



**Parijat Industries (India) Pvt. Ltd.**

AN ISO 9001, 14001 & 45001 COMPANY

# **Scientific Infrastructure At Parijat**



**NABL  
ISO/IEC 17025: 2017  
Accredited  
Quality  
Control  
Laboratory**

**Department of  
Scientific and Industrial  
Research (DSIR)  
Accredited  
R&D Unit**

**Issued By:**

**Parijat Industries (India) Pvt. Ltd.**

**Reg. Office:** M-77, II Floor, M Block Market, Greater Kailash-II, New Delhi-110048.

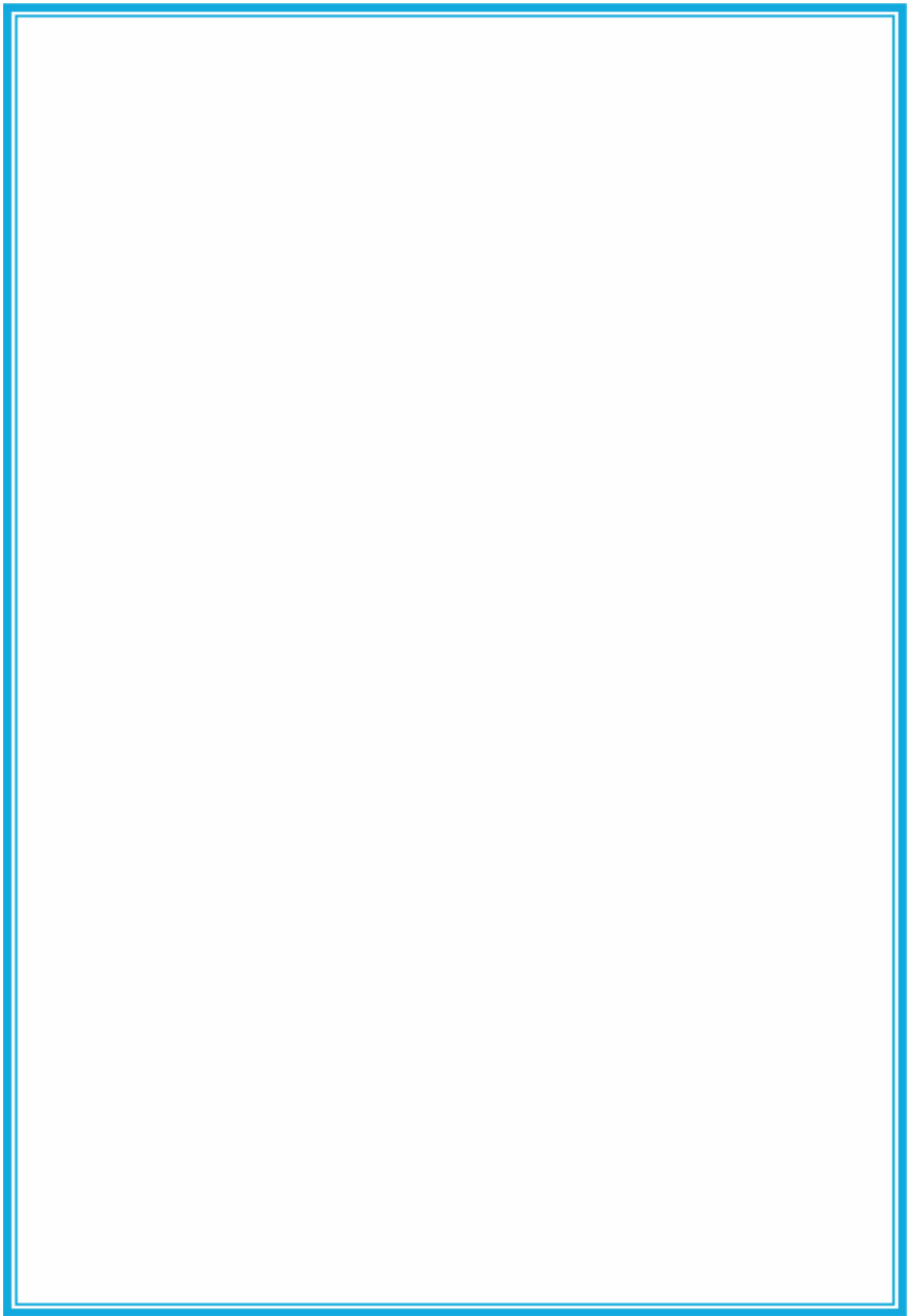
**Factory:** Works-Khera Ganni, V&PO-Fatehgarh, Raipur Rani Road, Ambala, Haryana-134201



**PARIJAT**

Enabling. Growth. Responsibly.

**A REFERENCE GUIDE FOR SCIENTIFIC LABORATORY**



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## PARIJAT PRESENCE IN INDIA



## INTRODUCTION

Parijat Industries (India) Pvt. Ltd. is an integrated crop protection & public health goods manufacturing company, with its head office located in New Delhi and manufacturing facilities in Ambala, Haryana. In India, Parijat is operating in 18 states. Parijat have an extensive global presence spreading across to more than 60 countries, 6 international offices with exclusive distribution networks in India, Russia, Tanzania, Colombia and West Africa. Parijat currently owns 7 subsidiaries, and our branded products are exported across the globe.

This publication is a brief description of Scientific and Technological Infrastructure at Parijat Industries.

The Scientific and Technical Infrastructure is a combination of:

1. In-house laboratories
2. Scientific workforce
3. Extensive engagement with external scientific institutions

Parijat has established 6 different inhouse laboratories. Each of these are specialized in different areas and include:

1. Plant Protection Laboratory
2. Physical and Chemical Testing Laboratory (NABL Accredited)
3. Formulation Development Laboratory (DSIR Accredited)
4. Process Development Laboratory (Ambala)
5. Process Development Laboratory (Cuddalore)
6. Research Farm of R&D (Agri)
7. Packaging Laboratory



These laboratories work in conjunction with 6 scientific departments:

1. Patent Department
2. Regulatory Department (Registration)
3. Research and Development (Formulation) Department
4. Health, Safety and Environment Department
5. Quality Assurance Department
6. Research and Development (Agriculture) Department



## PLANT PROTECTION LABORATORY

Research and Development (R&D) are an integral part of Parijat. The R&D (Agri) Department operated a plant protection laboratory at Mandour, Ambala that is solely dedicated to carry out different research activities for the company related to pests and field trials for efficacy testing.

The plant protection laboratory is currently functional under three sections:

1. Pathology
2. Agronomy
3. Entomology

The pathology division dedicatedly collects and identifies diseased samples from the field, isolates different diseases add-causing plant pathogen in laboratory and thereafter conducts lab trials for testing efficacy of fungicides.

The entomology division is solely responsible for maintaining insect culture in the entomological laboratory. Rearing of different pests is done round the year to conduct Bio - efficacy trials.

Bio-efficacy trials of pesticides in laboratory are carried out in-vitro condition.

The agronomy division is responsible for growing of weed in pots and conducting pot and field trials for testing efficacy of herbicides. The weed management division is dedicated to the development of weed banks and conduction of various bio-efficacy trials for the management of various weeds.

The lab is well equipped with various sophisticated instruments such as:

- |                      |                         |
|----------------------|-------------------------|
| 1. Autoclave         | 6. Hotplate             |
| 2. Laminar air flow  | 7. Binocular microscope |
| 3. BOD               | 8. Weighing balance     |
| 4. Stereo microscope | 9. Soil PH meter        |
| 5. Deep freezer      | 10. Venier cliper       |

The lab serves as the backbone of the R&D department conducting bioassay's, dose standardization as well as monitors Parijat in-house and multilocation field trials.





# PHYSICAL AND CHEMICAL TESTING LABORATORY

## NABL ISO/IEC 17025: 2017

### Accredited Quality Control Laboratory

Parijat products are sold globally under our own trademark brands. A vigorous process of quality monitoring is in place under our independent Quality Control and Quality Assurance Departments. The lab is National Accreditation Board for Testing and Calibration Laboratories (NABL) ISO/IEC 17025:2017 Accredited Laboratory approved by Central Insecticide Board and Registration Committee (CIB).

To provide service to global clientele, the company has been investing in a sophisticated Physical & Chemical Testing Laboratory for Testing and Research and Development. Instruments available at the premises include:

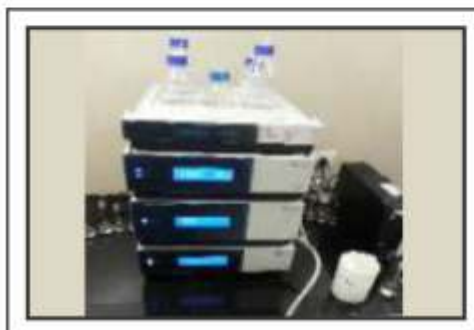
1. High Pressure Liquid Chromatography (HPLC)
2. Gas Chromatography (GC)
3. UV Spectrophotometer
4. High Precise Analytical Balance
5. Air Jet Mill
6. SC Bead Mill Lab Model (SC formulation development)
7. Extruded Granulator



Total number 15 scientific and technical staff are engaged in the laboratory.

Numbers of studies are generated from this laboratory including the

1. Bio-efficacy
2. Chemistry
3. Toxicity



# **FORMULATION DEVELOPMENT LABORATORY**

**(DSIR, GOVT. OF INDIA ACCREDITED)**

The formulation development laboratory of Parijat focuses on producing new product formulations as well as continuous improvement in existing formulations which is done by dedicated team of scientists.

The lab precisely determines the effectiveness of pesticide formulations before the product reaches market stands.

The lab is equipped with sophisticated equipment's for developing newer formulations like:

1. Analytical Lab
2. Ultra-High Pressure Liquid Chromatography (HPLC)
3. Mass Analyzer
4. Gas Chromatography (GC)
5. High Pressure Liquid Chromatography (HPLC)
6. Physio-chem properties testing Lab
7. Hot Air Ovens/ Stability Chambers
8. Extruded Granulator & Dryer- To formulate Extruded cylindrical shape WG/ SG formulations.
9. Homogenizer - High Speed Homogenizer to Micronize formulation (CS, EW & ZCs)
10. Mechanical Stirrer - To formulate different EC's & SL formulations
11. Fluid Bed Granulator - To formulate WG/SG formulation through a fluid bed process for a fine irregular shaped granule
12. Air Jet Mill - To micronize particle size of formulation like WP/ WG granules
13. Bead Mill - To formulate Suspension formulations like SC & OD.
14. Spheronizer - To make round shaped WG formulation
15. Fume Hood for Process Reactions

The lab is able to precisely determine the effectiveness of formulations before the product launch or improvement while working in conjunction with the Physical Chemical Testing Lab and the Field Research Stations.





## **PROCESS DEVELOPMENT LABORATORY**

Parijat have two Process Development Laboratory which are based in Ambala, Haryana and in Cuddalore, Tamil Nadu. Both the lab is involved with the process development of active ingredients as well as intermediates chemicals.

The well-equipped synthesis laboratory is capable of developing process from gram scale to kilogram scale and further transferring the technology to manufacturing scale.

The laboratory is equipped with various advanced and necessary equipment. Some of these are listed below: -

### **Equipment**

- > Process Reaction Vessel
- > Vacuum Systems
- > Hydrogenation Vessel
- > Fume Extraction Chambers
- > Chilled Water Circulation System
- > Phase Separators
- > Filtration Systems
- > Vacuum Hot Air Oven
- > Hot Air Oven
- > Weighing Scale
- > Hardware like Heating Mantles, Stirrers, etc.

### **Analytical Section**

- > HPLC with UV-Vis Detector
- > Preparatory HPLC with UV-Vis Detector
- > GLC with FID Detector and all the accessories
- > Sonicator
- > Analytical Balance (Mettler Toledo)
- > Karl Fischer Moisture Analyzer (Polmon)
- > PH Meter
- > Moisture Balance
- > Melting Point Apparatus (VEEGO)

### **Chemical Process Capabilities**

- > Friedel-Crafts Alkylation and Acylation Reactions
- > Grignard Reactions
- > Formylation Reactions
- > Hydrogenation Reactions
- > Phase Transfer Reactions
- > Halogenation Reactions such as Fluorination, Chlorination and Bromination
- > Addition and Elimination Reactions
- > Coupling Reactions

## **PROCESS DEVELOPMENT LABORATORY**

**The laboratory at Cuddalore** is equipped with various advanced and necessary equipment. Some of these are listed below: -

### **Equipment**

- > Process reaction vessels
- > Vacuum systems
- > Hydrogenation vessel
- > Fume extraction chambers
- > Fractionation column
- > Filtration systems
- > Hot air oven
- > Weighing scale
- > Hardware like heating mantles, stirrers, etc.

### **Analytical Section**

- > HPLC with UV-Vis detector
- > GLC with FID detector and all the accessories
- > Sonicator
- > Analytical balance (mettler toledo)
- > Analytical balance (Radwig) with printer
- > Karl Fischer moisture analyzer (Polman)
- > PH meter
- > TDS meter
- > Melting point apparatus (VEEGO)

### **Chemical Process Capabilities**

- > Friedel-crafts alkylation and acylation reactions
- > Condensation reaction
- > Column fractionation
- > Formylation reactions
- > Neat reactions
- > Phase transfer reactions
- > Halogenation reactions such as fluorination, chlorination and bromination
- > Addition and elimination reactions

## RESEARCH FARM OF R&D (AGRI) DEPARTMENT

Research farm of R&D (Agri) Department is situated in Ambala, Haryana. The farm is located at Tasroli village and spread across 2.5 acres. Furthermore, a modern polyhouse has been installed in the farm to conduct different research and trials.

Various in-house studies are conducted in the research farm for new molecules, which are further distributed in various locations. For the multi-location studies, different types of research activities are carried out in the farm to test the efficacy of molecules and evaluation of various aspects which are helpful for domestic and international market.

The research farm enables us to do trials on providing the correct solutions to the farmers for the problems related to their crops.





## PACKAGING LABORATORY

Parijat handles a very large number of packaging materials both in terms of size as well as material of construction. Pesticide packaging is regulated by statutory laws which includes containers, labels, leaflets, cartons, bags, pouches, cans, and drums.

The separate packaging laboratory is operational for testing as well as developing and continuous improvement of packaging at Parijat. The laboratory has the following equipment:

- 1) Compression Strength Machine CS
- 2) Bursting Strength Machine
- 3) Hot Air Oven
- 4) Cobb Value Tester

The products are tested against the Bureau of Indian (BIS) Standards.



## **SCIENTIFIC DEPARTMENTS**

Other than the 6 laboratories, Parijat has 6 Scientific departments which are completely engaged with Technology, Environment, Safety and Quality Management.

These include:

1. Patent Department
2. Regulatory Department (Registration)
3. Research and Development (Formulation) Department
4. Health, Safety and Environment Department
5. Quality Assurance Department
6. Research and Development (Agriculture) Department

### **PATENT DEPARTMENT**

Patent Department continuously works to provide solutions by conducting efficient and accurate Patent infringement analysis.

Parijat have received approval of three patents in India for products sold under brands **AADAT, VELEKTIN and XYFEN ULTRA.**

Parijat have also applied patents in Panama, Philippines, Colombia & ARIPO (Zambia, Zimbabwe, Uganda, Tanzania, Sudan, Rwanda, Namibia, Mozambique, Kenya & Ghana), OAPI (Burkina Faso, Cameroon, Mali, Togo & Senegal), Nigeria, Bangladesh, Ethiopia and Paraguay.

Specific area of Patent Department

- > Patents Filing-
  - International patent application
  - Indian patent application
- > IP Clearance and Infringement analysis

### **REGULATORY DEPARTMENT (REGISTRATION)**

Regulatory department manages registration of agrochemical-based products in Indian as well as in international markets according to the regulatory framework. The departments coordinate for registration of product right from development phase, phase, followed by working closely with Contract Research Organizations, compilation, and submission of dossiers to government authorities, follow-up with the regulators for data gaps and fulfilling deficiencies, till completion of registration process. Department also monitor post-registration regulatory compliances of the product.

Currently, department is working in 67 international markets with 568 complete registrations. Another set of 189 international registration are in the pipeline in 37 countries.

In Indian market. Parijat is holding registration of 212 products which can be sold in domestic market, out of which 30 products are registered under Section 9(3).

Parijat also received three patents' rights in India for product sold under the brands AADAT, VELEKTIN & XYFEN ULTRA. Several applications for the patents rights of Parijat products have also been applied overseas.



## RESEARCH & DEVELOPMENT (FORMULATION) DEPARTMENT

The R&D (formulation) department carries out extensive research to test new chemicals and possible combinations for further development of the product portfolio for the company. The department is equipped with several state-of-the-art laboratories in Ambala. A well-qualified team of scientists and technical researchers works at the R&D Formulation lab, which is accredited by the DSIR.

The laboratories develop innovative products with the highest quality standards, both in manufacturing undertakings and in formulations, to improve the productivity of farmers and their crops. Over the years and with an experienced team of scientists, researchers, and developers, Parijat has been able to strengthen its standing both on the domestic and international agrochemical markets.

In addition, the lab keeps track of pest status across the country and the latest chemistry/technical being launched by competitors.

## HEALTH, SAFETY & ENVIRONMENT DEPARTMENT

As a responsible corporate citizen, Parijat is committed to ensure the best of safety, health and environment practices for all our employee. Health, Safety and environment Department monitors and implements ISO 45001:2018, a certification for Occupational Health and Safety Management Systems. Firefighting infrastructure, SOPs and continuous training, both in-house and external agencies, fire/emergency drills are conducted to maintain the highest standards in health and safety.

Parijat has been awarded with several Safety awards.

The National Safety Awards by Govt of India for developing and implementing highly effective management system in safety in the year 2016, 2017, 2018 and 2019,

Greentech Safety Award- By Greentech Foundation for outstanding achievements in safety management from 2015, 2016, 2017, 2018 and 2021. Parijat also won International Environment, Health and Safety (EHS) presented by Greentech Foundation in 2023 for EHS Leadership.

Parijat has also been a recipient of the Environment Awards presented by Greentech Foundation for the year 2015, 2017, 2018, 2019 and 2022.





## QUALITY ASSURANCE DEPARTMENT

The Department plays a vital role in the development of formulations and packs, which meets the requirement of application and maintain the quality of product to meets regulatory demand and customer satisfaction. It also continuously monitors, implement, and improve the Standard Operating Procedures at every stage and in every department at the manufacturing plant. Parijat follows the following product quality control guidelines for Quality assurance:

- a. BIS (Bureau of Indian Standards) specifications
- b. FAO (Food and Agriculture Organization of the United Nations) specifications
- c. Customer specific requirements

The department also maintain all documents related to compliance of all manufacturing processes at factory sites and analysis of market complaint and evaluation of vendor document as per ISO guideline.



## RESEARCH & TRAINING (AGRICULTURE) DEPARTMENT

The Research and Training (Agri) Department has a pool of Plant Pathologists, Entomologists and Agronomists, together are engaged in:

1. Product Stewardship
2. Training the Trainers
3. Training and Dissemination of Best Agricultural Practices to Farmers
4. Product Portfolio Expansion

The department possesses an independent research farm for its field trial. Active participation of our team in extension of product knowledge via training and field demonstrations

Maintains a proper update on pest status across the country as well as New Chemistry/Technical being launched by competitor companies.

## **SCIENTIFIC AND TECHNICAL POOL**

Our international Scientific and Regulatory Department has a team of entomologists, toxicologists, biotechnologists, agronomists, microbiologists, and chemist. Parijat has 400 international product registrations.

The large pool of agrochemical scientific personnel engaged in generating scientific studies enables us a pipeline of products in India and overseas markets.

We intensively work and collaborate with a gamut of universities and scientific institutions, which include:

11 state Agriculture Universities (SAUs), covering all the agro-ecological zones for bio-efficacy data generation.

S.No	State Agriculture Universities
1	Jawaharlal Nehru Krishi Vishwavidyalaya , Jabalpur, Madhya Pradesh
2	University of Agricultural Sciences, Dharwad , Karnataka
3	Uttar Banga Krishi Viswavidyalaya , West Bengal
4	Dr. Panjabrao Deshmukh Krishi Vidyapeeth Akola , Maharashtra
5	University of Agricultural and Horticultural Sciences, Shimoga , Karnataka
6	Bidhan Chandra Krishi Viswavidyalaya , West Bengal
7	Punjab Agricultural University, Ludhiana
8	Chaudhary Charan Singh Haryana Agricultural University , Haryana
9	Swami Keshwanand Rajasthan Agriculture University , Rajasthan
10	Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya , Himachal Pradesh
11	G.B. Pant University of Agriculture And Technology , Uttarakhand

2. 9 Scientifically equipped GLP/NABL accredited laboratories for Chemistry and toxicity studies

S.No	Scientifically equipped GLP/NABL accredited laboratories for Chemistry and toxicity studies
1	Ross Life Sciences, Pune
2	Ana Labs, Mumbai
3	Sri Ram Institute, New Delhi

4	Konark Research Foundation, Daman
5	Eurofins, Bangalore
6	Bioneds India Private Limited , Bangalore
7	Institute of Pesticide Formulation Technology (IPFT) , Gurgaon
8	Palamur Biosciences Private Limited , Telangana
9	Indian Institute of Packaging (IIP), Delhi

3. India Institutes of Packaging (IIP), Delhi for packaging material

## **BRAND REGISTRATION DEPARTMENT**

Parijat's branded formulations are trusted products bought by farmers worldwide. We own large number of brands in India and across the globe.

These brands are:

1. Product with Registered formulations with the apex statutory body responsible for registration of Pesticides in the country.
2. Products with registered brand names with the apex statutory body responsible for Trademarks and Copyright in the country.
3. Branded registered products that are sold under our propriety labels in these countries to farmers for many years

In India the total number of registered brands that Parijat owns are 207. Globally, we have 58 registered brands.

These international brands are sold in countries of North & South America, Africa, Europe (EU as well as non-EU countries and Asia (West Asia, Commonwealth of Independent States (CIS), South Asia, East Asia)

13 Parijat brands are sold in multiple countries spanning different continents.



# Certifications: ISO, NABL & DSIR



## Great Place to Work



## **PARIJAT : Safety First**

**Always follow safe & correct practices for use of crop protection products.**



Take care of and maintain application equipment



Read and understand the product label



Exercise caution at all times



**PARIJAT**



Practice good personal hygiene



Wear appropriate personal protective clothing & equipment



Store chemicals appropriately in their original containers and away from water, fire, food, animal and children



**PARIJAT**

Enabling. Growth. Responsibly.

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