

# PATRICK BINYIN DI

patrick\_di@icloud.com | 0466 967 005 | Darwin, NT, 0800 | [Webpage](#) | [LinkedIn](#)

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## SUMMARY

A highly motivated graduate researcher in agriculture and ecology, an avid bibliophile with a passion for emerging technologies and a track of record of delivering results, having extensive research on crop phenotyping, field data collection and applied ecology specialising in data analytics and remote sensing by using multiple computer languages and software, rapport with academic, government and industry stakeholders and a career commitment for effective science communication.

## AREAS OF EXPERTISE

Plant Physiology & Phenomics, Precision Agriculture, Remote Sensing, Drone Operation, Imagery Analysis, Data Analysis & Virtualisation, Research & Development

## QUALIFICATIONS

**Bachelor of Agricultural Science (Hons)** – *The University of Queensland*

February 2017 – December 2020

## CAREER HISTORY

**Biosecurity Industry Liaison Officer** – *The Northern Territory Farmers Association Inc.* at Darwin, NT

February 2023 – present

Supporting the development and pilot of on-farm biosecurity standards for NT plant industries (primarily horticulture). This will be undertaken through research to develop effective and relevant tools and messaging to implement biosecurity standards across the plant industries, and develop and deliver key messages to industry through a risk-based approach for training and on-farm support to ensure growers are best placed to prevent, prepare, respond and recover from plant pest incursions and meet regulatory responsibilities.

## Duties

- Participate in the development and implementation of on farm Biosecurity Plans and assist with updating plans where applicable. Gathering relevant feedback to inform the review of the current plans and identify any impediments.
- Keep industry informed of Biosecurity developments and target engagement and delivery of communication materials locally and nationally.
- Consult with industries to determine likely methods of disease spread, options for pest control, the effect of pest control policies and programmes on industry and gather feedback on the progress of the response.
- Seek and encourage industry endorsement of pest control policies, cooperation with control activities and dissemination of information to their members.
- Support the delivery of operational activities including surveillance and removals on commercial properties including securing access, compliance with response procedures, liaison with contractors and response personnel.

## Achievements

- Created, administered, and maintained on-farm biosecurity management plan to meet the national industry standards.

- Provided technical updates about emerging and existing biosecurity threats to the broader farming community, including NT Farmers members.
- Enhanced communications amongst key stakeholders, particularly between the industry participants and governments.
- Raised and promote on farm use of integrated pest management (IPM) against pests, diseases and weeds.
- Successfully obtained “Industry Liaison Officer e-learning” and “Plant Biosecurity in Australia” micro credential accreditations.
- Delivered several workshops, extension events and farm visits for improving on-farm biosecurity and updating technical information of plant biosecurity risks.
- Efficiently communicated with relevant stakeholders about the latest biosecurity risks across the sectors in plant industries.
- Successfully organised the “Northern Australia Food Future Conference 2023: Northern Myths, Opportunities & Realities”.
- Represented the organisation in various occasions, such as forestry national workshops, National Biosecurity Forum, Plant Pests Surveillance and Diagnostic Network, conferences.
- Contributed organisational communication materials and activities.

### **Skills Developed**

- Plant Biosecurity
- Science Communication
- Stakeholder and Community Engagement/Outreach
- Professional Networking
- Project Management
- Event Planning and Organisation

### **Precision Agriculture Specialist – *Rocky River Ag Services (EFMG)* at Crystal Brook, SA**

November 2021 – November 2022

Influencing over the technology platform of the business incorporating sales, service, parts and training functions related to the precision agriculture.

### **Duties**

- Install a wide range of Receiver, Navigation controllers, Display systems, of Trimble and CNH products in Workshop and in the fields.
- Fault finding and diagnose the advance farming systems in large tractors, harvesters, Air Seeders, and Sprayers.
- Use the advance farming software tools, like AFS Connects, Ag Leader for Mapping, Editing Field Boundaries, Convert the Farm Data to a suitable format.
- Maintain RTK radio/ Modem Network to ensure the smooth operation throughout the peak seeding and harvesting period. Test and repair our RTK radio / modem network with priority and urgency to minimise downtime.
- Installation of firmware into receiver, Display systems and Navigation Controller and other ISO implements for proper communication during the farming operation.
- Calibration of Farming Machinery, Advance Farming systems after the installation. Testing and fault findings of Electro- Mechanical parts used in farming Machinery.

- Maintain and record keeping of farm data, Servicing records, installation, creating service request on Technical Help desk on CNH web portal.
- Upload / Download farm data on AFS (Advance Farming System) enabled farming machinery through CNH Telematics Service Portal.
- Assigning / releasing AFS products, Licenses, activation codes for Navigation Controllers, Receivers, Display System through Trimble / CNH Dealer portal and Vehicle Management Systems.
- Ensure the usage of the RTK Network is maximised to Company Policy and Terms. Pro-actively attend weekly meetings with the intention to resolve best performance outcomes for all departments and client.
- Answer telephone inquiries and provide technical support over a phone, test products, and provide instructions to customers on the proper usage of AFS products and systems.
- Use diagnostic tools to identify issues and evaluate the available information, and support the sales staff in equipment set-up for test and drive days, trade shows and field days.
- Provide services during normal work hours, rostered weekends and emergency callouts particularly during critical seasonal peak periods. Ensure timely and completion of documentation for all service work, in particular:
  - o Time sheets; Job cards; Quotes (where appropriate); Completion of warranty records; Completion and assignment of parts requisitions. Contribute to the development and continuous improvement of Rocky River Ag Services.

### **Achievements**

- Successfully obtained Trimble Accreditations, such as “Trimble RTX for Agriculture Resellers” and “GNSS Basics and Correction Services Overview”.
- Regularly travelled, located/mapped and maintained NTRIP/radio RTK base stations.
- Troubleshooted and calibrated a wide range of equipment and brands.
- Conducted and delivered the basic training to the staff members.
- Executed the computer and machinery-based mapping software, modified and drew field boundaries and swath lines/layers, and extracted yield maps and coverage maps for end users’ needs (customer base).
- Attended Society of Precision Agriculture Australia Annual Conference, National Farmers’ Federation’s Australia-China Agricultural Youth Programme (ACAYP) and Leaders’ Summit 2023.

### **Skills Developed**

- Precision Agriculture products, such as CNHi, Trimble, Ag Leader etc.
- Telecommunication protocols (NMEA 0183/2000) and parts (RS232/RS422)
- Proprietary Controller Area Network (CAN-BUS) and ISO-BUS
- Mapping Tools and AFS Cloud Portal
- File Management
- Troubleshooting
- Attention to details

### **Casual Research Assistant & Casual Academic – *The University of Queensland* at Gatton, QLD**

March 2020 – November 2021

Specialised researcher on crop phenotyping and physiology

### **Duties**

- Collect qualitative data, through ground surveys, plant partitioning, and UAV flights.
- Generate, analyse and visualise results.

- Create automatic pipelines for multiple research projects.
- Develop high-level report writing skills through submission of milestone report to supervisors.
- Liaise with key researchers and parties to facilitate and solve the issues.
- Install and monitor sensors at multiple trial sites.
- Assist other miscellaneous tasks.

## Project List

Project Topics:

- 1) *INVITA: A technology and analytics platform for improving variety selection* (Project ID: UOQ2003-011RTX)
- 2) *CropPhen: Remote mapping of grain crop type and phenology, Enabling analytics for grain crop monitoring applications - Crop classification and mapping of phenological characteristics* (Project ID: UOQ2002-010RTX)
- 3) *High throughput feature extraction from imagery to map spatial variability* (Project ID: UOQ2003-008RTX)

Jan 2021 - Nov 2021

Location: Gatton, Queensland, Australia

Supervisors: Prof Scott Chapman, A/Prof Andries Potgieter

Project Topic: *Subsoil constraint: Improving wheat yields on sodic soils* (Project ID: GRDC UA00159)

June 2020 - Dec 2020

Location: Toowoomba & Billa Billa, Queensland, Australia

Supervisors: Dr Jack Christopher, Dr Yash Dang

## Achievements

- Successfully obtained CASA Remotely Piloted Aircraft (RPA) operator accreditation.
- Conducted independent research and collaborative research relevant to crop phenology and physiology specifically on wheats and sorghum.
- Active participation in academic teaching and learning for entry statistic courses.
- Debugged codes and advised data scientists for code improvement.
- Organised weekly meetings with supervisors and relevant researchers.
- Assisted other research groups to facilitate the equipment and provided training for the students.
- Implemented COVID rules and other policies on campus.

## Skills Developed

- Plant Physiology
- Programming Languages (Advanced: R, Intermediate: Python, Beginner: Git, PBS etc)
- Data Collection, Management, Analysis, Visualisation
- Imagery Processing/RS software: Agisoft Metashape, Pix4D, ArcGIS
- Research devices (Greenseeker, EM38)
- DJI Suites (GS Pro, GO Pro)
- Research (Trial Design, Literature Review, Academic Writing)

## RESEARCH PAPER

**Di, Binyin;** Firn, Jennifer; Buckley, Yvonne M; Lomas, Kate; Pausas, Juli G; Smith, Annabel L 2022 The impact of roadside burning on genetic diversity in a high-biomass invasive grass, *Evolutionary Applications*, vol. 15, no. 5, pp. 790-803, <https://doi.org/10.1111/eva.13369>

## **HONOURS & AWARDS**

2020 Employability Award

2020 UQ Science Leaders Award (UQ Science Leaders Academy)

2020 Winter Research Scholarship

2019 Leadership and Mentoring Program in Science

2019 Short Term Experience Travel Grant

## **REFEREES**

References are available upon request.