Agriculture Technology Application Research Institute, 10 Other Projects, 17 Network Projects, 4 deemed to be universities, 53 State Agricultural Universities (SAUs), 1 central agricultural university, 633 Krishi Vigyan Kendras (Zone I – 62 KVKs, Zone II – 77 KVKs, Zone III – 70 KVKs, Zone IV – 79 KVKs, Zone V – 55 KVKs, Zone VI – 57 KVKs, Zone VII – 93 KVKs and Zone VIII – 76 KVKs) in the rural districts of the country for transmission of technology, and eight trainers training centres. For staff training and addressing research management issues, it has established an institute for

human resource development called the National Academy of Agricultural Research Management (NAARM).

5.1 LIST OF ICAR INSTITUTES, NATIONAL RESEARCH CENTRES, NATIONAL BUREAUX, PROJECT DIRECTORATE, DEEMED UNIVERSITIES, AGRICULTURE TECHNOLOGY APPLICATION RESEARCH INSTITUTE –

• **Deemed Universities**

1. Indian Agricultural Research Institute, New Delhi
2. Indian Veterinary Research Institute, Bareilly, Uttar Pradesh
3. National Dairy Research Institute, Karnal, Haryana
4. Central Institute of Fisheries Education, Mumbai, Maharashtra

• **ICAR Institutes**

1. Central Agricultural Research Institute, Port Blair
2. Central Arid Zone Research Institute, Jodhpur
3. Central Avian Research Institute, Izatnagar
4. Central Inland Fisheries Research Institute, Barrackpore
5. Central Institute of Brackish Water Aquaculture, Chennai
6. Central Institute for Research on Buffaloes, Hissar
7. Central Institute for Research on Goats, Makhdoom
8. Central Institute of Agricultural Engineering, Bhopal
9. Central Institute of Arid Horticulture, Bikaner
10. Central Institute of Cotton Research, Nagpur
11. Central Institute of Fisheries Technology, Cochin
12. Central Institute of Freshwater Aquaculture, Bhubneshwar
13. Central Institute of Research on Cotton Technology, Mumbai

14. Central Institute of Sub Tropical Horticulture, Lucknow
15. Central Institute of Temperate Horticulture, Srinagar
16. Central Institute on Post-harvest Engineering and Technology, Ludhiana
17. Central Marine Fisheries Research Institute, Kochi
18. Central Plantation Crops Research Institute, Kasargod
19. Central Potato Research Institute, Shimla
20. Central Research Institute for Jute and Allied Fibres, Barrackpore of Dryland
Agriculture, Hyderabad
21. Central Rice Research Institute, Cuttack
22. Central Sheep and Wool Research Institute, Avikanagar, Rajasthan
23. Central Soil and Water Conservation Research & Training Institute, Dehradun
24. Central Soil Salinity Research Institute, Karnal
25. Central Tobacco Research Institute, Rajahmundry
26. Central Tuber Crops Research Institute, Trivandrum
27. ICAR Research Complex for Eastern Region, Patna
28. ICAR Research Complex for NEH Region, Barapani
29. Central Coastal Agricultural Research Institute, Ela, Old Goa, Goa
30. Indian Agricultural Statistics Research Institute, New Delhi
31. Indian Grassland and Fodder Research Institute, Jhansi
32. Indian Institute of Agricultural Biotechnology, Ranchi
33. Indian Institute of Horticultural Research, Bengaluru
34. Indian Institute of Natural Resins and Gums, Ranchi
35. Indian Institute of Pulses Research, Kanpur
36. Indian Institute of Soil Sciences, Bhopal

37. Indian Institute of Spices Research, Calicut
38. Indian Institute of Sugarcane Research, Lucknow
39. Indian Institute of Vegetable Research, Varanasi
40. National Academy of Agricultural Research & Management, Hyderabad
41. National Biotic Stress Management Institute, Raipur
42. National Institute of Abiotic Stress Management, Malegaon, Maharashtra
43. National Institute of Animal Nutrition and Physiology, Bengaluru
44. National Institute of Research on Jute & Allied Fibre Technology, Kolkata
45. National Institute of Veterinary Epidemiology and Disease Informatics, Hebbal, Bengaluru
46. Sugarcane Breeding Institute, Coimbatore
47. Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora

- **National Bureaux**

1. National Bureau of Agricultural Insect Resources, Bengaluru
2. National Bureau of Agriculturally Important Micro Organisms, Mau Nath Bhanjan, Uttar Pradesh
3. National Bureau of Animal Genetic Resources, Karnal, Haryana
4. National Bureau of Fish Genetic Resources, Lucknow, Uttar Pradesh
5. National Bureau of Plant Genetic Resources, New Delhi
6. National Bureau of Soil Survey & Land Use Planning, Nagpur, Maharashtra

- **Agriculture Technology Application Research Institute**

1. Agriculture Technology Application Research Institute Zone I, Ludhiana, Panjab
2. Agriculture Technology Application Research Institute Zone I, West Bengal, Kolkata

3. Agriculture Technology Application Research Institute Zone III, Umiam, Meghalaya
4. Agriculture Technology Application Research Institute Zone IV, Rawatpura, Kanpur
5. Agriculture Technology Application Research Institute Zone V, Santoshnagar, Hyderabad
6. Agriculture Technology Application Research Institute Zone VI, Jodhpur, Rajasthan
7. Agriculture Technology Application Research Institute Zone VII, Adhartal, Jabalpur
8. Agriculture Technology Application Research Institute Zone III, Bangalore, Karnataka

- **Project Directorate**

1. Directorate of Cashew Research, Puttur
2. Directorate of Cold Water Fisheries Research, Bhimtal, Nainital
3. Directorate of Floriculture Research, Pune, Maharashtra
4. Directorate of Groundnut Research, Junagadh, Gujarat
5. Directorate of Knowledge Management in Agriculture (DKMA), New Delhi
6. Directorate of Maize Research, New Delhi
7. Directorate of Medicinal and Aromatic Plants Research, Anand
8. Directorate of Mushroom Research, Solan
9. Directorate of Oil Palm Research, Pedavegi, West Godawari
10. Directorate of Oilseed Research, Hyderabad
11. Directorate on Onion and Garlic Research, Pune
12. Directorate of Rapeseed & Mustard Research, Bharatpur

13. Directorate of Research on Women in Agriculture, Bhubaneswar
 14. Directorate of Rice Research, Hyderabad
 15. Directorate of Seed Research, Mau
 16. Directorate of Sorghum Research, Hyderabad
 17. Directorate of Soybean Research, Indore
 18. Directorate of Water Management Research, Bhubaneswar
 19. Directorate of Weed Science Research, Jabalpur
 20. Directorate of Wheat Research, Karnal
 21. Project Directorate for Farming Systems Research, Modipuram
 22. Project Directorate on Animal Disease Monitoring and Surveillance, Hebbal,
Bangalore
 23. Project Directorate on Cattle, Meerut
 24. Project Directorate on Foot & Mouth Disease, Mukteshwar
 25. Project Directorate on Poultry, Hyderabad
- **National Research Centre**
 1. National Centre for Agril. Economics & Policy Research, New Delhi
 2. National Research Centre on Pig, Guwahati
 3. National Research Centre for Agroforestry, Jhansi
 4. National Research Centre for Banana, Trichi
 5. National Research Centre on Camel, Bikaner
 6. National Research Centre for Makhana(foxnut), Darbhanga
 7. National Research Centre on Equines, Hisar
 8. National Research Centre on Meat, Hyderabad
 9. National Research Centre for Citrus, Nagpur
 10. National Research Centre for Grapes, Pune

11. National Research Centre for Litchi, Muzaffarpur
12. National Research Centre for Pomegranate, Solapur
13. National Research Centre on Mithun, Medziphema, Nagaland
14. National Research Centre on Orchids, Pakyong, Sikkim
15. National Centre for Integrated Pest Management, New Delhi
16. National Research Centre on Plant Biotechnology, New Delhi
17. National Research Centre Seed Spices, Ajmer
18. National Research Centre on Yak, Dirang, Arunachal Pradesh

5.2 ICAR CENTRES AND INSTITUTES OF NORTH-EASTERN REGION

Northeast India is the eastern-most region of India connected to East India via a narrow corridor squeezed between Bhutan and Bangladesh. It comprises the contiguous Seven Sister States (Arunachal Pradesh, Mizoram, Manipur, Nagaland, Assam, Tripura and Meghalaya), plus the Himalayan state of Sikkim. Except for the Goalpara region of Assam, the rest were late entrants to political India; the Brahmaputra valley area of Assam became a part of British India in 1824, with the hill regions annexed even later. Sikkim was annexed to the Indian union through a referendum in 1975 and was recognized as part of Northeast India in the 1990s.

Agriculture and allied sectors are the main sources of livelihood for the people of north eastern region where rural population constitutes about 82% of the total population. Thus, any attempt to improve agriculture in the region shall have to be based on system wide regional planning. Keeping in mind judicious conservation and utilization of natural resources several agricultural research institutes and centres were introduced and doing research in different fields. But for the present study, total 12 selected institutes and

centres were taken into consideration which includes 1 ICAR institute under which having 6 regional centres, 1 Zonal Project Directorate and 4 National Research Centres. Hence, very briefly these institutes and centres were discussed below.

5.2.1 ICAR Research Complex for NEH Region, Umiam, Meghalaya

5.2.1.1 Preamble of the Institute

The perception to establish an ICAR Institute in the North Eastern Hill region was perceived at a seminar on '*Research and Training Needs in Agriculture and Animal Husbandry of the North East Himalayan Region*' held in the Central Library Hall, Shillong on 23rd – 26th October, 1973. The seminar organized by ICAR was inaugurated on 23-10-1973 by the Union Minister of Agriculture, Late Fakhruddin Ali Ahmed and was attended by eminent delegates from all over India. In the course of deliberations, the abilities as well as the long-felt requirement for research and development of Agriculture, Animal Husbandry and Fisheries in the North –Eastern Hill Region were highlighted. In the plenary session, under the Chairmanship of Dr. M.S. Swaminathana, the then Director-General, ICAR, New Delhi, it was decided that an ICAR unit should be established at Shillong to take up research and development needs of the North Eastern Hills Region of the country including Arunachal Pradesh, Manipur, Mizoram, Meghalaya, Nagaland, Tripura and the hill tracts of Assam like North Cachar and Mikir Hills. The Government of India recognized the recommendations of the seminar and a project to establish Agriculture and Animal Science Research Centres in North Eastern states was included Council's IV Five Year Plan itself. On the other hand, the project could be implemented in V Plan only in the form of the ICAR Research Complex for NEH Region Shillong, which came into existence on the 9th January 1975, when Dr.

D.N. Borthakur joined as its first Project Director. After a little while, Dr. M.S. Swaminathana, the then Director-General, ICAR New Delhi, visited the region from May 5 to 11, 1975 to evaluate and identify the agricultural research and training needs of the NEH region and also extended the office to finalize the locations and instant infra-structural needs of the Centres. As regards to the title role of Assam Agricultural University, Jorhat, it was advised that the University would train up students from NEH region and will also bear the administrative legal responsibility to establish the Research Centre in Karbi Anglong (former North Cachar and Mikir hills) district of Assam. Dr. Swaminathana also specified the research significances and strategy for different areas of the North-Eastern Hill region, which was summarised into three major groups as follows-

- Development of alternative farming systems to replace the practice of Jhuming (shifting cultivation).
- Making up the gap in the food needs of different States/U.T.s by introducing improved and adaptable varieties of crops; efficient management of soil, water and pests and increasing the animal production by adopting scientific system; and
- Increasing the rural income and employment through developing high-value low-volume produce/products, and this can be sold as a competitive advantage outside the region.

ICAR Research Complex for North Eastern Hill Region was established in the year 1975 by the Indian Council of Agricultural Research to make available an adequate research base for supporting agricultural development in the North Eastern hill region of the country. It is the first institute of its kind setup by ICAR which having multidisciplinary approach in serving seven hill states of the region in ten divisions of agriculture and allied sciences which encompass 16 major disciplines to cater to the research needs of the tribal areas of NEH Region including Sikkim. The Headquarters of

this Institute is located at Barapani (Meghalaya) while its regional centres are located at Basar (Arunachal Pradesh), Imphal (Manipur), Kolasib (Mizoram), Jharnapani (Nagaland), Lembucherra (Tripura) and Gangtok (Sikkim). The Institute has a very strong extension network programme for all the north eastern states through 15 KVKs attached to different centres for providing on/off campus training to the practising farmers, school drop outs and farm women in the field of agriculture and allied sectors. A number of competitive projects such as NAIP, NICRA, NHB, DBT and DST supported programme, TSP, KIRAN, NFBSFARA (National fund for basic, strategic and frontier application research in agriculture) etc. are operational in the region. The institute has been propagating modern technologies for livelihood and nutritional security in the region which includes truly labeled seeds, quality planting materials, improved animal, poultry and fish seeds including proto-type implements and tools appropriate for hill agriculture, soil health testing kits, diagnostic kits for animal parasites, diseases and critical inputs. Through the support from the council headquarters, the strength of scientists in the complex has been increased during the period. Many in-house projects, generally of interdisciplinary nature, are being pursued. The premeditated and frontline research on climate change adaptation and mitigation under NICRA is a major research thrust area of the institute. There are 14 AICRPs, 5 network and 15 collaborative projects in operation. The institute has strong link with other ICAR Institutes and Universities within the region and outside the region as well with International organizations like IRRI, ICRISAT, ILRI, and IWMI. The Institute also works together with government sponsored agencies like NERCOMP, MRDS, NABARD and IFAD Loan Project; several NGOs and farmers bodies and co-operative societies for technology extension.

5.2.1.2 Mandates of the Institute

Following are the significant mandate of ICAR Research Complex for NEH Region, Umiam-

- To improve and develop sustainable farming systems for different agro-climatic and socio- economic conditions of the region.
- To improve crops, livestock, fishery and to impart training for development of local competence for management of resources to enhance agricultural productivity.
- To maintain, analyse and project data base resources for perspective planning.
- To collaborate with the state departments of the region for testing and promotion of improved farming technologies.
- To act as a repository of information on different farming systems of the region.
- To collaborate with national and international agencies in achieving the above objectives.
- To provide consultancy.
- To research on organic agriculture.
- To develop local human resources through post graduate teaching and research.

5.2.1.3 Organizational Scheme

ICAR Research Complex for NEH Region, Barapani (Meghalaya) is the headquarter of north eastern region. The Director of the institute has the full authority on Research Strategy Formulation (RSF), administration. Institute Management Committee (IMC), Research Advisory Committee (RAC), Staff Research Council (SRC) and other functional committees of all regional centres i.e. Basar (Arunachal Pradesh), Imphal (Manipur),

Kolasib (Mizoram), Jharnapani (Nagaland), Lembucherra (Tripura) and Gangtok (Sikkim) and also the institute itself.

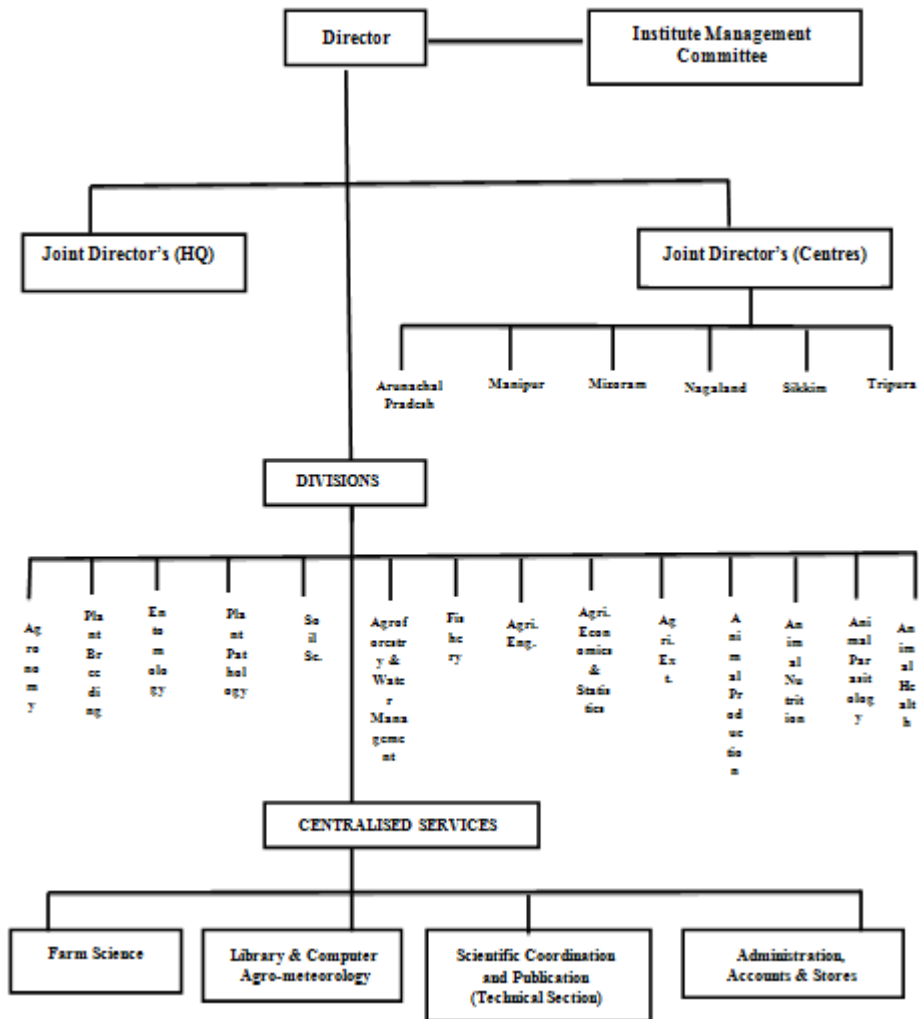


Figure 5.1: Organizational Structure of ICAR Research Complex for NEH Region, Umiam, Meghalaya

5.2.1.4 Collaboration

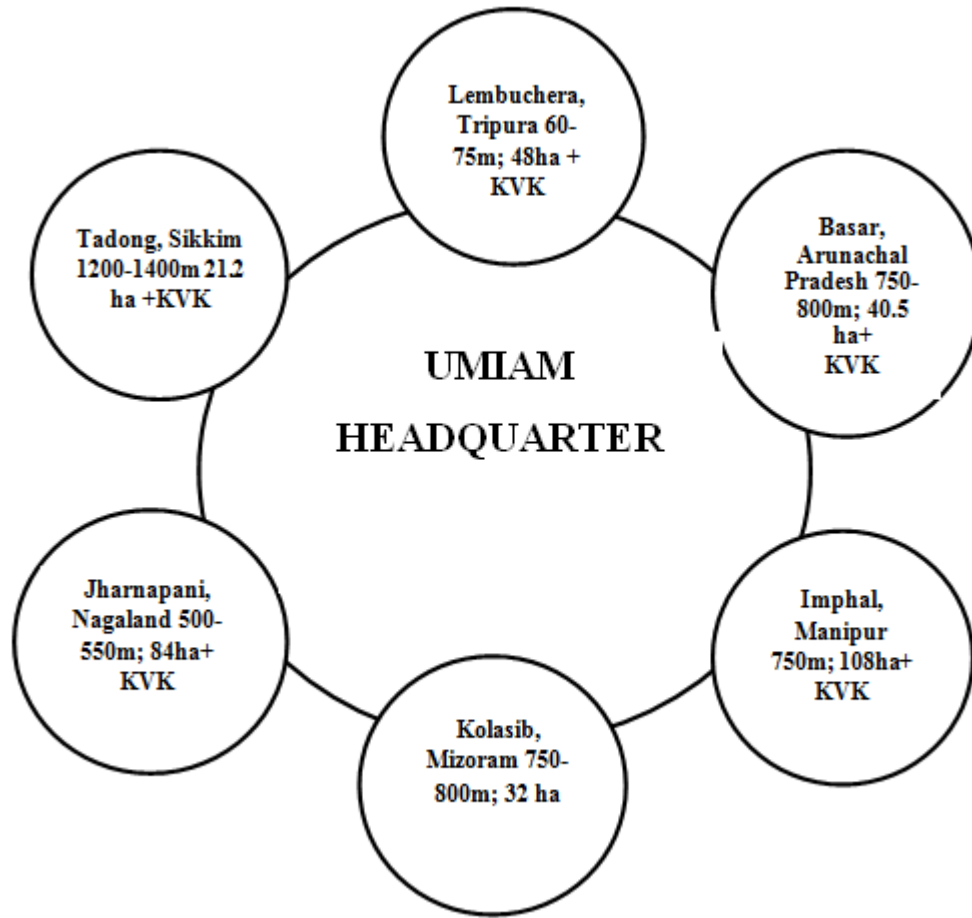


Figure 5.2: Collaboration Structure of ICAR Research Complex for NEH Region, Umiam, Meghalaya

5.2.1.5 Library and Information Centre of the Institute

The library made a very modest beginning as ICAR library during its first year in 1975 with only 8 books and 24 Indian Journals. Today the library has a total of 29,196 which includes books and reports and it subscribes 85 Indian and 15 foreign journals. It also has 205 newsletters and 11,066 back volumes of journals. To promote the Hindi language, the library procured 4778 Hindi books, 40 popular journals, 16 newspapers and 8 magazines. ICAR, New Delhi is the main funding agency of the library and the growth of the library budget rises to lakhs from Rs. 1,200 in 1975. Total staff strength is six which includes one library in charge, one in charge library assistant, two library attendant and two other supporting staff. It have three numbers of desktop, three numbers of UPS with capacity of 1.5 KVA, three numbers of printers and one number of photocopier. Recently, the library has acquired data bases like AGRIS from INSDOC. Reprints and reports published by the institute are supplied by the library on demand in addition to a regular clientele on the mailing list which is constantly upgraded. ICAR, New Delhi is the main funding agency of the institute.

5.2.1.6 Location of the Institute

Institute is located at 25° 41' 01.91" N latitude & 91° 54' 46.24" E Longitude on the Umroi Road (MDR-28) at the road travel distance of 80 km from nearest railway station (Guwahati) and 1.50 km diversion from NH-40 (Dyke point of Barapani Lake) along the Umroi Road (MDR-28). The average bright sunshine hours received in the state is 2-5 hours during monsoon and 7-8 hours during winter. The topography is mostly hilly and has Agro Ecological Sub Region zones. The agro-climatic conditions of the State are excellent for growing all types of fruits, vegetables, flowers, spices and condiments,

aromatic and medicinal plants, plantation crops, etc., ranging from temperate to tropical crops under rain fed conditions.

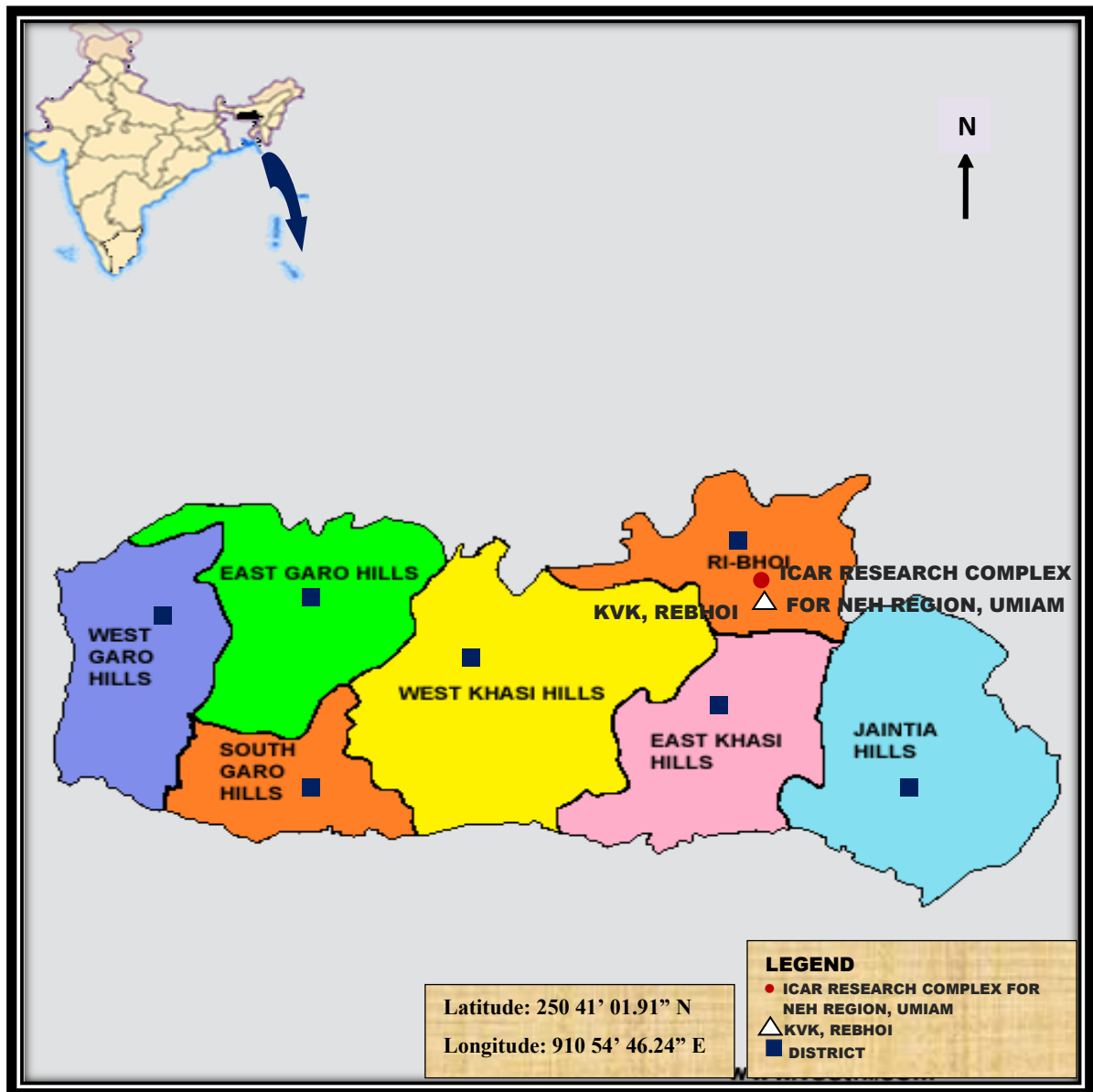


Figure 5.3: Location of ICAR Research Complex for NEH Region, Umiam, Meghalaya

(Source: www.pinterest.com)

5.2.2 ICAR, Agriculture Technology Application Research Institute Zone III, Umiam, Meghalaya

5.2.2.1 Preamble of the Institute

The Indian Council of Agricultural Research (ICAR) formed 8 (Eight) Zonal Coordinating Units with a staff strength of 6 (Six) for application of Lab-to-land programme covering 50,000 farm families in addition of the whole country for the period of 1979. Consequently, the ICAR decided that the KVK Project would be observed by these units and augmented the staff strength to 8 (Eight). For the duration of the VIIIth Plan (1992-1997), once the total number of KVKs was 261, the ICAR revised the staff strength of Zonal Coordinating Unit to 15 (Fifteen). During the XIth Plan, on an average, each Zonal Coordinating Unit is to handle an annual budget of about Rs. 55 Crores and 83 KVKs. For proper management of large number of KVKs and the need for actual support and monitoring of the KVKs activities and large volume of financial transaction, Zonal Coordinating Units were upgraded to the status of Project Directorate, called Zonal Project Directorate with total sanctioned staff strength of 18.

The Agriculture Technology Application Research Institute for North Eastern Region is located at the ICAR Research Complex for NEH Region, Umiam, (Barapani) in Meghalaya state. The Umiam is located near the Umiam (Barapani) lake enroute to Shillong from Guwahati. The Shillong airport is just 6 km from the ZPD, ICAR Complex and well connected by the road from Guwahati and Shillong. The Zonal Project Directorate is responsible for the implementation of Transfer of Technology Projects of ICAR in the North Eastern Region of the country. The Indian Council of Agricultural Research (ICAR) mooted the idea of establishing Krishi Vigyan Kendra

(Farm Science Centre) as innovative institution for imparting trainings to the practising farmers, school drop-outs and field level extension functionaries, which would help in accelerating the agricultural production and also improving socio-economic conditions of the farming community.

The Agriculture Technology Application Research Institute, one of the eight zones of India under the Transfer of Technology Project of ICAR comprises of eight North Eastern States namely; Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Mizoram, Tripura and Sikkim. Agriculture is the primary occupation in the region with over 80% of the population directly and indirectly depending on it and majority of the farmers are small and marginal. Presently, there are 85 districts spread over eight states with total number of 78 sanctioned and functioning KVKs as on 1st April, 2015.

5.2.2.2 Mandates of the Institute

The mandates of Agriculture Technology Application Research Institute are as follows-

- To formulate, implement, monitor and evaluate the transfer of technology projects.
- To coordinate the works relating to TOT projects with various agencies such as Directorate of Agriculture and Animal Husbandry of the States, State Agricultural Universities (SAUs), ICAR institutes, Voluntary Agencies and Development Departments.
- To coordinate with State/ Central Government Agencies, Credit Institutions and any other organization for successful implementation of the programmes.
- To serve as feedback mechanism from the projects to research and extension systems.

- To help in implementation of other projects (Front Line Demonstration) on oilseeds, pulses and food grains biological control etc. assigned by ICAR headquarter.
- To have a very close liaison with ICAR headquarters particularly Deputy Director General (Agri. Extension) and his staff and prepare reports/ write –up for their use
- Perform other activities needed for implementation of assigned programme.

5.2.2.3 Organizational Scheme

Agriculture Technology Application Research Institute (ATARI) is the only one project directorate in north east region and the director has full authority over the scientific staff, technical, administrative and finance system of the institute and also has the responsibility to report the Deputy Director General (Agri. Extn) ICAR, New Delhi.

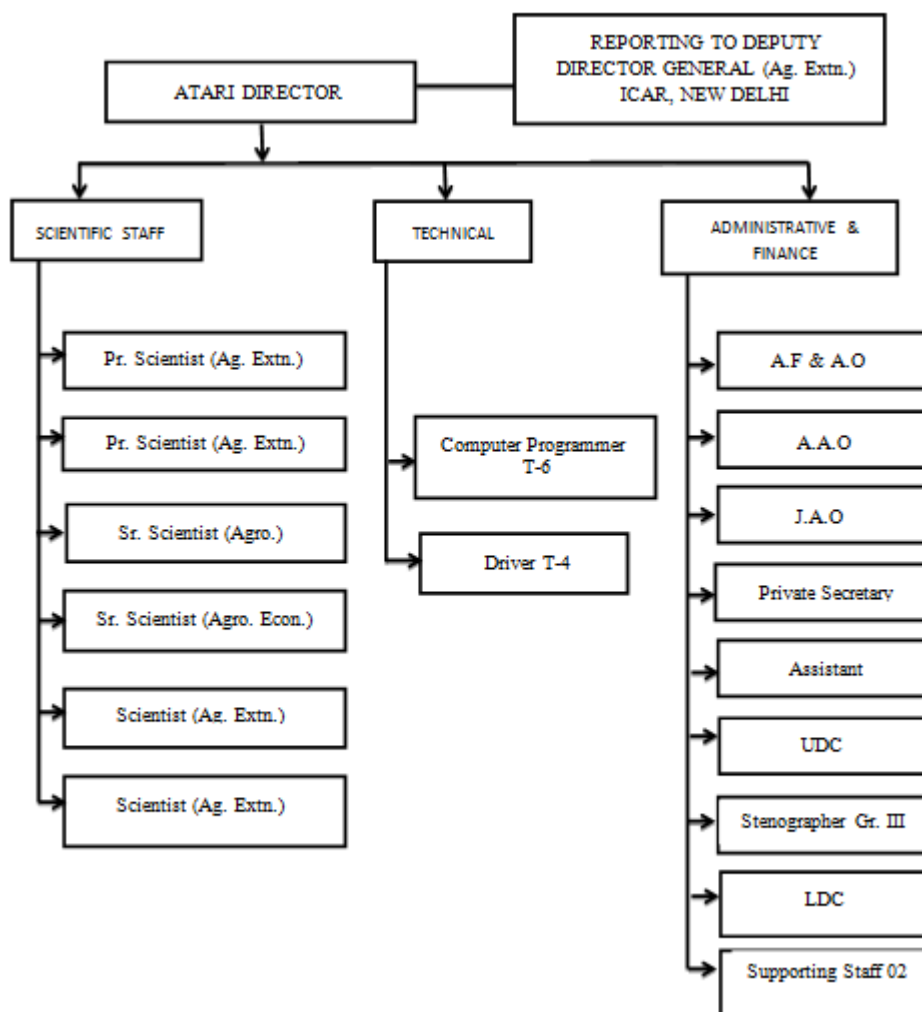


Figure 5.4: Organizational Structure of ICAR, Agriculture Technology Application Research Institute (ATARI)

5.2.2.4 Library and Information Centre of the Institute

The library of this institute is located within the head building of Agriculture Technology Application Research Institute near ICAR Research Complex for NEH region, Umiam. The library established in the year 1979. It is having only one room with total 2,101 including books and reports, 12 journals etc. The library mainly uses only for issue and purchase books, journals etc. which were also procured from the library of ICAR Research

Complex for NEH region, Umiam. The main funding agency of the library is from ICAR, New Delhi. Staff strength of the library is only one i.e. one library in-charge (scientist).

5.2.2.5 Location of the Institute

Agriculture Technology Application Research Institute for North Eastern Region is located at the ICAR Research Complex for NEH Region, Umiam, (Barapani) in Meghalaya state. Institute is located at 25° 41' 01.91" N latitude & 91° 54' 46.24" E Longitude on the Umroi Road (MDR-28) at the road travel distance of 80 km from nearest railway station (Guwahati) and 1.50 km diversion from NH-40 (Dyke point of Barapani Lake) along the Umroi Road (MDR-28) under Ribhoi district. The average bright sunshine hours received in the state is 2-5 hours during monsoon and 7-8 hours during winter. The topography is mostly hilly and has Agro Ecological Sub Region zones. The agro-climatic conditions of the State are excellent for growing all types of fruits, vegetables, flowers, spices and condiments, aromatic and medicinal plants, plantation crops, etc., ranging from temperate to tropical crops under rain fed conditions.



Figure 5.5: Location of ICAR, Agriculture Technology Application RESEARCH Institute (ATARI)

(Source: www.pinterest.com)

5.2.3 National Research Centre on Yak, West Kameng, Arunachal Pradesh

5.2.3.1 Preamble of the Institute

Arunachal Pradesh is one of the 29 states of India, located in northeast India, it holds the most north-eastern position among the other states in the north-east region of India. Arunachal Pradesh borders the states of Assam and Nagaland to the south, and shares international borders with Bhutan in the west, Burma in the east and China in the north. Itanagar is the capital of the state. China claims the northern part of the state as a part of the Tibet Autonomous Region.

National Research Centre on Yak is a unique institute in India located in West Kameng district. West Kameng is a district of Arunachal Pradesh in India. It accounts for 8.86% of the total area of the state. The name is derived from the Kameng River, a tributary of the Brahmaputra that flows through the district. It is solely dedicated for overall improvement of yak husbandry and socio-economic upliftment of yak herdsman (brokpas) who are considered as the poorest of poor pastoral nomads. This animal is integrally associated with the culture, religion and social life of their farmers, their families and above all communities of yak rearing states. Yak is remarkable bovine species of economic importance in high hill and snow bound areas. Unlike other bovine species, the animal has been considered as multipurpose animal and provides milk, meat, fibre, hide and dung at places where arable farming, including other livestock, are unavailable. Animal power of yak is also exploited and the animals are used as pack animals and used for transportation of goods in hilly terrain and also for riding. However, unfortunately yak husbandry in India is confronted with so many challenges like indiscriminate breeding, non-availability of highland pasture and heavy grazing tax, winter feed crisis, prevalence of trans boundary diseases, unscientific management practices at field level and above all

climate change which leads to reduced productivity and disease threats. At present, the NRC has its headquarter (office with central laboratory) at Dirang (1500m above msl) and experimental Yak farm at Nyukmandung (2700m above msl) at a distance of 31 km from Dirang. Both the campuses are located in the West Kameng District of Arunachal Pradesh.

5.2.3.2 Mandates of the Institute

The mandate of National Research Centre on Yak, West Kameng is as follows-

- Survey for genetic resources, management practices, production level and problems associated with production.
- To establish a small herd of pure yaks to carry out observations on performances under range and semi-range systems of management.
- To conduct research on improvement of yak and its products through selection and breeding with exotic frozen semen.
- To conduct research on nutrition, physiology, production and management aspects under semi-range and confinement.
- To provide complete health coverage through proper therapeutic and prophylactic measures based on clinical and laboratory findings on the prevalent diseases of yak.

5.2.3.3 Organizational Scheme

The Director, NRC on Yak, exercises full authority for research strategy formulation and administration. Institute Management Committee (IMC), Research Advisory Committee (RAC), Institute Research Committee (IRC) and other functional committees constituted by Indian Council of Agricultural Research (ICAR), New Delhi, provide advises to the

Director for running the administration and research activity of the institute. A team of scientists, technical, administrative and supporting staff, assist the Director. The present structure of management of the centre is presented below:

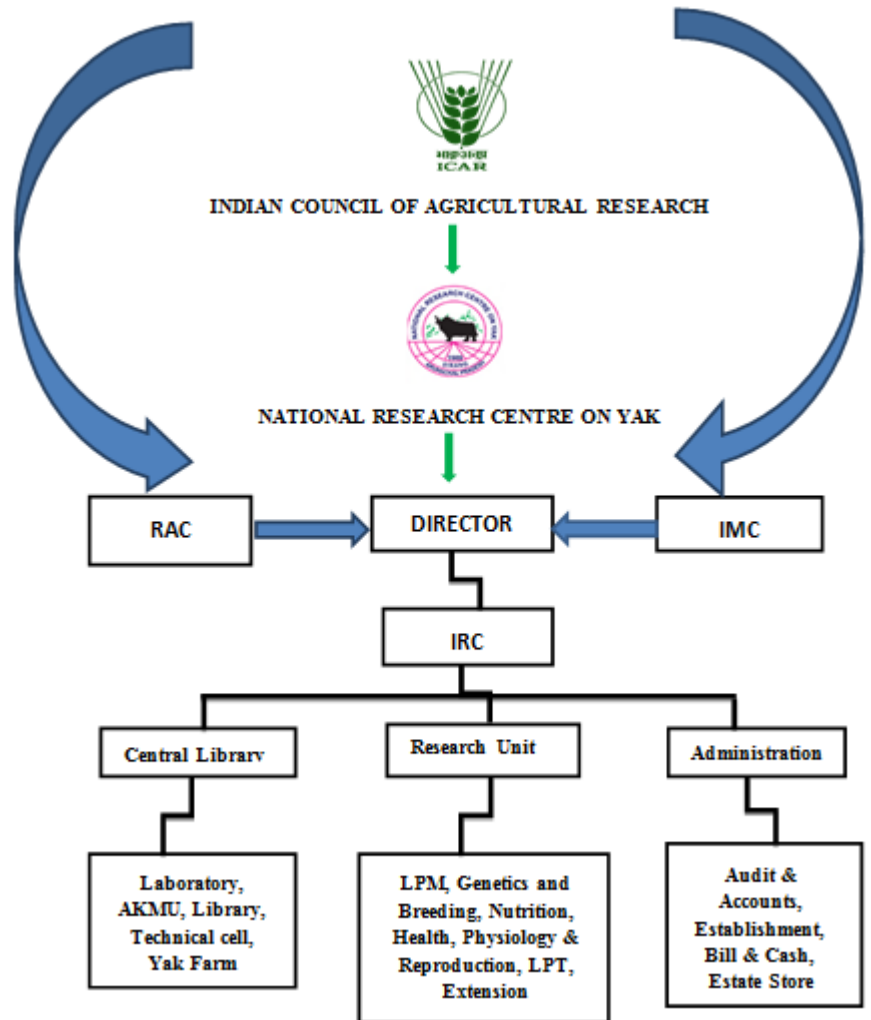


Figure 5.6: Organizational Structure of National Research Centre on Yak, West Kemang, Arunachal Pradesh

5.2.3.4 Collaboration

❖ **National Institutes and Agricultural Universities**

In view of availability of Scientists, and their willingness to collaborate with the NRC on Yak, the following institutes and agencies have been identified for collaboration:

- National Dairy Research Institute, Karnal
- Indian Veterinary Research Institute, Izatnagar
- CIAE, Bhopal
- Project Directorate on Poultry, Hyderabad
- Project Directorate on ADMAS, Bangalore
- National Research Centre on Mithun, Jharnapani
- ICAR Research Complex for NEH Region, Barapani
- College of Veterinary Science, AAU, Khanapara, Guwahati
- Indian Grassland & Fodder Research Institute, Jhansi
- Tamil Nadu Veterinary & Animal Sciences University, Chennai
- West Bengal University of Animal & Fishery Sciences, Kolkata
- National Centre for Agricultural Economics & Policy Planning, New Delhi
- Inter-University Consortium for DAE Facilities, Kolkata
- Field Research Laboratory, Leh
- Defence Research Laboratory, Tezpur

❖ **Extension and Development Agencies**

The following agencies have been identified for collaboration in activities related to extension and development of yak husbandry and production at the level of yak-herdsmen:

- Directorate of Veterinary and Animal Husbandry, Govt. of Arunachal Pradesh
- Directorate of Veterinary and Animal Husbandry, Govt. of Sikkim

- Directorate of Veterinary and Animal Husbandry, Govt. of Jammu & Kashmir
- Directorate of Veterinary and Animal Husbandry, Govt. of Assam
- Directorate of Veterinary and Animal Husbandry, Govt. of Himachal Pradesh
- Directorate of Veterinary and Animal Husbandry, Govt. of Uttarakhand
- Pragya (an NGO working in the Indian Himalayas), Haryana, India

5.2.3.5 Library and Information Centre of the Institute

The library of the institute is located in the first floor of the main building of National Research Centre on Yak, Dirang. The library made its diffident beginning in the year 1989 as NRC Yak Library. It has total 2370 numbers of books, 38 reports, 27 journals including both Indian and International, 4 magazines and 6 newspapers. Total staff of the library is two which includes one library in charge (principle scientist) and other one is the supporting staff (contractual basis). ICAR, New Delhi is the main funding agency of the library. It has one number of desktop computer, one UPS, one printer, one scanner and one photocopier.

5.2.3.6 Location of the Institute

The institute is located at Dirang which falls under West Kameng district. West Kameng is a district of Arunachal Pradesh in India. It accounts for 8.86% of the total area of the state. West Kameng district occupies an area of 7,442 square kilometres (2,873 sq mi), comparatively equivalent to Papua New Guinea's New Ireland. It lies approximately between 91° 30' to 92° 40' East longitudes and 26° 54' to 28° 01' North latitudes. The district shares an international border with Tibet in the north, Bhutan in the west, Tawang District in the northwest, and East Kameng district in the east. The southern border is shared

with Sonitpur district and Darrang district of Assam. The West Kameng district experiences arid tundra or a cool temperate climate in the north. Snow fall occurs from mid-November to February. Snow can be also seen in Khupi, Bomdilla and Nechiphu. Nechiphu is the highest place in the district, situated at 5690 feet above sea level.

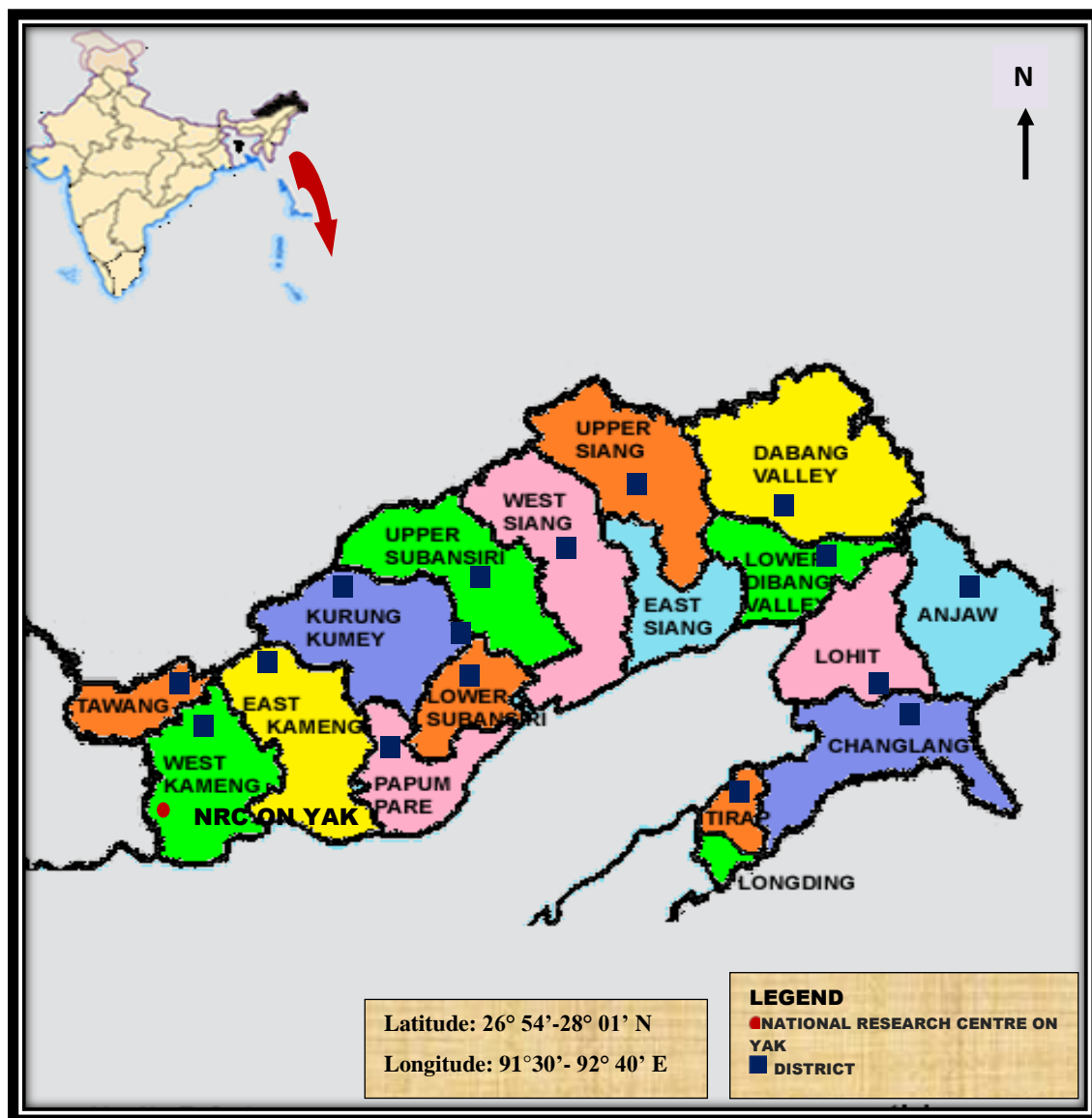


Figure 5.7: Location of National Research Centre on Yak, West Kameng, Arunachal Pradesh

(Source: www.pinterest.com)

5.2.4 National Research Centre on Mithun, Medziphema, Nagaland

5.2.4.1 Preamble of the Institute

Nagaland is a state in Northeast India. It borders the state of Assam to the west, Pradesh and part of Assam to the north, Burma to the east and Manipur to the south. The state capital is Kohima, and the largest city is Dimapur. It has an area of 16,579 square kilometres (6,401 sq mi) making it one of the smallest states of India.

Agriculture is the most important economic activity and the principal crops include rice, corn, millets, pulses, tobacco, oilseeds, sugarcane, potatoes, and fibers. It also has different agricultural research institutes, centres, universities etc. under government and state department. National Research Centre on Mithun is one of the agricultural institute under central government (ICAR, New Delhi) and the campuses of the institute are situated at Medziphema (Dimapur district) and Porba (Phek district) Nagaland. The Jharnapani campus is 25 Km away from the Dimapur railway station and the Porba campus is 150KM away from the Dimapur railway station and it is maintaining two Mithun farms, one at Jharnapani and other at Porba. The Jharnapani farm comprising of 62.5 acre land is located between 25.45° East longitude and 93.53° North latitude, about 300m above the mean sea level. The Porba farm comprising of 230.76 acre land is located between 94.20° East longitude and 24.53° North latitude, about 2133m above the mean sea level.

5.2.4.2 Mandates of the Institute

The mandate of the institute was redefined twice in the year 1997 and 2006. Currently, the National Research Centre on Mithun is functioning for developing the scientific and sustainable mithun rearing system and for catering the needs of mithun farmers with the following mandates.

- Identification, evaluation and characterization of mithun germplasm available in the country.
- Conservation and improvement of mithun for meat and milk.
- To act as a repository of germplasm and information centre on mithun.

5.2.4.3 Organizational Scheme

The Director of National Research Centre on Mithun exercises full authority for Research Strategy Formulation (RSF) and administration. Institute Management Committee (IMC), Research Advisory Committee (RAC), Staff Research Council (SRC) and other functional committee's constituted by ICAR provide directives to the director for running the institute's administration. For day-to-day administration and smooth running of the institute, a team of scientists, technical, administrative and supporting staff, assists the director. The present structure of management of the centre is presented below:

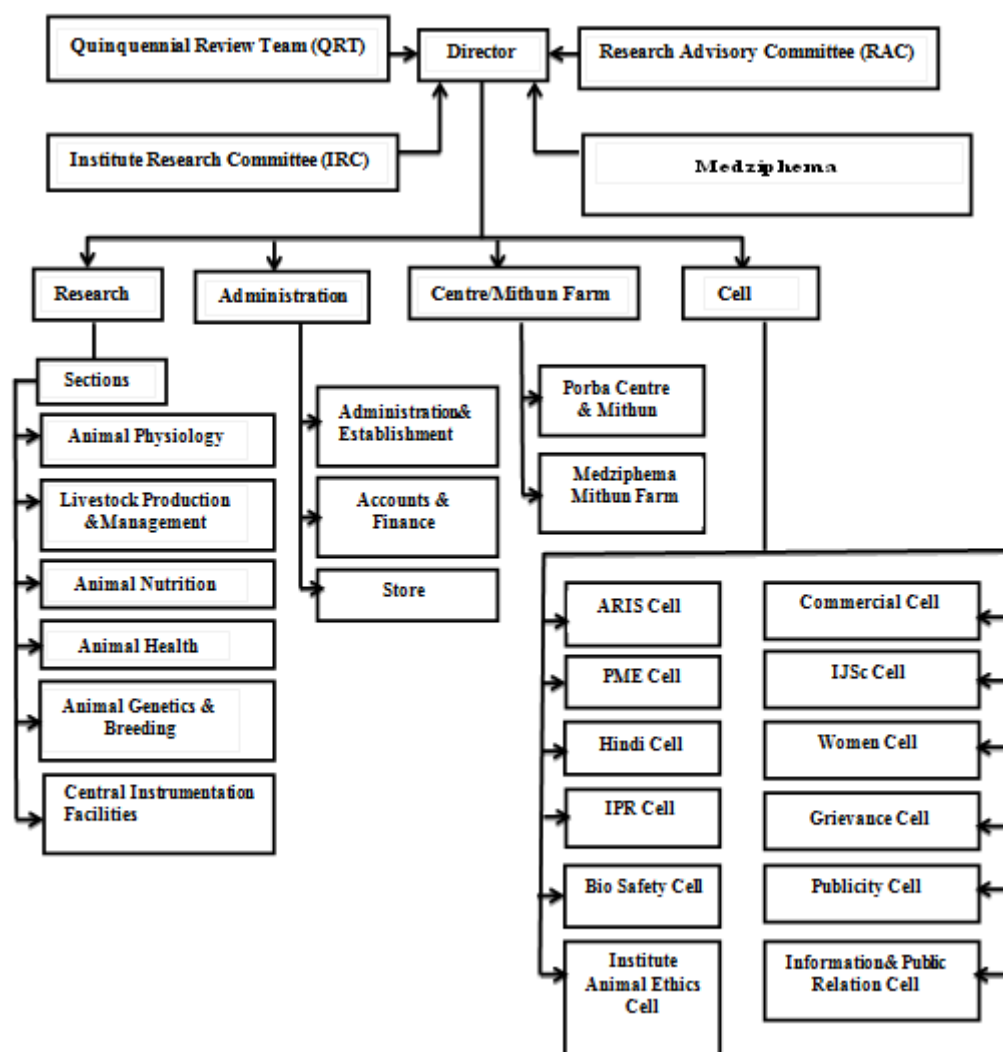


Figure 5.8: Organizational Structure of National Research Centre on Mithun, Medziphema

5.2.4.4 Collaboration

Institute is collaborating with various agencies for research and development programme and for disseminating information at local, state and national level. Students from other universities also deputed to conduct research for M.Sc. and Ph.D. dissertation. Currently institute is running collaborative research programme with National Dairy Research Institute, karnal, Indian Veterinary Research insitute, Barielly, Assam Agriculture University, Khanapara and ICAR Research Complex, Barapani.

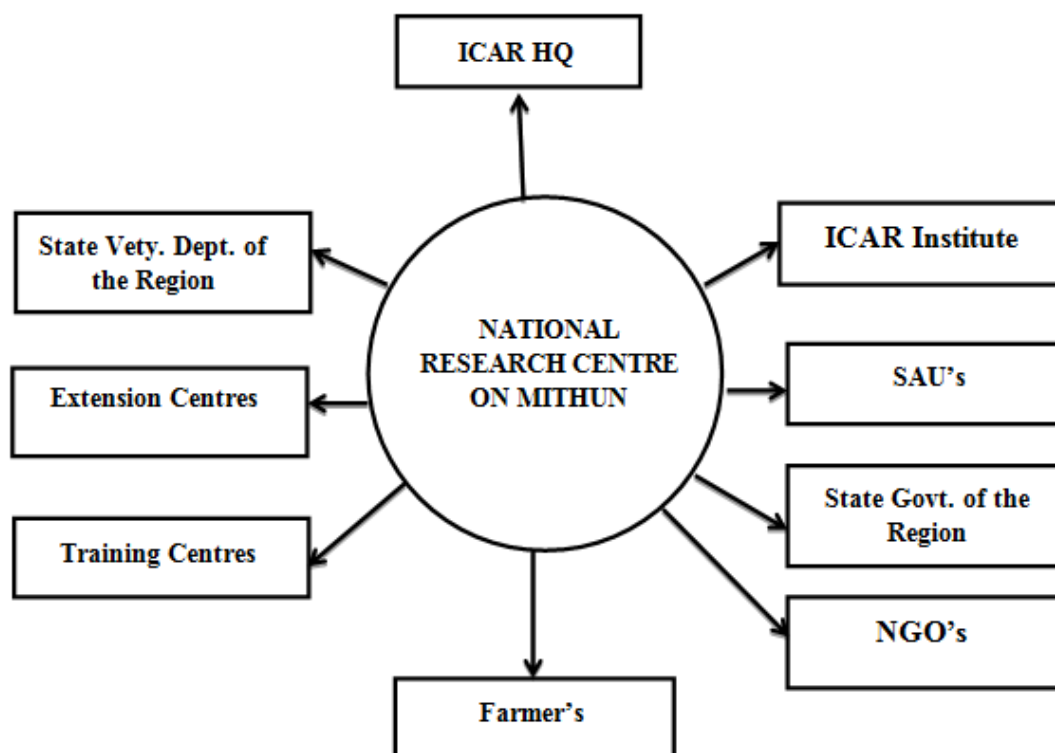


Figure 5.9: Collaboration Structure of National Research Centre on Mithun, Medziphema, Nagaland

5.2.4.5 Library and Information Centre of the Institute

The library is one of the important central facilities of the institute. It has a collection of 1745 books covering wide area of subjects dealing with Animal Genetics and Breeding, Animal Nutrition, Animal Physiology, Livestock Production and Management, Animal Health, Molecular Biology and allied areas. The library is also subscribing 15 numbers of national and international journals. Some of the notables include Animal Science, Reproduction, Veterinary Parasitology, Current Science, Livestock Production Science, Indian Journal of Animal Sciences etc. The library is also a vast reservoir of 722 Annual reports, newsletters, research highlights and 806 other special publications received from ICAR Institutes, SAUs and other organizations under exchange programme. Library is also providing bibliographic search through CD-ROM. It has a good bibliographic database

collection of 20 MEDLINE CD, 29 VET CD, 08 BEAST CD, and 13 AGRIS CD. The activities of the library are looked after by a scientist, with the logistic help from one administrative staff and one attendant.

5.2.4.6 Location of the Institute

The campuses of the institute are situated at Medziphema (Dimapur district) and Porba (Phek district) Nagaland. The Jharnapani campus is 25 Km away from the Dimapur railway station and the Porba campus is 150KM away from the Dimapur railway station. The Institute is maintaining two Mithun farms, one at Jharnapani and other at Porba. The Jharnapani farm comprising of 62.5 acre land is located between 25.45° East longitude and 93.53° North latitude, about 300m above the mean sea level. The Porba farm comprising of 230.76 acre land is located between 94.20° East longitude and 24.53° North latitude, about 2133m above the mean sea level.

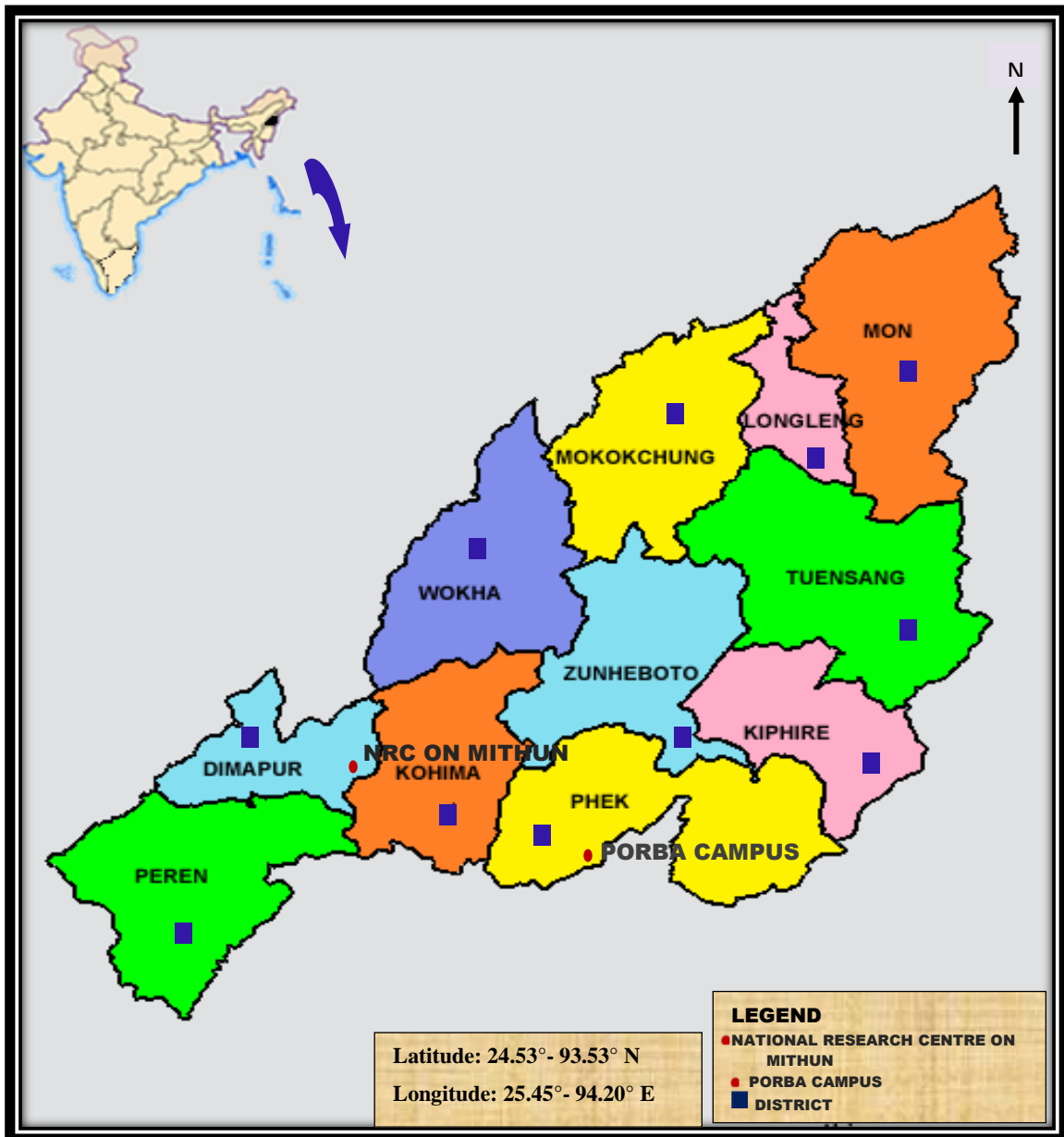


Figure 5.10: Location of National Research Centre on Mithun, Medziphema, Nagaland

(Source: ww.pinterest.com)

5.2.5 National Research Centre on Pig, Guwahati, Assam

5.2.5.1 Preamble of the Institute-

Assam is a state of India in the north-eastern region. Located south of the eastern Himalayas, Assam comprises the Brahmaputra Valley and the Barak river valleys along with the Karbi Anglong and the North Cachar Hills with an area of 30,285 square miles (78,438 km²). Assam is surrounded by seven sister states: Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura and Meghalaya. By means of the mid-term appraisal committee constituted by ICAR in 1990 to review the work of the All India Coordinated Centres on Pig recommended the establishment of one National Research Centre on Pig preferably in the North Eastern part of the country where 28% of country's pig population is distributed. Following the recommendation, ICAR approved the establishment of one NRC on pig at Rani, Guwahati, Assam towards the fag end of the IX five year plan. All existing AICRP centres were merged with the NRC and the post of project coordinator was upgraded to the position of Director. Developing countries like India are faced with the challenge to increase the agricultural productivity not only to reduce the human hunger, but also to meet the demand for nutritious food for the growing populations. Animal husbandry is the important sub-sector of agriculture in the country, which is playing the most important role in the livelihood of rural poor. Among the animal husbandry, piggery not only acts as an insurance coverage for the rural poor, but also it can contribute significantly in narrowing the growing demand for animal protein. Pork is the most popular meat consumed in the world today and about 36 % of the world meat consumption is derived from pork and pork products. Despite the significant potential for pigs to contribute to the improvement of livelihood of rural poor and also to meet the demand for animal protein, pig population in India is considerably low. Therefore, the

National Research Centre (NRC) on pig established by the Indian council of Agricultural Research, New Delhi has to undertake basic, strategic and applied research in the areas of pig production and health to evolve technologies for sustainable pig production and transfer of the technologies to the client groups to increase the pig production in the country. Techniques of modern biology such as molecular cloning of genes, gene transfer, genetic manipulation of pig, chemical and biological treatment of low quality animal feeds for improved nutritive value, genetically engineered immunodiagnostic and immunoprophylactic agents and transgenic pig etc are a reality today and are finding their ways into research and development programmes. Under National Research Centre on Pig, Indian Council of Agricultural Research, Rani, Guwahati, Assam one Krishi Vigyan Kendra (KVK) Goalpara (Dudhnoi) was established in September 2006 under the administrative control of the institute.

5.2.5.2 Mandates of the Institute

The mandates of the institute are as follows-

- To act as a repository of information on pig production and health for regional, national and global policy planning and implementation.
- To undertake basic, strategic and applied research in the areas of pig production and health including product/by-product processing, value addition through quality control measures and transfer of the evolved technologies to the client groups.

5.2.5.3 Organizational Scheme

The Director of National Research Centre on Pig exercises full authority for Research Strategy Formulation (RSF) and administration. Institute Management Committee (IMC),

Research Advisory Committee (RAC), Staff Research Council (SRC) and other functional committee's constituted by ICAR provide directives to the director for running the institute's administration. For day-to-day administration and smooth running of the institute, a team of scientists, technical, administrative and supporting staff, assists the director. The present structure of management of the centre is presented below:

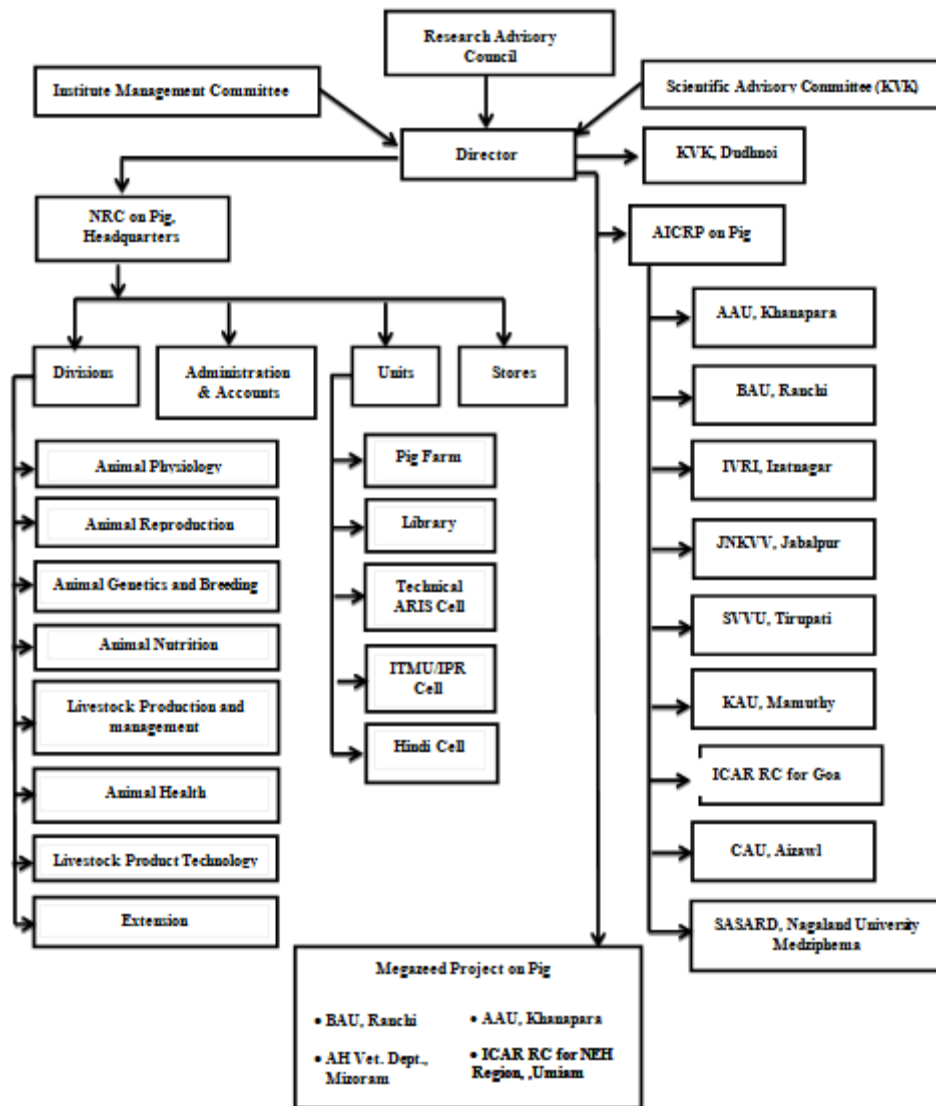


Figure 5.11: Organizational Structure of National Research Centre on Pig, Guwahati, Assam

5.2.5.4 Library and Information Centre of the Institute

National Research Centre on Pig is one of the research based institution located in Rani (Assam). The Library of this institution established in the year 2004 as ICAR NRC Pig library. The library has total 2,400 numbers of books and 49 numbers of Indian and foreign journals which also includes several volumes of the same journals, 4 newspapers, 35 annual reports, 46 proceedings and 5 magazines. Staff strength is only one which includes only one in charge librarian (principle scientist). The library mainly receives funds from ICAR, Govt. of India, New Delhi. The ICT infrastructure of the library includes 24 numbers of computers with LAN Connectivity, 1 server (IBM, System), 4 numbers of UPS (5KVA), 2 printers, 1 projectors and Internet connectivity with bandwidth (Wifi, 1MBPS).

5.2.5.5 Location of the Institute

The institute is located in Rani, Guwahati. The Latitude is 25° 57.544608' N and Longitude: 91° 32.875134' E. Guwahati-Rani Road is located in Borjhar sub-locality, Guwahati locality, Kamrup District, Assam State of India Country. It has a humid subtropical climate falling just short of a tropical savanna climate.

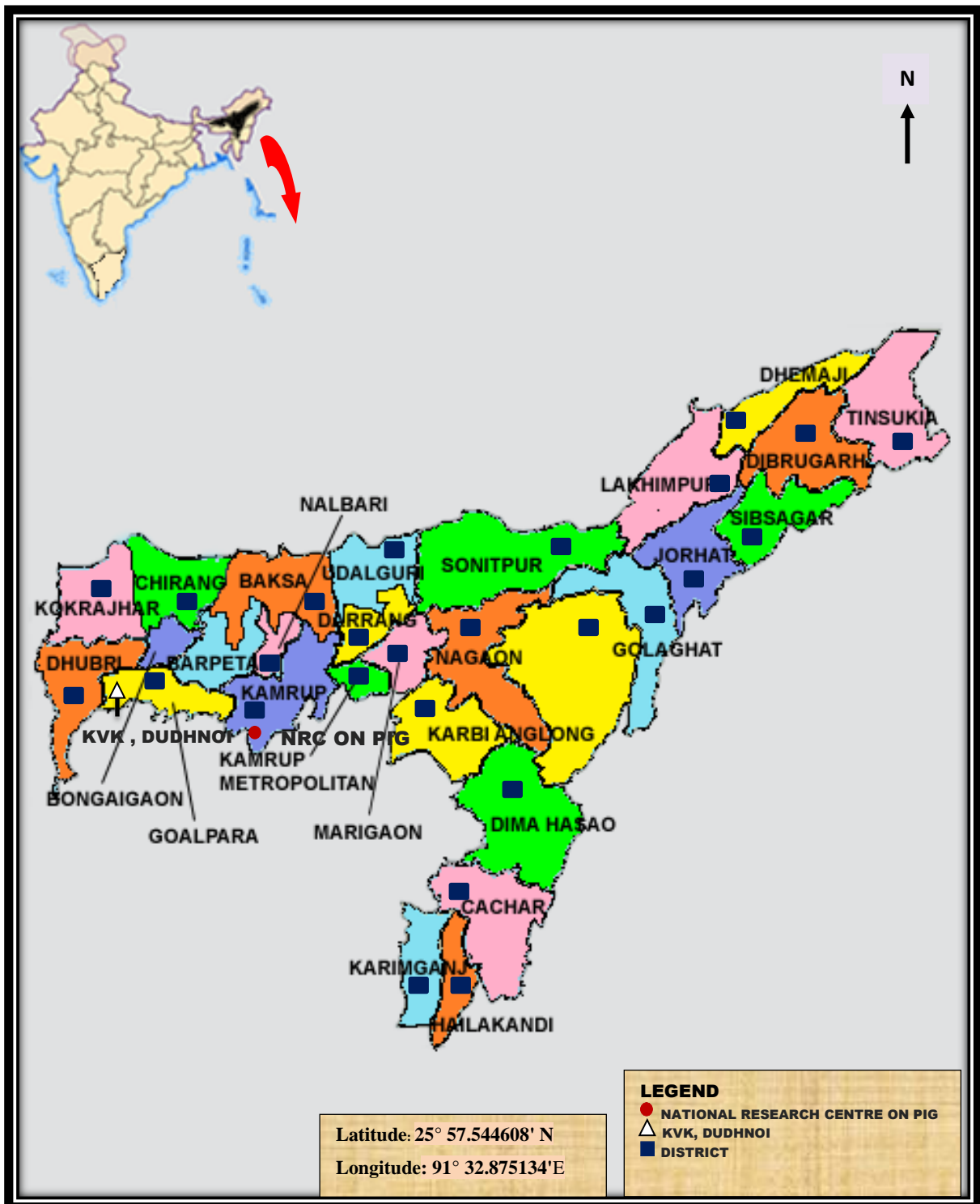


Figure 5.12: Location of National Research Centre on Pig, Guwahati, Assam

(Source: www.pinterest.com)

5.2.6 National Research Centre on Orchids, Pakyong, Sikkim

5.2.6.1 Preamble of the Institute

Sikkim is a landlocked Indian state located in the Himalayan Mountains. The state is bordered by Nepal to the west, China's Tibet Autonomous Region to the north and east, and Bhutan to the east. The Indian state of West Bengal lies to the south. Sikkim is situated in an ecological hotspot of the lower Himalayas, one of only three among the eco regions of India. The forested regions of the state exhibit a diverse range of fauna and flora. Owing to its altitudinal gradation, the state has a wide variety of plants, from tropical species to temperate, alpine and tundra ones, and is perhaps one of the few regions to exhibit such diversity within such a small area. Nearly 81 per cent of the area of Sikkim comes under the administration of its forest department. Keeping in view of the export potential of Orchids, based on the recommendations of the Planning Commission, the Indian Council of Agricultural Research (ICAR) established a National Research Centre for Orchids during VIIIth Five Year Plan at Pakyong, Sikkim since October 1996. The state of Sikkim has handed over 22.19 acres of land with all other assets belonging to Regional Agricultural Centre at Pakyong on lease basis for 99 years. The Director General, ICAR, New Delhi visited and inaugurated this centre when visited Gangtok (5th October, 1996) to attend Regional Committee meeting of Zone III. Since then the centre is undertaking mission oriented research programme on crop improvement, crop production and post-harvest management. In October 1997, the centre also took over the Darjeeling centre of C.P.R.I. Shimla. . In October 1997, the centre also took over the CPRS, Darjeeling from CPRI and established a campus for research on temperate orchids. The laboratory cum administrative building, two fibre houses, 15 medium cost polyhouses with micro-irrigation system, four net houses and four low cost polyhouses have been constructed on

sloppy land for different experimental and conservation purpose. The centre is also equipped with automatic weather station to assist in carrying out research in different disciplines. Orchid sanctuary has been created on 4 acres of farmland covered with different species of trees for in-situ conservation. The basic facilities like tissue culture laboratories and equipped genetics laboratories are available at this centre. The centre has purchased advance equipments like deep freeze (-80°C), distillation sets, DNA thermo cycler (PCR), gel apparatus with power pack, BOD incubators, gel documentation system, incubator shaker, trinocular microscope with camera and other accessories, laminar flow, phase contrast fluorescence with camera and CCTV, microtome, cytological work station, lyophilizer, ELISA reader, UV/VIS spectrophotometer, water purification system etc.

5.2.6.2 Objectives of the institute

- ✓ To collect, conserve, characterize and evaluate germplasm and develop National repository of orchids.
- ✓ To evaluate locally adopted orchid species for their suitability as cut flower or potted plant for commercial purpose.
- ✓ To standardize micro propagation techniques for production of quality planting material at commercial scale.
- ✓ To develop export-worthy orchid lines through a systematic breeding programme.
- ✓ To carry out systematic work on disease and pest management of Orchids.
- ✓ To standardize post-harvest management practices of orchid cut flowers for domestic and International markets.

5.2.6.3 Mandates of the Institute

For resolving major constraints in production of orchids and other bulbous ornamentals in major growing belt, the centre has mission mode approach with following mandate

- Collection, characterization, evaluation and conservation of orchid germplasm.
- Molecular characterization to check bio-piracy and IPR protection of orchids.
- Development of protocols for mass multiplication.
- Production of quality planting materials for large scale cultivation.
- To develop hybrids/ varieties suitable for domestic and export markets.
- To develop production, protection and post-harvest technologies for orchids.
- To act as a national repository of scientific on mandate crops.
- To coordinate research with other scientific organizations and acts as a centre for training.

5.2.6.4 Divisions/Unit of the Institute

❖ **Darjeeling Campus:**

Darjeeling campus of this centre is located at the elevation of 2100m (MSL) in Darjeeling town. About 400 meter square protected area has been created for protected cultivation of Orchids and conservation of germplasm. A small laboratory is set-up with minimum facilities. Basic facilities have been created to carry out research. Over 160 species of Orchids have been collected and maintained at the campus. The collected species represent various genera e.g. Cymbidium, Coelogyne, Dendrobium, Eria, Calanthe, Paphiopedilum, Bulbophyllum etc. Characterization of some of the species has been completed. Work on liliium multiplication has been taken on priority basis.

5.2.6.5 Organizational Scheme

The Director of National Research Centre on Orchids exercises full authority for Research Strategy Formulation (RSF) and administration. Institute Management Committee (IMC), Research Advisory Committee (RAC), Staff Research Council (SRC) and other functional committee's constituted by ICAR provide directives to the director for running the institute's administration. For day-to-day administration and smooth running of the institute, a team of scientists, technical, administrative and supporting staff, assists the director. The present structure of management of the centre is presented below:

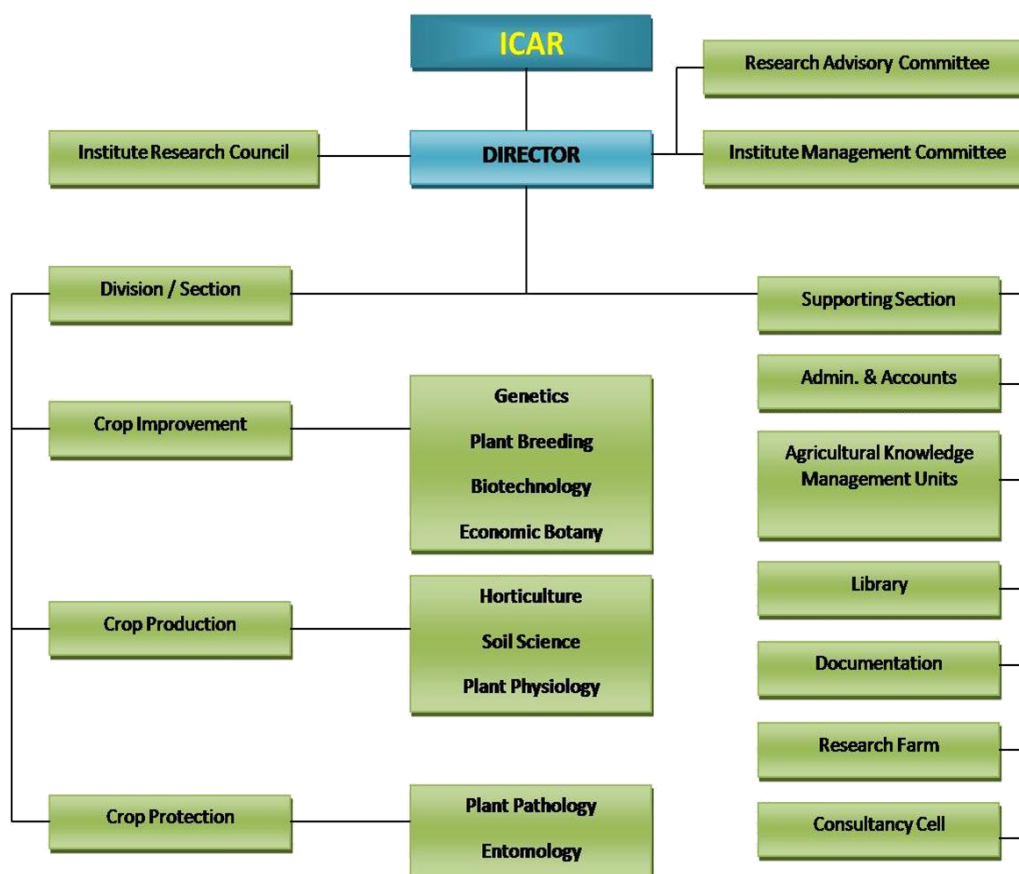


Figure 5.13: Organisational Structure of National Research Centre on Orchids, Pakyong, Sikkim

5.2.6.6 Collaboration



Figure 5.14: Collaboration Structure of National Research Centre on Orchids, Pakyong, Sikkim

5.2.6.7 Library and Information Centre of the Institute

The library of the institute has a collection of about 1100 books. The library information system has been enriched with the subscription of 14 national and international journals, 12 magazines, 302 reports and proceedings of horticultural importance. The main funding agency is ICAR, New Delhi. Staff strength is only two which includes one is the library in

charge (principle scientist) and one is the supporting staff from administration cell. The infrastructure of the library includes 3 computers interlinked with LAN, 1 photocopier machine, 1 printer and 1 scanner. To back up the orchid research in addition to facilities application software packages like SAS 9.3, SPSS, Gen Stat, word processing, database management system etc. were also available. V-SAT has been installed to provide internet facility.

5.2.6.8 Location of the Institute

The institute is located at Pakyong which is a town in the foothills of the Himalayas located in the East Sikkim district of the Indian state of Sikkim. The tiny town is also Sub Division of East District and holds many government offices .Pakyong used to be a small settlement until the Central government grant Sikkim for the first airport (Greenfield Airport) being constructed by Punj Lloyd to be built in this town brought it into the limelight in the late nineties. Located in East Sikkim at an altitude of 1700m (5577 ft), it shares its borders with Bhutan and Tibet. The nearest railway station is at New Jalpaiguri (NJP) and airport is at Bagdogra which is about 130 km away from the center. The center is in process of developing phase and modernizing its infrastructure including construction of office building and residential quarters. The latitude is 27.1400° N and longitude is 88.6500° E. Topography is hilly and a good agricultural area. The average rainfall at Pakyong ranges from 2,000-2,500 mm per annum, mainly distributed from April to October, humidity varies from 70-80%, and temperature ranges from $7-27^{\circ}\text{C}$.



Figure 5.15: Location of National Research Centre on Orchids, Pakyong, Sikkim

(Source: www.pinterest.com)

5.2.7 ICAR Research Complex for NEH Region, Mizoram Centre, Kolasib, Mizoram

5.2.7.1 Preamble of the Centre

Mizoram is one of the seven sisters state which lies in between 92°15' to 93°29' E longitude and 21°58' to 24°35' N latitude. The length of Mizoram is 320 km and the breath is 160 km. The surface is undulating and broken hills mainly run from North to South. Similarly, the major rivers also run from North to South. The altitude ranges from 21 metre at Tlabung to 2,175 m at Phawngpui (Blue Mountain). Temperature ranges from 10°C to 36°C and the annual rainfall ranges from 2,000 mm to 2,500 mm. The climate is characterised by monsoon rains from May to October, winter from first part of December to the end of February and summer without rainfall except few shower from first part of March to the end of April. As a whole, Mizoram climate is pleasant during winter and moderately warm during summer. The mainstay of economy of Mizoram is agriculture, which is currently exhibiting trends of increasing unsustainability.

Kolasib district is situated in the northern most regions of the state surrounded by Aizawl ditrict in the south & east and Mamit district in the west and Assam state in the north. Kolasib Town is the headquarters of the district where various District Offices of different Departments viz. Agriculture Department, Horticulture Department, A.H & Vety. Department, ICAR Research Complex, KVK etc. are located in Kolasib Town.

ICAR, Research Complex for NEH Region, Mizoram Centre is one of the regional centre under ICAR, Research Complex for NEH Region, Barapani which was established in 1977 in Kolasib also providing research back up to agriculture and allied sector development of Mizoram state. The area of the farm at Mizoram Centre is 32 ha located at altitudes varying between 750-800 m. The whole set up with 16 quarters and office-cum-

laboratory buildings was handed over to the ICAR by Govt. of Mizoram in 1977. It has 2 jeeps and a power tiller for agricultural operations.

5.2.7.2 Mandates of the Centre

The mandates of the institute are as follows-

- Development of sustainable farming systems for different agro-climatic and socio-economic zones of the region. Improvement in rain-fed agriculture through watershed based approach.
- Improvement in the productivity of different crops, live stocks and aquatic fauna through the development screening of varieties and agro-techniques.
- Development of local competence through training on agriculture and allied sectors.
- Development of effective linkages with other development departments, financing agencies and SAUs, CAUs operating in the region.
- To maintain database and act as a repository of information centre on agriculture and allied sectors and to provide consultancy in the above areas including plant and animal bio-technology.
- Germplasm exchange, research update in a collaborative mode with other national and international agencies.

5.2.7.3 Organizational Scheme

ICAR Research Complex for NEH Region, Mizoram Centre, Kolasib, Mizoram is one of the regional centre under ICAR Research Complex for NEH Region, Umiam, Meghalaya. The joint director has full authority over administration, Research Advisory Committee

(RAC), Staff Research Council (SRC) and other functional committees of the centre. The centre one Krishi Vigyan Kendra i.e. KVK, Hailakandi.

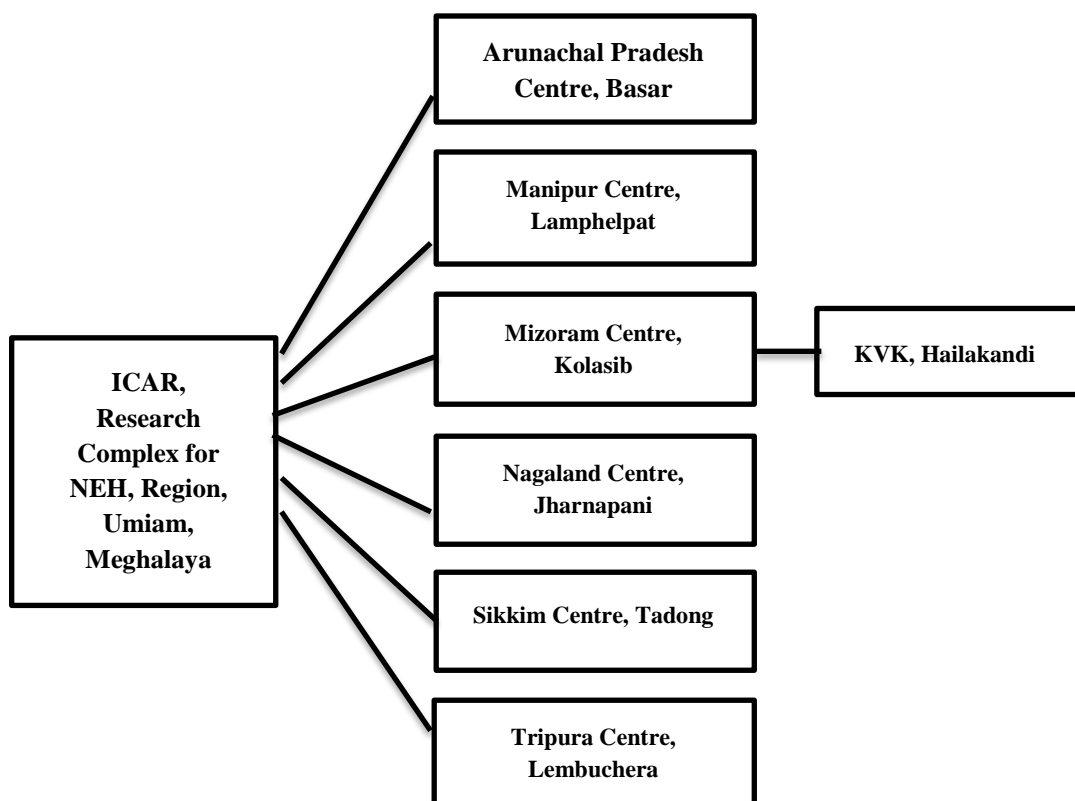


Figure 5.16: Organisational Structure of ICAR Research Complex for NEH Region, Mizoram Centre, Kolasib, Mizoram

5.2.7.4 Library and Information Centre

The library established in the year 1978 as ICAR Mizoram Centre Library. The library was started with 18 books and 12 reports now it has total 534 numbers of books with 16 numbers of subscribed journals, 80 reports, 59 proceedings, 8 thesis, 7 newspapers and 4 magazines. ICAR Research Complex for NEH Region, Umiam is the main funding agency of the library. It has only two staff i.e. one is the in charge librarian (principle scientist) and other is the supporting staff (contractual basis).

5.2.7.5 Location of the Centre

The centre is located in Kolasib with latitude 24°12'44"N and longitude 92°40'36"E. Kolasib district is situated in the northern most region of the state surrounded by Aizawl ditrict in the south & east and Mamit district in the west and Assam state in the north. The geographical area of the district is 1382.51Sq.Kms. which is 6.56% of the state total geographical area. It is situated in between 23° - 5' to 24° - 35' North Latitude and 92° - 3' to 93° East Longitude. The District is covered by Humid Sub-tropical Hill Zone and Humid mild tropical zone. Adjacent to the National Highways and district road, a good number of Agriculture/Horticultural link roads has been constructed which serve for transportation of Agricultural and Horticultural products from the interior areas of the district.

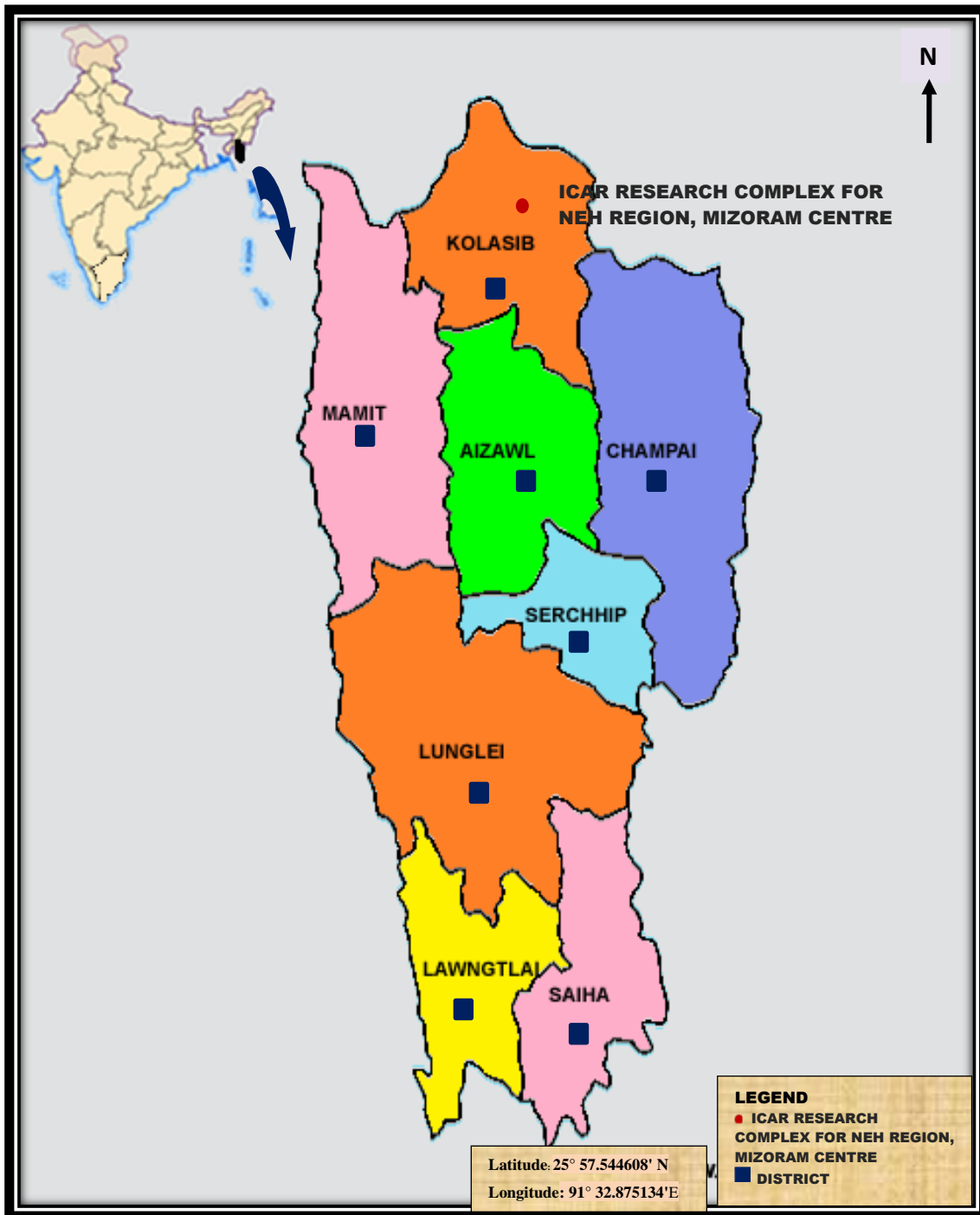


Figure 5.17: Location of ICAR Research Complex for NEH Region, Mizoram Centre, Kolasib, Mizoram

(Source: www.pinterest.com)

5.2.8 ICAR Research Complex for NEH Region, Nagaland Centre, Jharnapani, Nagaland

5.2.8.1 Preamble of the Centre

Nagaland, the 16th State of the Indian Union, was established on 1 December 1963. It is bound by Myanmar on the East, Arunachal on the North, Assam on the West and Manipur on the South. It lies between the parallels of 98 degree and 96 degree East longitude and 26.6 degree and 27.4 degree latitude north of the Equator. The state of Nagaland has an area of 16,579 sq kms. The state is mostly mountainous except those areas bordering Assam valley. Mount Saramati is the highest peak in Nagaland with a height of 3,840 metres and its range forms a natural barrier between Nagaland and Myanmar.

ICAR Research Complex for NEH Region, Nagaland Centre is situated adjacent to NH-39 along the Dimapur - Kohima route, which is about 25km far from Dimapur having a latitude of 25°45'24"N, longitude of 93°50'26"E, and altitude of 295m AMSL. The State falls under monsoon zone. The annual rainfall varies from 2000 to 2500 mm. However, the state receives considerable amount of rainfall during pre-monsoon (March-May) and post monsoon (October-November) periods, with an annual humidity of 70 to 80% and average temperature range of 10°C to 25°C. The average bright sunshine hours received in the state is 2-5 hours during monsoon and 7-8 hours during winter. The topography is mostly hilly and has three distinct agro-climate zones. The agro-climatic conditions of the State are excellent for growing all types of fruits, vegetables, flowers, spices and condiments, aromatic and medicinal plants, plantation crops, etc., ranging from temperate to tropical crops under rain fed conditions. The infrastructure facility of the centre includes an Administration Building, a Central Laboratory, an Experimental Farm, a Livestock Farm (Poultry, Pig, Duck, Rabbit, Cattle), a Scientists' Home and a Farmers 'Hostel. Three

Krishi Vigyan Kendras (KVKs), namely, KVK Dimapur, KVK Wokha and KVK Longleng are under the administrative control of the Centre.

5.2.8.2 Objectives of the Centre

The centre is functioning at Jharnapani since 1975 with the following objectives.
To evolve sustainable integrated farming system for hills to replace Jhum cultivation.
Restoration of degrade/ Jhum fallow lands through tree based farming.

- ✓ To increase the overall productivity of different crops through research in cereals, pulses, oilseeds, horticultural, fisheries and other economical crops.
- ✓ Animal health coverage and improvement of livestock production system.
- ✓ To act as repository of agricultural information on network for state regional international market.

5.2.8.3 Mandates of the Centre

Following are the mandates of the institute-

- Development of sustainable farming systems for different agro-climatic and socio-economic zones of the region. Improvement in rain-fed agriculture through watershed based approach.
- Improvement in the productivity of different crops, live stocks and aquatic fauna through the development screening of varieties and agro-techniques.
- Development of local competence through training on agriculture and allied sectors.
- Development of effective linkages with other development departments, financing agencies and SAUs, CAUs operating in the region.

- To maintain database and act as a repository of information centre on agriculture and allied sectors and to provide consultancy in the above areas including plant and animal bio-technology.
- Germplasm exchange, research update in a collaborative mode with other national and international agencies.

5.2.8.4 Organizational Scheme

ICAR Research Complex for NEH Region, Nagaland Centre, Jharnapani, Imphal is one of the regional centre under ICAR Research Complex for NEH Region, Umiam, Meghalaya. The joint director has full authority over administration, Research Advisory Committee (RAC), Staff Research Council (SRC) and other functional committees of the centre. The centre also have control over three Krishi Vighyan Kendra i.e. KVK, Dimapur, KVK, Wokha and KVK, Longleng.

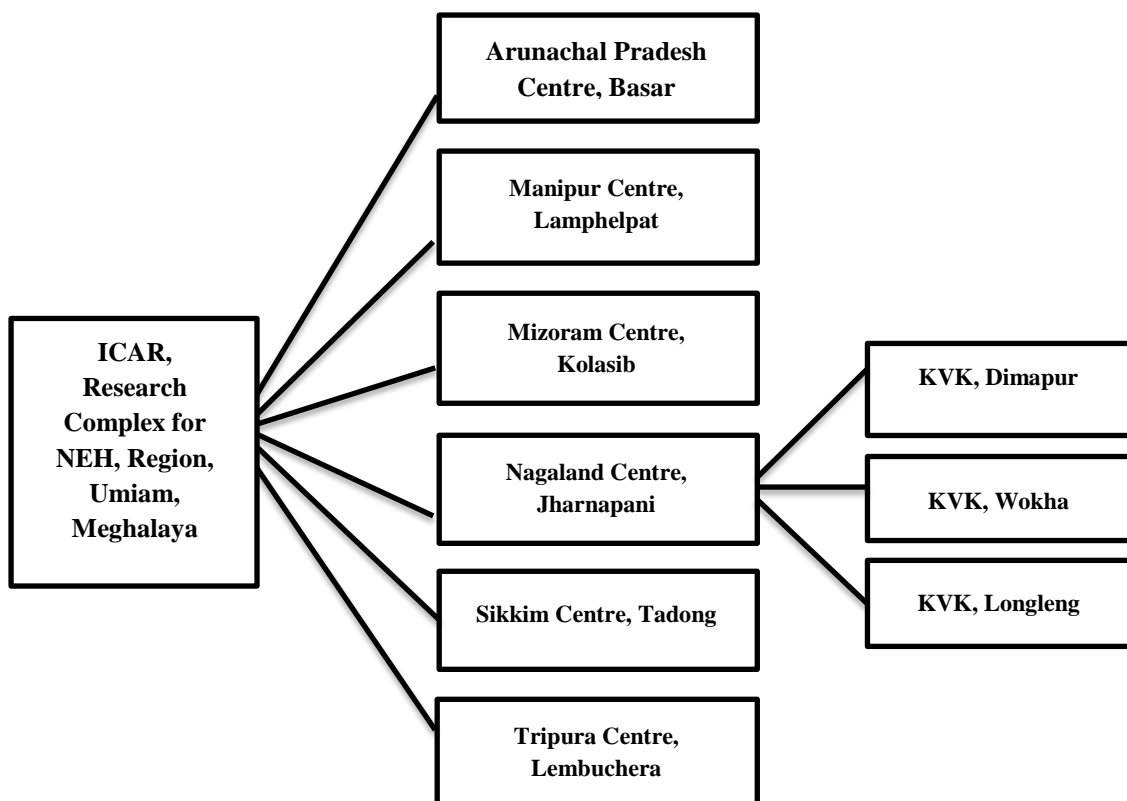


Figure 5.18: Organizational Structure of ICAR Research Complex for NEH Region, Nagaland Centre, Jharnapani, Nagaland

5.2.8.5 Library and Information Centre

The library of the centre made its modest beginning in the year 1979 as ICAR, Nagaland Centre Library. At present library has total 3,429 numbers of books including 498 Hindi books, receives 27 numbers of annual reports from different institutes and centres, subscribes 18 journals, 14 newsletters, receives 9 technical and extension series, 5 daily newspapers and 1 weekly magazine. It has only one staff i.e. library incharge (subject matter specialist of KVK, Dimapur). ICAR Research Complex for NEH Region, Umiam is the main funding agency of the library. It is having only one computer with internet connectivity, one UPS, one printer and one scanner.

5.2.8.6 Location of the Centre

ICAR Research Complex for NEH Region, Nagaland Centre is situated adjacent to NH-39 along the Dimapur - Kohima route, which is about 25km far from Dimapur having a latitude of 25°45'24"N, longitude of 93°50'26"E, and altitude of 295m AMSL. The State falls under monsoon zone. The annual rainfall varies from 2000 to 2500 mm. However, the state receives considerable amount of rainfall during pre-monsoon (March-May) and post monsoon (October-November) periods, with an annual humidity of 70 to 80% and average temperature range of 10°C to 25°C. The average bright sunshine hours received in the state is 2-5 hours during monsoon and 7-8 hours during winter. The topography is mostly hilly and has three distinct agro-climate zones. The agro-climatic conditions of the State are excellent for growing all types of fruits, vegetables, flowers, spices and condiments, aromatic and medicinal plants, plantation crops, etc., ranging from temperate to tropical crops under rain fed conditions.

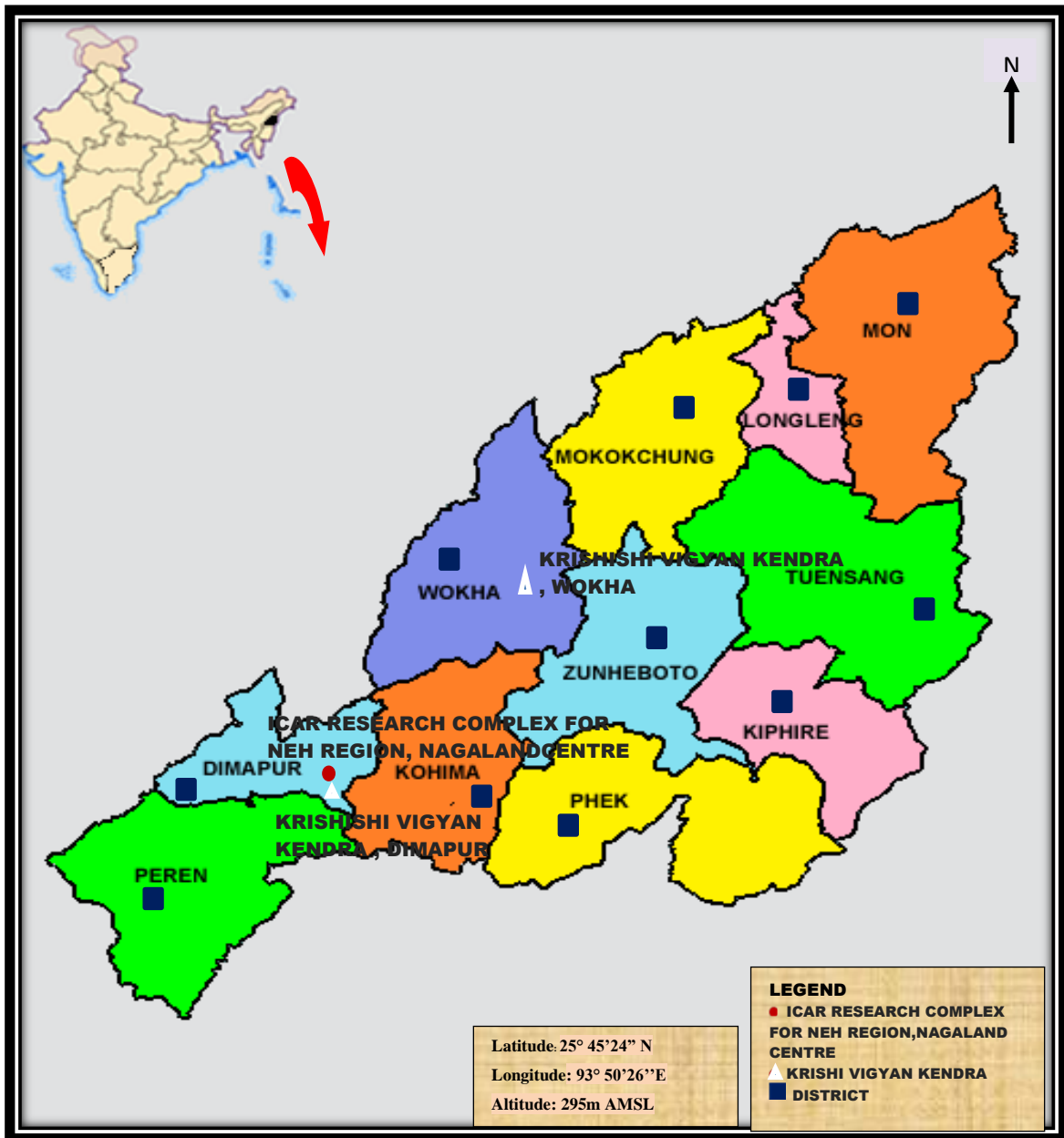


Figure 5.19: Location of ICAR Research Complex for NEH Region, NAGALAND Centre, Jharnapani, Nagaland

(Source: www.pinterest.com)

5.2.9 ICAR Research Complex for NEH Region, Arunachal Pradesh Centre, Basar, Arunachal Pradesh

5.2.9.1 Preamble of the Centre

Arunachal Pradesh is one of the 29 states of India located in northeast India, it holds the most north-eastern position among the other states in the north-east region of India. Arunachal Pradesh borders the states of Assam and Nagaland to the south, and shares international borders with Bhutan in the west, Burma in the east and China in the north. Itanagar is the capital of the state. China claims the northern part of the state as a part of the Tibet Autonomous Region.

ICAR Research Complex for NEH Region, Arunachal Pradesh Centre, Basar , established in the year 1975. Basar is a census town in West Siang District in the state of Arunachal Pradesh, India. Basar is popular, as it is the abode of Galo people. It is spread over 40.5 ha land at Gori research Farm. It has moderately furnished laboratories and staff and with a small library. The centre has 2 jeeps, 1 tractor, one truck and one power tiller. One KVK is attached to the centre to disseminate evolved and tested technologies to the user group.

5.2.9.2 Mandates of the Centre

Following are the mandates of the Centre-

- Development of sustainable farming systems for different agro-climatic and socio-economic zones of the region. Improvement in rain-fed agriculture through watershed based approach.
- Improvement in the productivity of different crops, live stocks and aquatic fauna through the development screening of varieties and agro-techniques.

- Development of local competence through training on agriculture and allied sectors.
- Development of effective linkages with other development departments, financing agencies and SAUs, CAUs operating in the region.
- To maintain database and act as a repository of information centre on agriculture and allied sectors and to provide consultancy in the above areas including plant and animal bio-technology.
- Germplasm exchange, research update in a collaborative mode with other national and international agencies.

5.2.9.3 Organizational Scheme

The regional centre of ICAR Research Complex for NEH Region, Arunachal Pradesh Centre, Basar, Arunachal Pradesh has its headquarter at ICAR Research Complex for NEH Region, Umiam, Meghalaya. The joint director is the head of the centre which have control over the administration, technical and financial committee of the centre. The regional centre has two Krishi Vigyan Kendras one is KVK, Basar and another is KVK Anjaw.

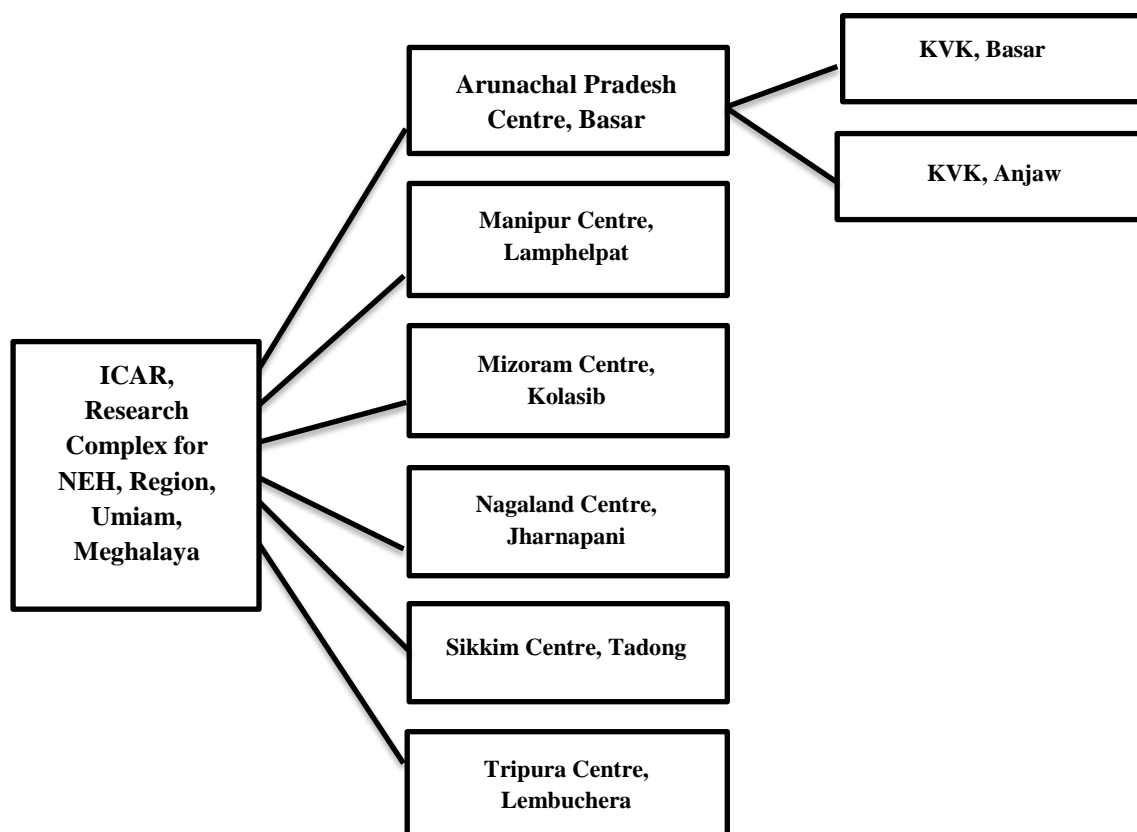


Figure 5.20: Organizational Structure of ICAR Research Complex for NEH Region, Arunachal Pradesh Centre, Basar

5.2.9.4 Library and Information Centre

The centre library started in the 1975 as ICAR A.P. Centre Library. It has total 1275 books, 35 journals, 4 daily newspapers, 6 magazines, 32 reports, 16 newsletters and 26 proceedings receives from different institutes and centres. Staff strength is two which includes one library in charge (scientist) and another one is the supporting staff from technical cell. ICAR Research Complex for NEH Region, Umiam is the main funding agency of the library The ICT infrastructure of the centre is nil.

5.2.9.5 Location of the Centre

The institute is located in Basar, Arunachal Pradesh, Basar is a census town in West Siang District in the state of Arunachal Pradesh, India. Basar is popular, as it is the abode of Galo people. Basar is located at 27.9833° N, 94.6667° E. It has an average elevation of 578 metres above mean sea level and has a pleasantly cold weather which is near to karlunga darra Areas at the sub-Himalayan and sea-level elevation generally experience humid, sub-tropical climate. Arunachal Pradesh receives heavy rainfall of 2,000 to 4,100 millimetres (79 to 161 in) annually, most of it between May and September.

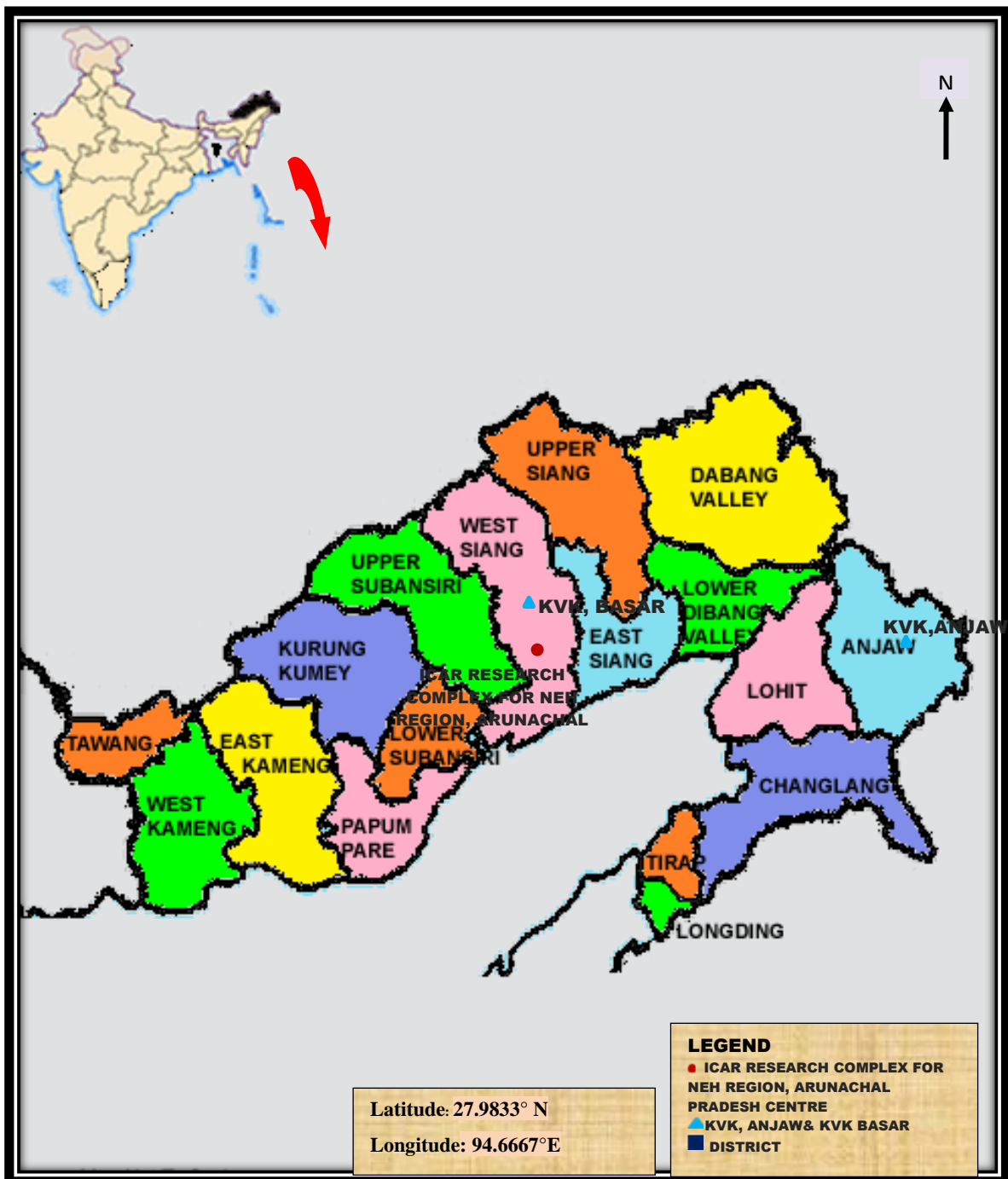


Figure 5.21: Location of ICAR Research Complex for NEH Region, Arunachal Pradesh Centre, Basar

(Source: www.pinterest.com)

5.2.10 ICAR Research Complex for NEH Region, Sikkim Centre, Tadong, Gangtok

5.2.10.1 Preamble of the Centre

Sikkim is a land locked Indian state located in the Himalayan Mountains. The state is bordered by Nepal to the west, China's Tibet Autonomous Region to the north and east, and Bhutan to the east. The Indian state of West Bengal lies to the south.

In 1975, the Prime Minister of Sikkim appealed to the Indian Parliament for Sikkim to become a state of India. In April of that year, the Indian Army took over the city of Gangtok. Thereafter, a referendum was held in which 97.5 per cent of voters supported abolishing the monarchy, effectively approving union with India. Although the union was presented as the will of the people by the Indian authorities, the merger was widely criticized as an annexation and India was accused of exploiting the ethnic divide and rigging the referendum. On 16 May 1975, Sikkim became the 22nd state of the Indian Union, and the monarchy was abolished. To enable the incorporation of the new state, the Indian Parliament amended the Indian Constitution. First, the 35th Amendment laid down a set of conditions that made Sikkim an "Associate State", a special designation not used by any other state. Later, the Amendment repealed the 35th Amendment, and made Sikkim a full state, adding its name to the First Schedule of the Constitution. After the merger of Sikkim as a State of India, the regional centre of ICAR Research Complex for NEH Region was established in 1976 at Tadong. The centre has a farm area 21.2 ha in an altitude of 1200-1400 m. The station has well-furnished office-cum-laboratory buildings, residential quarters and a scientists' dormitory. Other facilities included are a small library, one bus, two jeeps, audio visual aids and a staff welfare club. The centre also has one Krishi Vigyan Kendra at Ranipool.

5.2.10.2 Mandates of the Centre

Following are the mandates of the Centre-

- Development of sustainable farming systems for different agro-climatic and socio-economic zones of the region. Improvement in rain-fed agriculture through watershed based approach.
- Improvement in the productivity of different crops, live stocks and aquatic fauna through the development screening of varieties and agro-techniques.
- Development of local competence through training on agriculture and allied sectors.
- Development of effective linkages with other development departments, financing agencies and SAUs, CAUs operating in the region.
- To maintain database and act as a repository of information centre on agriculture and allied sectors and to provide consultancy in the above areas including plant and animal bio-technology.
- Germplasm exchange, research update in a collaborative mode with other national and international agencies.

5.2.10.3 Organizational Scheme

The joint director is the head of the centre and has full authority over the administration, technical section and financial section. The centre has its headquarter at ICAR Research Complex NEH Region, Umiam, Meghalaya. There is only one Krishi Vigyan Kendra at Ranipool under ICAR Research Complex for NEH Region, Sikkim Centre, Tadong, Gangtok.

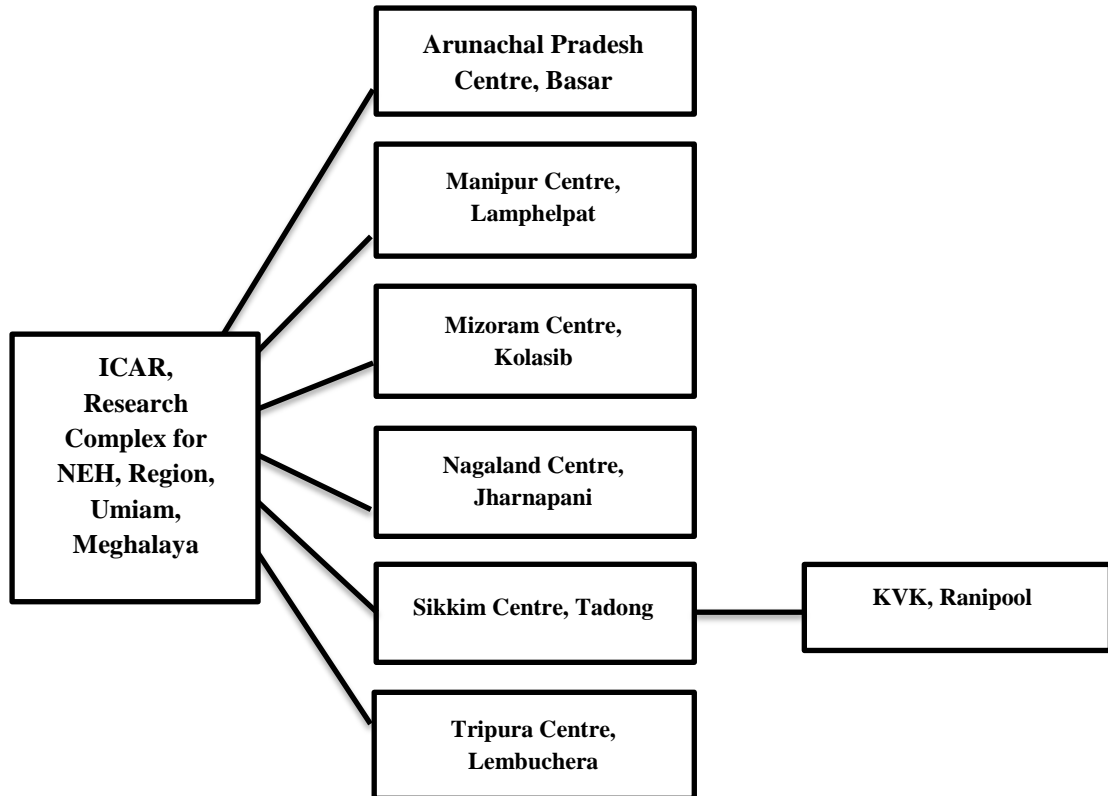


Figure 5.22: Organizational Structure of ICAR Research Complex for NEH Region, Sikkim Centre, Tadong, Gangtok

5.2.10.4 Library and Information Centre

The Library of ICAR Research Complex for NEH Region, Sikkim Centre, Tadong, Gangtok was established in 1977 as a name of ICAR, Sikkim Centre Library. The total library staff strength is two which includes one library in charge and another is library attendant. The main funding agency of the library is ICAR Research Complex for NEH Region, Umiam, Meghalaya. The centre Library has total 4,925 books, 27 Indian and International journals, 9 magazines, 4 newspapers, 24 newsletters, 46 CD ROM. It has only one computer, one printer with LAN connectivity.

5.2.10.5 Location of the Centre

The centre is located in the Tadong village of West Sikkim district. Snuggling in the Himalayan mountains, the village is characterized by mountainous terrain. Almost the elevation ranging from 280 metres (920 ft.) to 8,586 metres (28,169 ft.) with Latitude-27.3° N and Longitude-88.3° E. The village has five seasons: winter, summer, spring, autumn, and a monsoon season between June and September. The climate of the village is mainly tundra type. Most of the inhabited regions of Sikkim experience a temperate climate, with temperatures seldom exceeding 28 °C (82 °F) in summer. The average annual is around 18 °C (64 °F). It also receives regular snowfall. The snow line ranges from 6,100 metres (20,000 ft).



Figure 5.23: Location of ICAR Research Complex for NEH Region, Sikkim Centre, Tadong, Gangtok

(Source: www.pinterest.com)

5.2.11 ICAR Research Complex for NEH Region, Lembucherra, Tripura Centre, Tripura

5.2.11.1 Preamble of the Centre

Tripura is a state in Northeast India. The third-smallest state in the country, it covers 10,491 km² (4,051 sq mi) and is bordered by Bangladesh (East Bengal) to the north, south, and west, and the Indian states of Assam and Mizoram to the east.

The ICAR Research Complex for NEH Region, Tripura Centre was established by Indian Council of Agricultural Research, New Delhi with its headquarter at Umroi Road, Umiam (Barapani), Shillong in 1975 at Lembucherra, 12 km away from the capital town, Agartala. Lembucherra is a Village in Mohanpur Tehsil in West Tripura District of Tripura State, India. It is located 20 KM towards North from District headquarters Agartala. 20 KM from State capital Agartala Lembucherra is surrounded by Hezamara Tehsil towards East , Mandwai Tehsil towards South , Agartala Tehsil towards South, Padmabil Tehsil towards East . Late S. Govindaswami was appointed as the first Joint Director of this centre. During last 34 years four Joint Directors have served in this centre. The Centre over a short span of its existence has developed technologies with identification of high yielding varieties of agro - horticulture crops, production and protection technologies and soil characterization relevant to the state. The centre has also developed and introduced suitable strains of poultry, rabbit, pig and goat as components for uplifting the economic levels of the local masses. 'Farming System Research' has generated significant interest among the development workers and farmers of the state. The centre has a farm area of 48 ha comprising mostly of tilla land with only about 2 ha of low land. It has a good office-cum-laboratory building, some staff quarters, library, one bus, two jeeps, one tractor and two power tillers. ICAR Research Complex for NEH Region, Tripura Centre, Lembucherra has one Krishi Vigyan Kendra at Birchandramanu, South Tripura.

5.2.11.2 Mandates of the Centre

Following are the mandates of the institute-

- Development of sustainable farming systems for different agro-climatic and socio-economic zones of the region. Improvement in rain-fed agriculture through watershed based approach.
- Improvement in the productivity of different crops, live stocks and aquatic fauna through the development screening of varieties and agro-techniques.
- Development of local competence through training on agriculture and allied sectors.
- Development of effective linkages with other development departments, financing agencies and SAUs, CAUs operating in the region..
- Germplasm exchange, research update in a collaborative mode with other national and international agencies.

5.2.11.3 Organizational Scheme

The regional centre of ICAR Research Complex for NEH Region, Lembucherra, Tripura Centre, Tripura has its headquarter at ICAR Research Complex for NEH Region, Umiam, Meghalaya. The joint director is the head of the centre which have control over the administration, technical and financial committee of the centre. The regional centre has only one Krishi Vigyan Kendra at Birchandramanu, South Tripura.

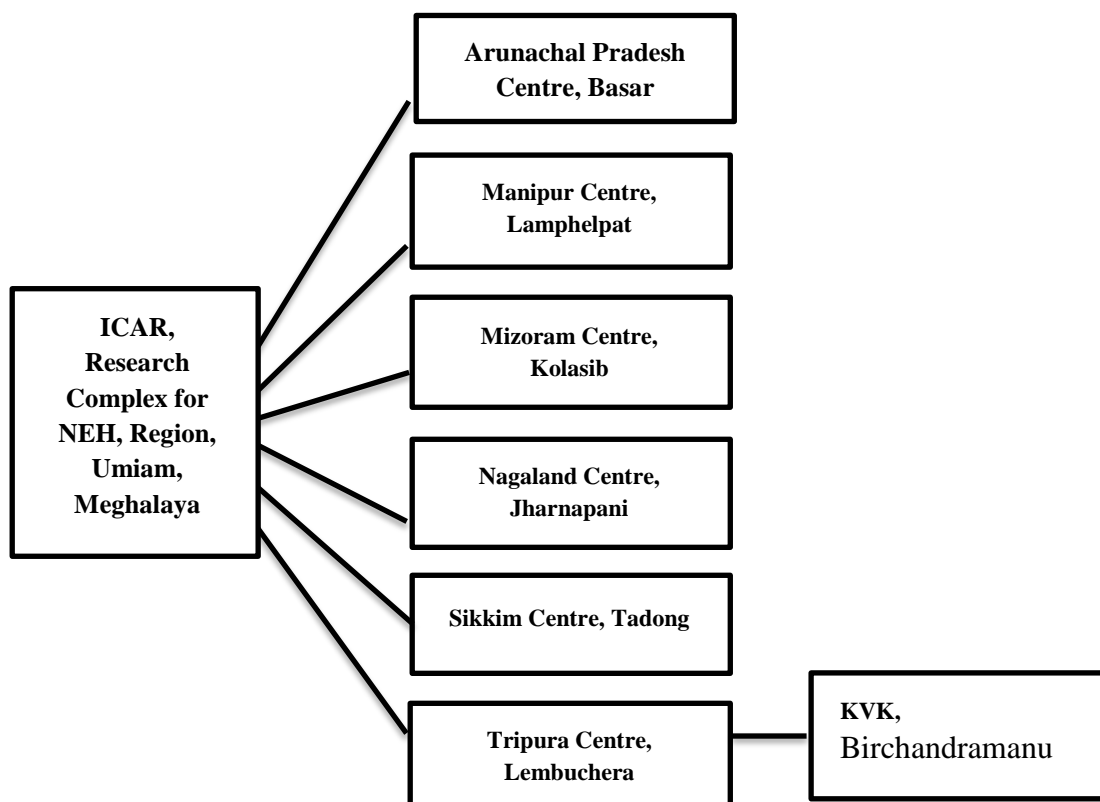


Figure 5.24: Organizational Structure of ICAR Research Complex for NEH Region, Lembucherra, Tripura Centre, Tripura

5.2.11.4 Library and Information Centre

The Library of ICAR Research Complex for NEH Region, Lembucherra, Tripura Centre, Tripura was established in 1978 as a name of ICAR, Tripura Centre Library. The total library staff strength is two which includes one library in charge and another is library attendant. The main funding agency of the library is ICAR Research Complex for NEH Region, Umiam, Meghalaya. The centre Library has total 2,425 books, 20 Indian and International journals, 6 magazines, 5 newspapers and 20 newsletters. It has only one computer, one printer with LAN connectivity.

5.2.11.5 Location of the Centre

The institute is located at Lembucherra village which is located at West Tripura District of Tripura. Tripura is a landlocked state in North East India, where the seven contiguous states – Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura – are collectively known as the Seven Sister States. Spread over 10,491.69 km² (4,050.86 sq mi),. It extends from 22°56'N to 24°32'N, and 91°09'E to 92°20'E. Its maximum extent measures about 184 km (114 mi) from north to south, and 113 km east to west. Tripura is bordered by the country of Bangladesh to the west, north and south; and the Indian states of Assam to the north east; and Mizoram to the east. It is accessible by national highways passing through the Karimganj district of Assam and Mamit district of Mizoram. The state has a tropical savanna climate, designated under the Köppen climate classification. The undulating topography leads to local variations, particularly in the hill ranges. The four main seasons are winter, from December to February; pre-monsoon or summer, from March to April; monsoon, from May to September; and post-monsoon, from October to November. During winter, temperatures range from 13 to 27 °C (55 to 81 °F), while in the summer they fall between 24 and 36 °C (75 and 97 °F).

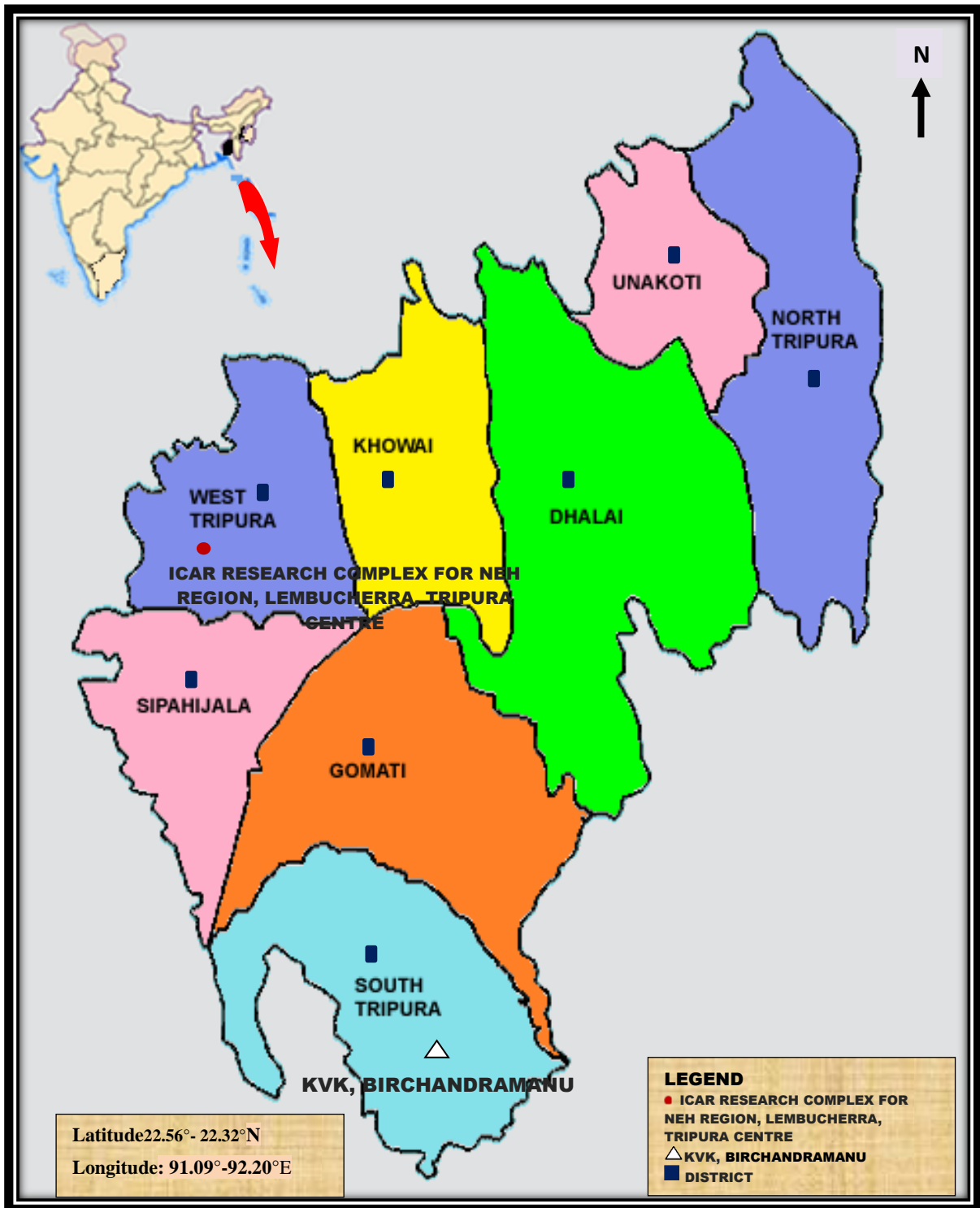


Figure 5.25: Location of ICAR Research Complex for NEH Region, Lembucherra, Tripura Centre, Tripura

(Source: www.pinterest.com)

5.2.12 ICAR Research Complex for NEH Region, Manipur Centre, Lamphelpat, Imphal

5.2.12.1 Preamble of the Institute

Manipur is a state in north-eastern India, with the city of Imphal as its capital. It is divided into two parts: Manipur Proper and Outer Manipur. It is bounded by Nagaland to the north, Mizoram to the south, and Assam to the west; Burma lies to its east. The state covers an area of 22,327 square kilometres (8,621 sq m).

Lamphelpat is the district headquarters of Imphal West district in the state of Manipur. ICAR Research Complex for NEH Region, Manipur Centre is located at Lamphelpat, Imphal which was granted its sanction under Indian Council of Agricultural Research, New Delhi for establishment in 1975. The Regional Station, has its own campus at Lamphelpat comprising of residential quarters, laboratory buildings, KVK buildings and farms. The farm area is spread over 108 ha of land. It has 1 bus, 2 jeeps, 2 tractors and 1 power tiller. The centre has almost all the equipments as per the strength of the scientists. It has common instrumentation centre where equipments like PCR, AAS etc. are used by the scientists. It also has a plant health clinic besides fish and poultry hatcheries.

5.2.12.2 Mandates of the Centre

Following are the mandates of the institute-

- Development of sustainable farming systems for different agro-climatic and socio-economic zones of the region. Improvement in rain-fed agriculture through watershed based approach.
- Improvement in the productivity of different crops, live stocks and aquatic fauna through the development screening of varieties and agro-techniques.

- Development of local competence through training on agriculture and allied sectors.
- Development of effective linkages with other development departments, financing agencies and SAUs, CAUs operating in the region.
- To maintain database and act as a repository of information centre on agriculture and allied sectors and to provide consultancy in the above areas including plant and animal bio-technology.
- Germplasm exchange, research update in a collaborative mode with other national and international agencies.

5.2.12.3 Organizational Scheme

ICAR Research Complex for NEH Region, Manipur Centre, Lamphelpat, Imphal is one of the regional centre under ICAR Research Complex for NEH Region, Umiam, Meghalaya. The joint director has full authority over administration, Research Advisory Committee (RAC), Staff Research Council (SRC) and other functional committees of the centre. The centre also have control over four Krishi Vigyan Kendra i.e. KVK Imphal, KVK Churachandpur, KVK Chandel and KVK Tamenlong .

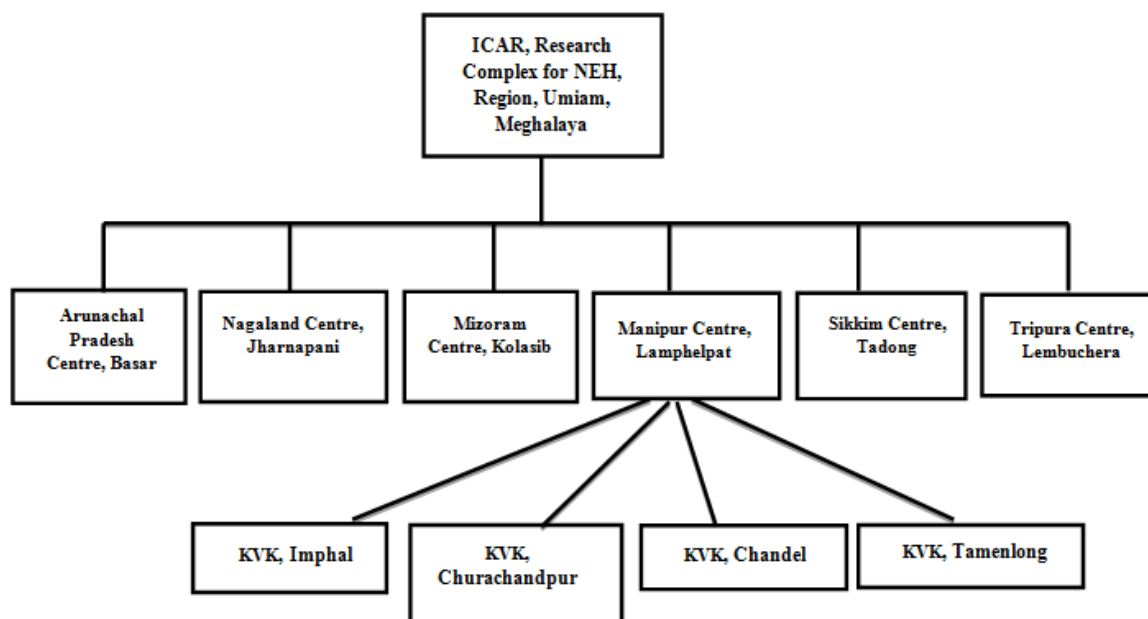


Figure 5.26: Organizational Structure of ICAR Research Complex for NEH Region, Manipur Centre, Lamphelpat, Imphal

5.2.12.4 Library and Information Centre

The library of the centre was established in the year 1978 with the name of ICAR, Manipur Centre Library. The main funding agency of the library is ICAR Research Complex for NEH Region, Umiam, Meghalaya. The staff strength of the library is only two which includes one library in charge and one supporting staff recruited on contractual basis. Till now the library has a total of 3,076 books, 23 newsletters, 4 newspapers and 315 back volumes and it also subscribes 24 Indian and foreign journals. Library has only one number of computer with one UPS.

5.2.12.5 Location of the Centre

The centre is located in Lamphelpat. Lamphelpat is the district headquarters of Imphal West district in the state of Manipur, India. Lamphelpat city is the administrative

headquarters of the district. The district occupies an area of 558 km². It lies at a latitude of 23°83'N – 25°68'N and a longitude of 93°03'E – 94°78'E. The total area covered by the state is 22,347 km². The climate is largely influenced by the topography of this hilly region which defines the geography of Manipur. Lying 790 meters above sea level, Manipur is wedged between hills on all sides. This north-eastern corner of India enjoys a generally amiable climate, though the winters can be a little chilly. The maximum temperature in the summer months is 32 degrees C. In winter the temperature often falls below zero, bringing frost. Snow sometimes falls in some hilly regions due to the Western Disturbance. The coldest month is January, and the warmest July. The ideal time for tourism in the state, in terms of climate, is from October to February, when the weather remains bright and sunny without the sun being too hot. It is drenched in rains from May until mid-October. It receives an average annual rainfall of 1467.5 mm.

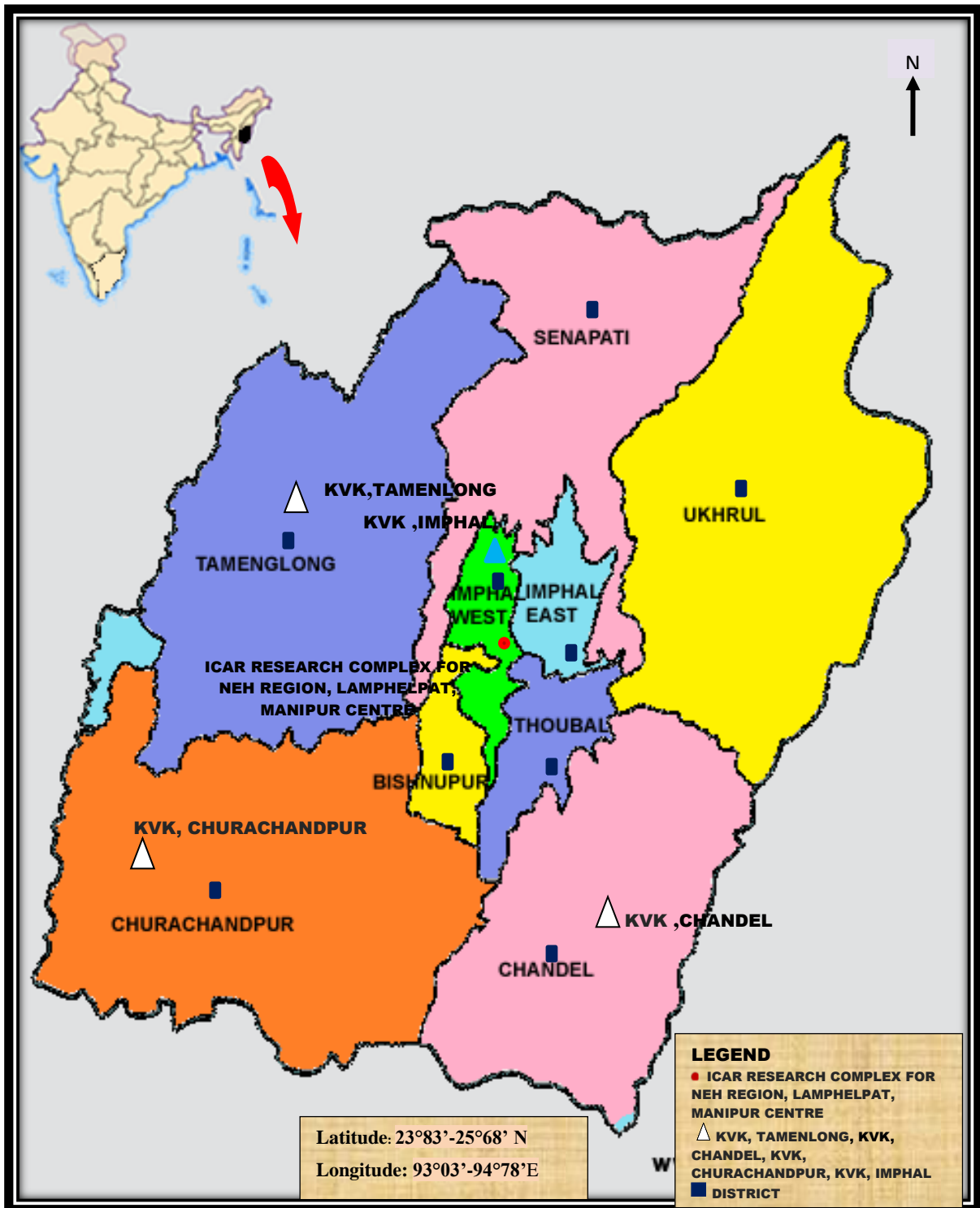


Figure 5.27: Location of ICAR Research Complex for NEH Region, Lembucherra, Tripura Centre, Tripura
(Source: www.pinterest.com)

5.3 CONCLUSION

Agricultural research in India has stimulating the past about its growth and progress. It started through the colonial era and today India improvements of an agricultural research system includes ICAR institutions along with a number of national research centres, bureaus, project directorates, AICRPs, KVKs, State and Central Agricultural Universities where several scientists and supporting staff are actively en-gaged in agricultural research. This marks the Indian agricultural research system possibly the largest in the world. Presently, ICAR plays a vital role at the national level and it supports, stimulates and organizes research and education activities not only in the northeast but also all over the country. Therefore, above chapter discusses about the origin, mandates, library facilities, organization scheme and location of the selected ICAR Institutes and Centres of northeast India to know genuinely about the surroundings, latest situation and circumstances of each institutes and centres individually. The following chapter provides a brief discussion on the conceptual framework and meaning of information needs and information seeking behaviour its models and theories (**Chapter 6**).