ASEAN FAW ACTION PLAN
Supporting IPM Across Southeast Asia

ASEAN FAW Action Plan 2020–2025
Bioprotection and IPM Action Plan 2026–2030

Presentation by Dr Alison Watson, Head of the Secretariat

www.aseanfawaction.org

The Future of AI for Biocontrol in Southeast Asia: Building a Trusted, Standardised AI Network for Applied BioInnovation in Asia-Pacific

Examples of AI + Digital Tools

Next-generation pest management tools combining drones, sensors, AI, and natural enemies.

Thailand’s multi-million-dollar national investment in drone technologies for precision agriculture and pest management.

How machine learning is transforming plant health surveillance through sensors, eDNA, and environmental data.

The use of drone imagery to detect crop damage early and enable timely interventions.

And in our Genomics Masterclasses, how sequencing and genetic data can track pest migration and resistance across borders and identify new management solutions at scale.

The Fragmentation Problem

A university in Vietnam has developed a new pheromone technology for Fall Armyworm (FAW) that outperforms commercial alternatives currently available in the local market.

Startups across Asia are deploying AI-driven predictive farming tools, integrating pest alerts, crop monitoring, and farmer advisory services within digital farm management platforms.

Research institutions are mapping invasive species hotspots, providing critical data for early warning and response.

A regional consortium has sequenced the genomes of FAW and brown planthopper populations across more than ten countries.

Challenges to AI-Regional Systems and Tools Network

Bias and blind spots: Models trained on data from one crop or country often fail when applied elsewhere. Data from tropical countries, smallholder farming systems are often under-represented.

Black-box decisions: Users rarely understand *why* an AI system makes a recommendation. We need greater transparency about model assumptions, and this will become more important as the degree of precision and confidence of predictive tools increases.

Guard-rails: GenAI/LLM confident sounding predictions may be fundamentally wrong.

Validation gaps: Many models are not tested across different agroecological zones or farming systems; and are often validated on outdated data.

Regulatory disconnects: AI-derived insights don’t yet align with scientific or regulatory evidence standards – this needs bespoke agentic systems for any application.

Usability and skills barriers: Tools are often complex, English-only, and not designed with end-users in mind.

Data trust and protection: Unclear ownership, consent, and sharing protocols undermine confidence and limit collaboration.

Over-confidence: Checks and feedback loops in the system to ensure quality control (and rubbish is filtered out).

Training, training, training: better science, concurrent / real-time data collection, and interpretation.

Addressing these issues will be essential if we want AI to accelerate our collective progress.

Building a Regional Coalition on AI systems & tools

How can data be shared and validated?

How can models be benchmarked and explained?

What safety, security & access and quality controls are necessary?

What ethics and privacy rules should apply?

How will insights be shared in user-friendly, multilingual formats?

Tangible Products and Tools

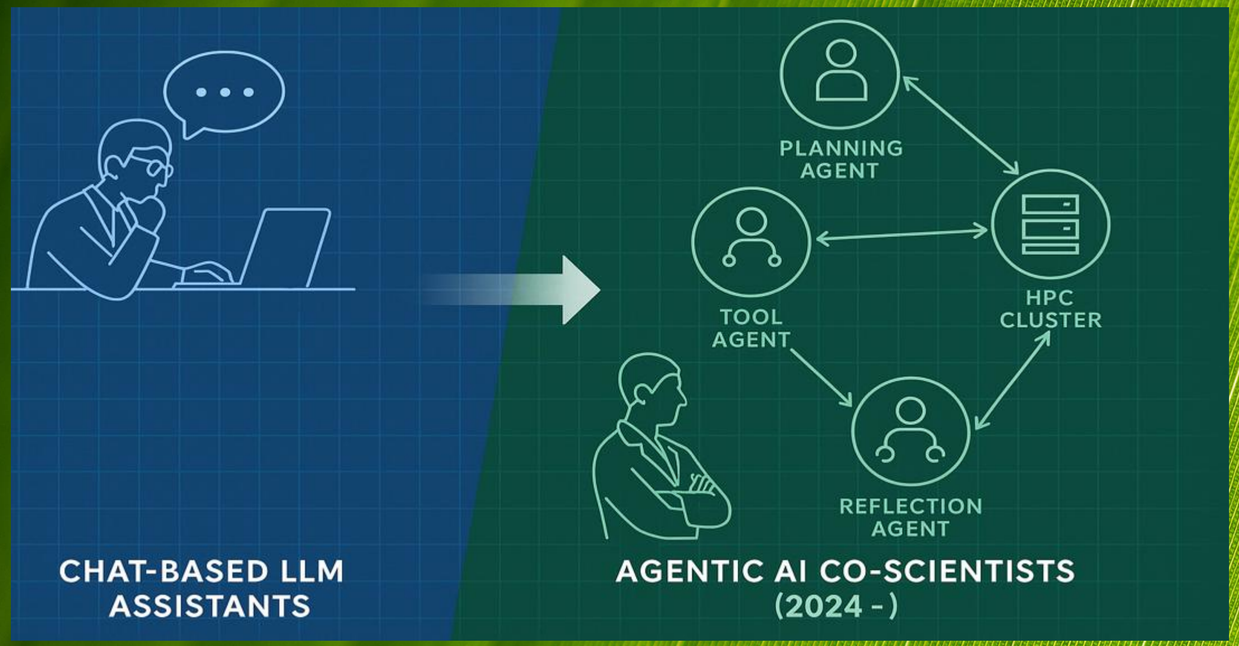
AsiaPac Biocontrol Catalogue – a searchable online database for data/datasets, models, pest information, and biocontrol agents, filtered by crop and agroecology.

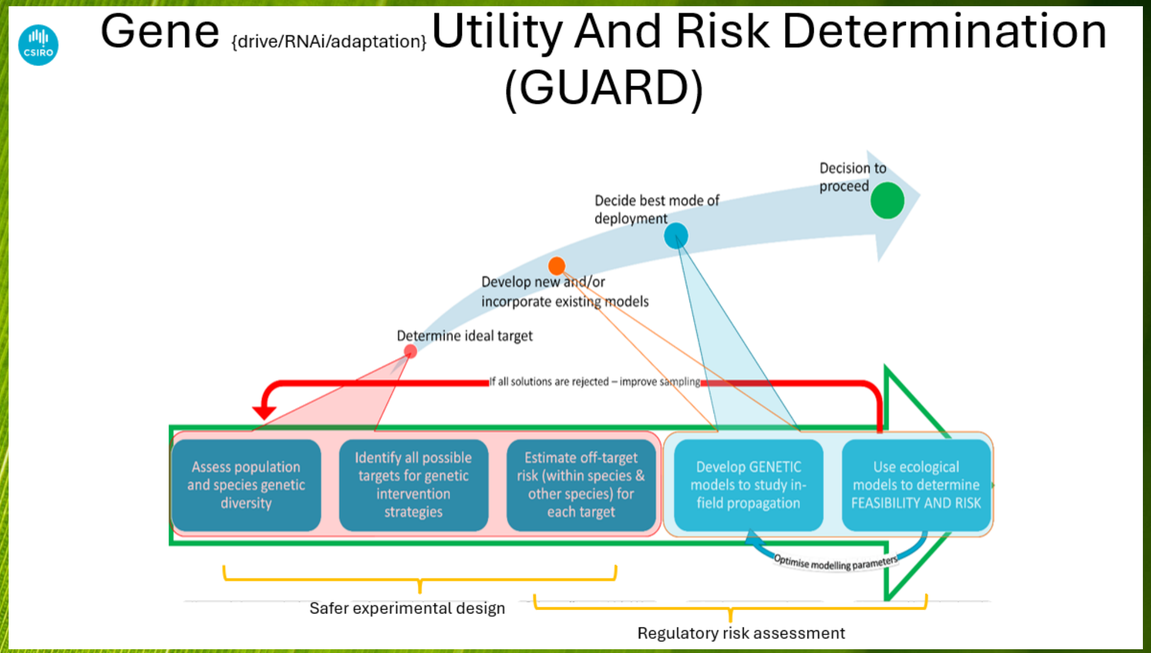
App Store for Biocontrol AI – a curated library of validated AI tools for pest detection and forecasting, all with model cards showing data sources and uncertainty.

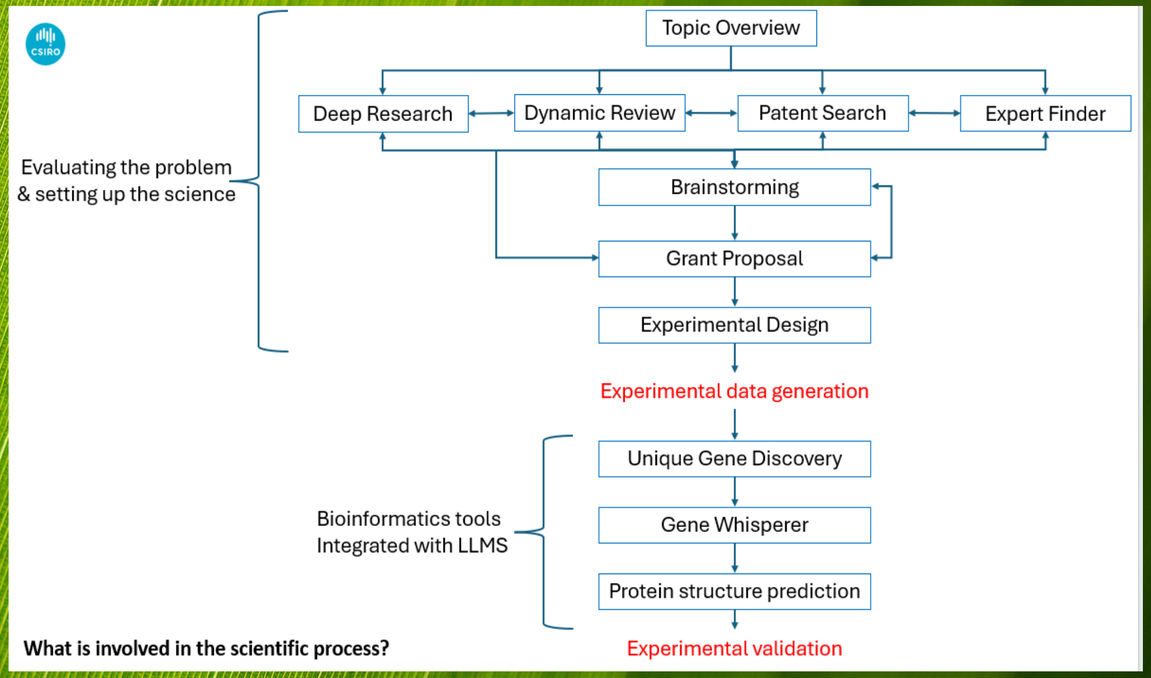
Regulatory and Research Sandbox Portal – a secure workspace where regulators can train and review version-locked datasets before approval, and where researchers can understand regulatory demands at project inception.

Collaboration portal – Ability to link transboundary research efforts, identifying optimal research field sites & research locations for trials and comparative multi-country/site studies, and pilots with an AI agents/expert guide to facilitate.

From Genomics to Action







From Research to Regulation to Market

Bioprotectant dossier data requirements

Data requirement	Active substance	Product
Identity (taxonomy) and specification	✓	
Biological Properties (origin, MoA, life-cycle, etc.)	✓	
Further information on formulated pesticide		✓
Application		✓
Analytical methods	✓	✓
Effects on human health	✓	✓
Residues		✓
Fate and behaviour in the environment	✓	✓
Effects on non-target organisms	✓	✓
Efficacy		✓

Regulators want to support innovation;
They need trustworthy, traceable data as part of robust registration applications. And they don't always know a lot about biocontrol solutions.

Researchers want impact;
But often don't design studies that meet regulatory requirements or market needs. And they don't always know much about what regulators want.

Regulatory and Research Sandbox Portal

- ✓ Regulators securely **access & test validated datasets**
- ✓ Common **regional schema** → integration with **national portals**
- ✓ **Assess** uncertainty, safety, efficacy thresholds, etc
- ✓ **Train regulators in less advanced systems**
- ✓ **Guard rails** – identify anomalies or need for additional review/checks
- ✓ Supports **guided reviews** & regional "evidence harmonisation"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- ✓ Researchers use **standardised protocols for data collection and entry**
- ✓ Transparent data **standards & validation frameworks**
- ✓ **Align research design with regulatory expectations**
- ✓ **Guard rails** – identify anomalies or the need for additional checks.
- ✓ Builds **"regulatory literacy"** among scientists
- ✓ Researchers access **guidance on market development** steps, potential funding portals/partners.

The Road Ahead

Capability disparities across countries are often significant. If we move forward without building the capability and capacity AI will amplify those disparities.

Our next step is to work together with **10 leading research institutions** and **7 Governments** (PPD, Regulators) across Southeast Asia.

Co-design and develop proof of concept of this federated network Q1/Q2 2026: defining standards, testing architecture, & seeding it with initial datasets.

Invite private-sector and donor partners to support and **help shape the collaboration.**

Q3 2026: **Proof of Concept Presentation** to Ministers, Donors, etc

AI’s real power comes from **intelligent alliances (IA)** - building trusted, inclusive AI-powered networks and tools, based on standardised and validated data, algorithms and models and accessible by stakeholders across diverse countries and systems (who have the capability to shape and use them)

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