



Agriculture for the Future:
Empowering Advisory Services
through AI

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Artificial Intelligence - AI & Generative AI

- **AI** – Learns from data to help us think, decide or act.
 - process information, learn from data, and make decisions, e.g. predictions, automation, decision supports.
- **Generative AI** - Creates new content by learning patterns from existing data.
 - e.g. content creation (text, images, data), ideation, simulation.

AI is our assistant, not our replacement

Why AI Matters

- **Advisors operate in complex, data-rich environments**
 - **Farm decisions increasingly multi-factor and time-sensitive**
 - **AI converts knowledge into scalable advisory support**
 - **Augments – not replaces – professional expertise**
 - **Increasing regulatory and sustainability complexity**
 - **Growing demand for personalised farm support**
 - **Need for faster evidence-based decision-making**

The Teagasc AI EcoSystem

- **Teag-Ask – AI Advisor model**
- **Teagasc GPT – AI Chat assistant**
- **Deep Research – Strategy & scientific analysis**
- **AI Data Analyser – Dataset insights & visualisation**
- **AI Assistants – Policies, Schemes, Power BI etc.**
- **Integrated through secure single portal**

Teagasc AI Knowledge Portal & AI Models

- 1. Teagasc AI Knowledge Portal
 - 2. Teagasc AI Models
 - 3. AI Data Platform
 - 4. Deep Research
 - 5. Agri-Insights
 - 6. AI Assistant
- PowerPoint

The screenshot shows the 'TeagAsk AI Knowledge Portal' with the subtitle 'Access Teagasc's suite of specialised AI assistants'. At the top, there is a 'Teagasc AI Policy' button. Below this are six AI assistant cards arranged in a 2x3 grid:

- TeagascGPT**: Ask anything. Launch button.
- Deep Research**: Easily create reports and research complex topics. Launch button.
- TeagAsk**: Ask questions on published Teagasc agricultural knowledge. Launch button.
- ACRES**: AI assistant covering the ACRES programme. Launch button.
- Staff Handbook**: AI assistant covering the Staff Handbook. Launch button.
- Research Papers**: Coming Soon: AI assistant covering Dairy Food Processing research. Coming Soon button.

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Teag-Ask - For Advisors / Teachers

- Built on Teagasc knowledge
- Secure and controlled
- Supports technical queries and advisory drafting
- Helps ensures consistency in messaging
- Rapid access to trusted publications
- Accelerates response time to farmers
- Launched Sept 2023



Teag-Ask is your digital friend, built on Teagasc knowledge



Teagasc AI Journey

- **Teag-Ask Prototype**
- **AI Working group established**
- **Business case approved**
- **AI Ethics & Governance Committee established**
- **AI Policy and AI Register in place**
- **Multiple AI Model developed**
- **Secure AI Knowledge Portal launched**
- **Phased rollout**
- **Training rolled out across organisation**

Artificial Intelligence Governance in Teagasc

- **AI Working Group**
- **Approved Business Case**
- **AI Ethics & Compliance Committee**
- **AI Policy & AI Principles**
- **AI Register**
- **Compliance with AI laws & regulations**

AI Governance in Practise – What does this mean for staff

- Teagasc adheres to GDPR, public-sector guidelines, and the EU AI Act to ensure trustworthy AI use
- Staff are encouraged to use AI to assist daily tasks, maintaining human oversight and verification.
 - All AI generated content must be considered as **draft, must have human oversight**. Staff responsible for final content.
 - **Disclosure** where AI is used.
 - Protect **privacy** and data
 - **Think critically** about AI results

Responsible & Ethical AI - EU AI

- EU AI Law - Risk-based approach
- Irish Public Sector Guidelines
- Concerns – Bias, Privacy, Misinformation, Complacency..
- Teagasc AI Policy

**Responsible & Ethical AI use
is non-negotiable**

**Human oversight must
remain in place**

AI is our assistant, not our replacement

Responsible & Ethical AI in Teagasc

- **AI Ethics & Governance Committee.**
- **Human oversight, always**
- **AI outputs must be critically reviewed**
- **Openly address concerns – bias, misinformation etc.**
- **Trust, transparency and accountability are essential**
- **Protect privacy and sensitive data**

Principles – Government & Teagasc Policy

AI Principles Teagasc's AI use shall be governed by the principles

- **1. Human Oversight** – People must remain in control.
- **2. Technical Robustness and Safety** – AI systems must be reliable and secure.
- **3. Privacy and Data Governance** – AI use must uphold data protection laws.
- **4. Transparency** – Use of AI must be clear, visible, and explainable.
- **5. Diversity, Non-Discrimination, and Fairness** – AI should promote inclusion and prevent unfair bias.
- **6. Societal and Environmental Well-being** – AI should contribute positively to sustainability and society.
- **7. Accountability** – Clear lines of responsibility must be maintained across the AI lifecycle.

AI Adoption in Teagasc

- **Easy access for all**
- **Clear use cases drive real adoption (e.g. Advisory)**
- **Peer learning accelerates uptake**
- **Training improves output quality**
 - **Structured prompting makes a difference (use R.A.C.E.)**
- **Practical demonstrations build confidence**
- **Data quality determines AI value**
- **Some limited resistance (time to learn, digital resistance, trust)**
- **Overall big assist in the day job**

Artificial Intelligence - Prompting

Prompting is the process of giving clear and structured instructions to an AI model to guide it toward producing the desired response or outcome.

🗣️ Use RACE = Role, Action, Context, Expectation

Example Prompt:

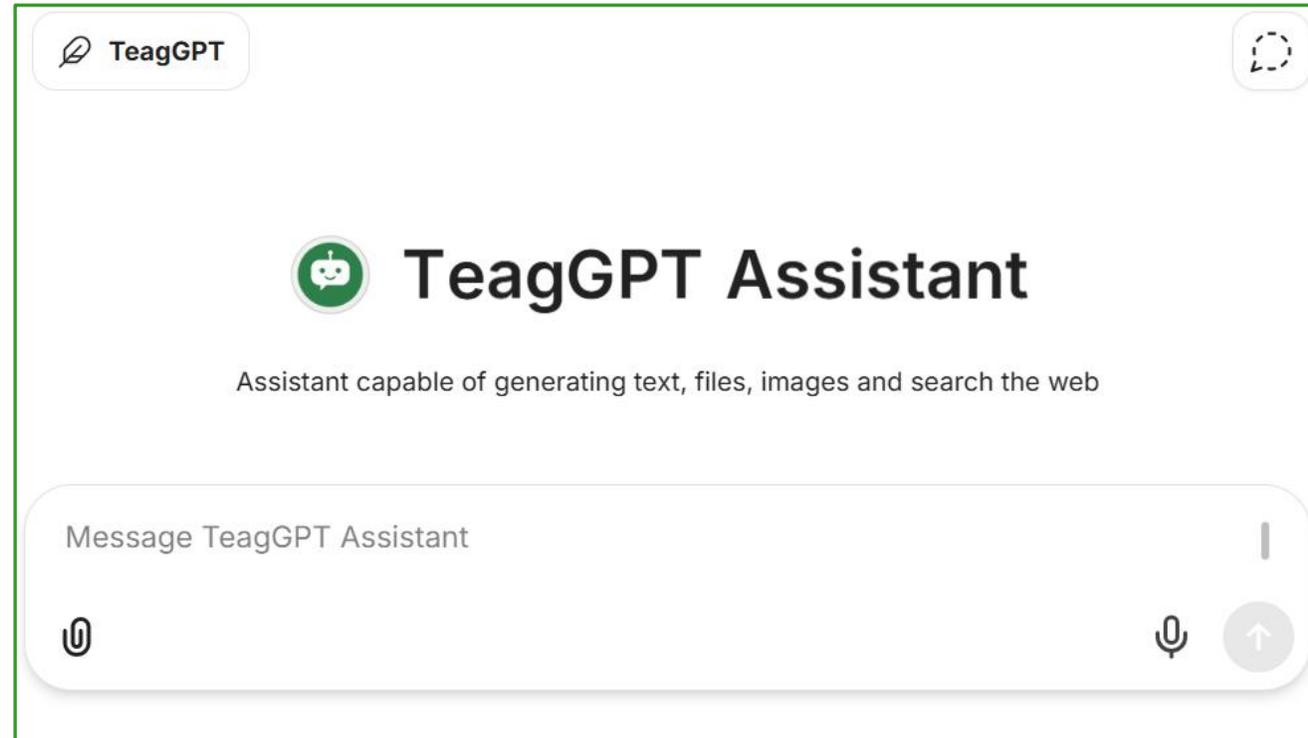
“You are a Teagasc beef adviser (**Role**). Write an advisory note (**Action**) for a 40-hectare suckler-to-beef farm in Roscommon (**Context**) on improving winter feeding efficiency. Present 4–5 practical recommendations suitable for inclusion in a farmer newsletter (**Expectation**).”

AI - Teagasc GPT

- Other Teagasc AI Tools

AI Model 2 - Teagasc GPT

- **Teagasc GPT** – Internal Chat-GPT equivalent - drafting, ideation, translating, summarising, improving, learning, extracting information, answering technical or complex questions, forms, workflow, working with images - optical character recognition, full image analysis. Our internal shortcut ai.teagasc.net



AI Model 2 - Teagasc GPT

General Teagasc AI assistant for day-to-day help (text, files, images, web search)

Purpose

- Help any staff member get answers and get work done faster
- Draft, rewrite, summarise, and explain in clear plain language

Common use cases

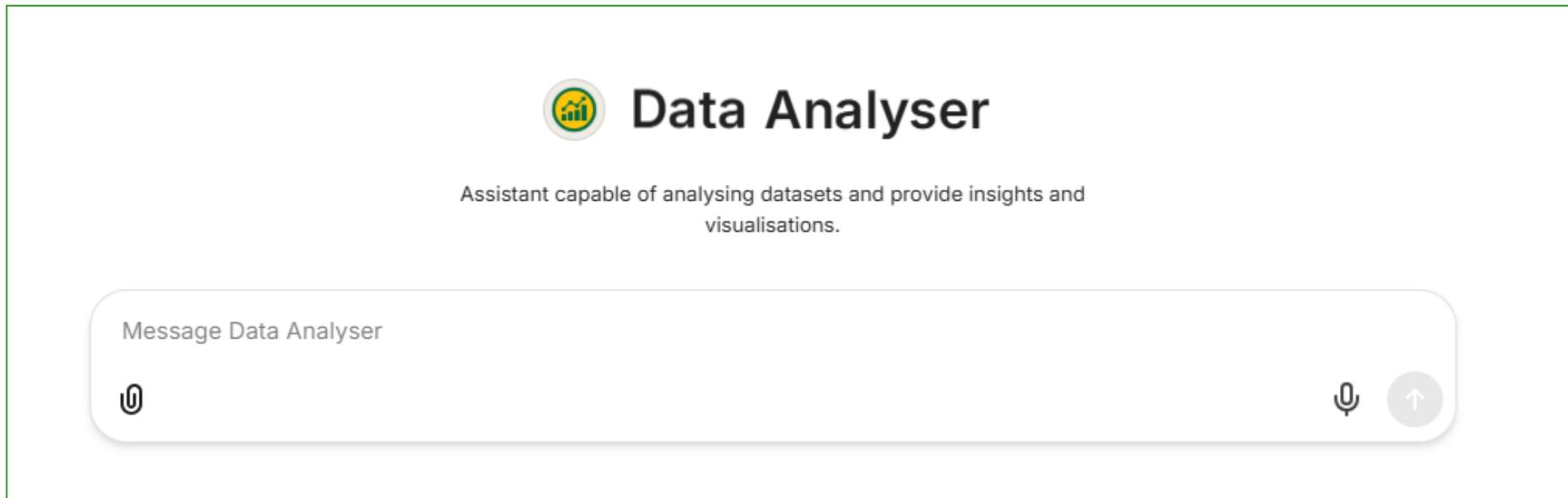
- Write first drafts (emails, notes, policies, comms)
- Summarise documents and meetings into key points
- Quick research with web browsing and citations when needed
- Create simple assets (tables, outlines, checklists, presentations)

Outputs & tools

- Creates text plus common files (e.g., docs, slides, spreadsheets)
- Generates images when visuals help
- Uses web search for up-to-date facts; uses Python for calculations & data wrangling

AI Model 3 - Data Analysis – Soils Example

- Upload Dataset, Ask human questions of data
- E.g. Provide summary statistics (mean, median, standard deviation) of soil pH, phosphorus, and potassium indices across all counties and farm types.
- Which counties consistently underperform across multiple nutrient categories, and which counties lead?

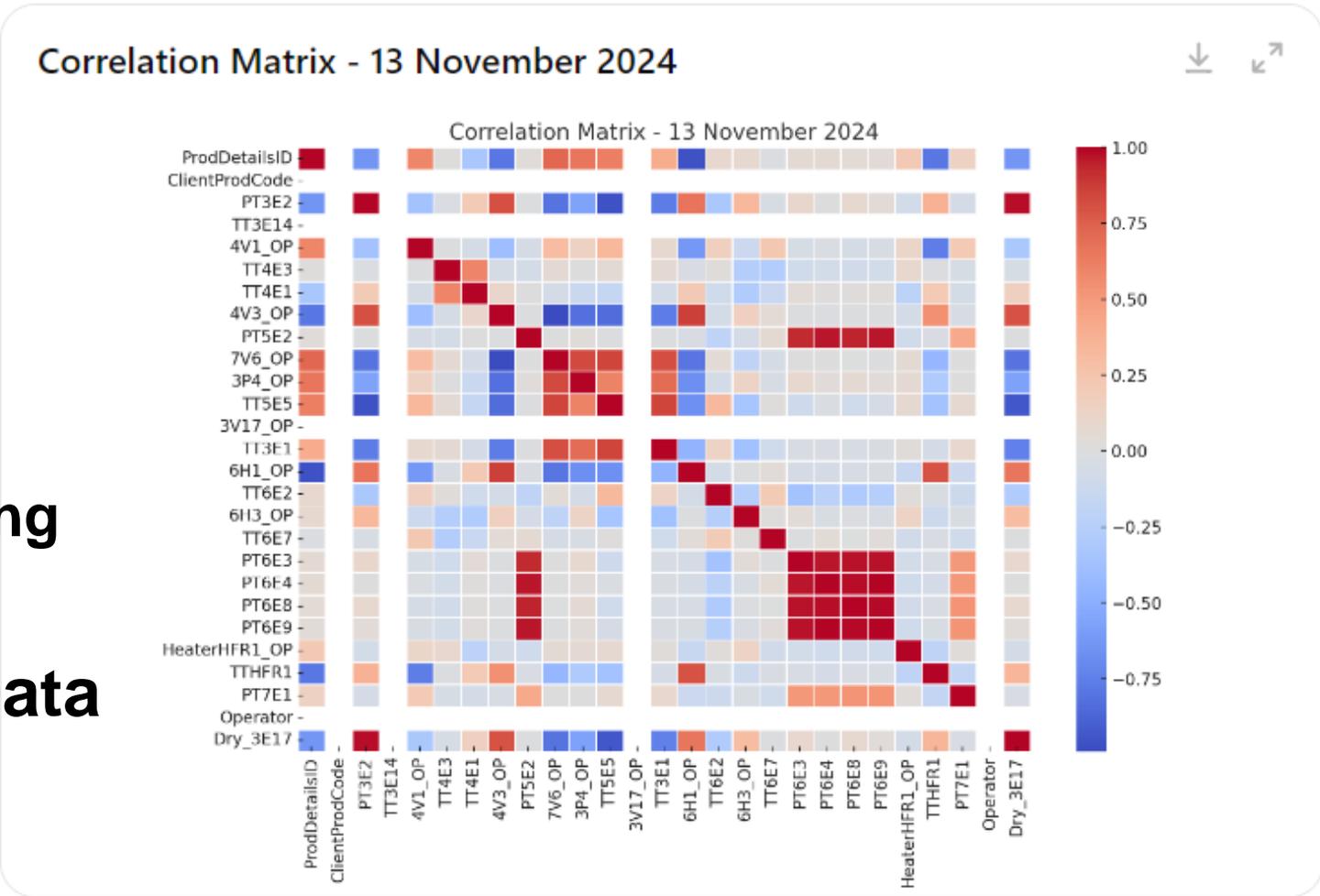


AI Model 3 - Data Analysis – Dryer Data Example

- **Uses**

- **Identify Data Problems**
- **Trend Analysis, Identify Anomalies, outliers**
- **Analyse Correlations**
 - e.g. temperature and drying efficiency.
- **Innovate & Ideate with Data**

perform a correlation matrix for 13-nov



Correlation Matrix for November 13, 2024

AI Model 3 - Data Analyser

Deep dataset analysis, insights, and visualisation (GPT-5.2 with high reasoning)

Purpose

- Turn raw data into insights you can act on
- Explain what the data means (not just what it says)

What it's best at

- Handling data in many formats (Excel, CSV, JSON, text, databases)
- Finding trends, anomalies, and relationships
- Building clear charts and summaries
- Producing thorough, report-style outputs when needed

Extra capabilities

- Can analyse images (charts/diagrams/photos) and extract insights
- Can combine multiple data sources into one story
- Ends with practical next-step recommendations

AI Model 4 - Deep Research

- **Deep Research** - In-depth reports / policy / scientific analysis.
- Best used recursively – Ask Teagasc GPT to create an extensive prompt for use in a Deep Research Tool
- **Access through AI Knowledge portal -**



Deep Research e.g. – AI integration into Advisory Services

Mastering AI Integration: A Strategic Framework for Teagasc's Advisory Services

Introduction

Artificial Intelligence (AI) is rapidly transforming the agricultural sector, offering unprecedented opportunities to enhance decision-making, operational efficiency, and sustainability. For Teagasc, Ireland's leading authority on agricultural and food development, integrating AI into its advisory services presents a unique opportunity to revolutionize how it supports farmers while maintaining its commitment to human-centric, research-driven guidance. This report explores how AI can co-exist with Teagasc's advisory staff to enhance

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Artificial Intelligence – For Advisors

Specific Examples:

- **Drafting tailored advisory notes and farm plans**
- **Translating research into practical farmer guidance**
- **Rapid retrieval of technical and scheme information**
- **Preparing discussion briefs for farm visits**
- **Summarising policy updates and regulatory changes**
- **Analysing farm datasets for trends and anomalies**
- **Generating scenario-based recommendations (e.g., nutrition, fertiliser, climate)**
- **Supporting training materials and group knowledge transfer sessions**
- **Admin – automate tasks, use of agents.**

Artificial Intelligence – in Research / Academia

Specific Examples:

- **Use of Persona's - Research proposal Analysis, Peer reviews.**
- **Literature Review and Document Analysis – extract concepts, source relevant papers, provide summaries.**
- **AI Data Analysis – data quality check, recommend algorithms, perform fast analysis, create visuals – heatmaps, multi variable correlation analysis.**
- **Outreach – convert research knowledge for different demographics.**
- **Research Gaps – understanding trends, themes, and emerging areas in a research field, identify gaps.**
- **Citation analysis – identify influential papers, under research**
- **Admin – automate tasks, use of agents.**

Back to Data – The foundation of AI

Back to Data

- Most AI challenges are data challenges
 - Quality begins at acquisition
 - Structured well defined data essential
 - Domain expertise is critical to interpretation
 - Analytics platforms (Power BI) turn data into visibility
 - The role of Digital twins
- The Human - Data Strategy – Data Sentiment / Data Behaviours

Data Value Platform

Power BI - Business Insights

- Modernise Analysis Tools
- Insights through visualisation
- Improved Data skills



Artificial Intelligence - Takeaways

AI is not a tool. It is capability infrastructure.

- **Governance is Critical**
 - Responsible & Ethical AI use is non-negotiable
 - Human oversight must remain in place
- **Trust and Responsibility**
 - Protect privacy and data
 - Think critically about AI results
- **Opportunities for Advisors and Agriculture**
 - Generative AI fits - multi variable, data rich industry
 - Internal & external applications
 - Transformative for innovation, content creation
 - Intelligent ecosystems are emerging
- **Data as the Foundation**
 - High-quality, curated datasets are essential
 - Effective AI performance depends on data quality / integrity
- **Balanced Perspective**
 - Risks exist, but with good practice benefits outweigh them
 - **AI is our assistant, not our replacement**

Don't forget the human

Thank You



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built on Teagasc knowledge**