JOB DESCRIPTION

SPECIFIC JOB TITLE	Postdoctoral Research Scientist — Smallholder Livestock Systems (2 positions)
GENERIC ROLE TITLE	Postdoctoral Research Scientist
LEVEL/GRADE	D
JOB FAMILY	Science
CONTRACT TYPE	Fixed term (until 31 March 2021)
HOURS	37
REPORTS TO	Head of Department, Sustainable Agriculture Sciences — North Wyke
DEPARTMENT	Sustainable Agriculture Sciences — North Wyke
LOCATION	North Wyke
DATE	Immediately available; applicants must be able to start on or before 1 August 2019

OVERVIEW OF ROLE

Livestock farming provides a wide range of benefits to smallholders in Africa, including food and financial security, manure input for crops, and a means of business diversification to countervail price volatility. Studies have shown, however, that the health and production performance of these animals are often limited by a strong interaction between parasitic disease and poor nutrition, creating a missed opportunity for economic development. Although chemical anthelmintics, the most common modern remedy for parasite damages, are readily available in the majority of markets across the continent, they are prohibitively expensive for subsistence farmers and, moreover, their extensive use is likely to be counterproductive in the long run as the likelihood of drug resistance increases.

To tackle this challenge, Rothamsted Research, in partnership with Queen's University Belfast and research institutes from Malawi, Botswana and South Africa, has recently launched a research project to investigate the feasibility of designing a novel concept of mixed (plant-ruminant) farming systems, with the view to utilise plant species rich in plant secondary metabolites (PSM) as an alternative means to control parasites while simultaneously enhancing animal nutrition. PSM, a large group of plant-based chemicals such as tannins, choline and essential oils, have previously been shown to suppress egg counts as well as the larval development of gastrointestinal nematodes when fed to ruminants. The study is supported by the UK Research and Innovation's Global Challenges Research Fund (GCRF).

Working as part of an interdisciplinary team of world-class scientists, the two post holders will be collectively responsible for the following components of the project:

- on-farm trial to compare the efficacy of PSM-based interventions vis-à-vis drug-based interventions
- data analysis to identify optimal management rules informing when to use PSM and when to use drugs
- on-farm collection and chemical analysis of PSM-rich plant samples
- data analysis to develop on-farm rationing tools for feeding strategies that can control parasites and improved animal nutrition at the same time
- household survey to assemble information on farm management, animal health and human livelihoods
- data analysis to quantify the livelihood impacts of PSM-based and drug-based interventions and their implications on resilience

The exact split of responsibility between the two posts will be determined based on the actual experience, knowledge and skills of the appointees.

The primary duties of these positions are summarised below. The post holders are expected to carry out all tasks listed here and any others reasonably requested by the line manager or the institute. The post holders will be based in the UK but must be able to travel flexibly to partner countries on a short-term basis.

MAIN DUTIES OF ROLE			
Generic Outputs	**Weight**	**Description of Outputs**	**Description of Job Specific Duties**
SCIENTIFIC RESEARCH	40%	Undertake scientific research within predetermined scopes	• Review the latest scientific literature to inform the project team • Design experiments and surveys that suit the predetermined objectives of the project • Plan and carry out experiments and surveys to collect quantitative data • Communicate with the project team as required
ANALYSIS AND PUBLICATION	40%	Analyse data and publish findings in scientific journals	• Collate and analyse data using appropriate statistical methods • Ensure data quality and replicability • Interpret the results of data analysis and draw objective conclusions • Propose follow-up experiments and surveys as required • Write and publish scientific articles in internationally reputable journals
INTERNAL COLLABORATION	5%	Participate in internal networks and develop links with external organisations	• Contribute to project management through meeting attendance and report writing • Participate in internal training and scientific exchange activities to enhance skills and knowledge • Under supervision of the line manager, offer day-to-day guidance to PhD and MSc students associated with the project • Ensure all health and safety procedures are strictly adhered to
KNOWLEDGE EXCHANGE AND OUTREACH	5%	Work with people and businesses outside the scientific community	• Communicate research findings to end-users, industrial stakeholders, policymakers and general media, both orally and in written formats • Contribute to public engagement events organised by the project team, funders and the institute
FINANCIAL MANAGEMENT	5%	Acquire and manage fund for scientific research	• Contribute to project finance management through meeting attendance and report writing • Contribute to research proposals for additional funding as required • Ensure lawful and efficient use of institutional resources
PROFESSIONAL DEVELOPMENT	5%	Undertake professional development activities to enhance employability	• Identify and participate in appropriate professional development opportunities to acquire skills and knowledge beyond the requirements for the role • Initiate and sustain professional networks that may present opportunities for future collaboration and/or employment

PERSON SPECIFICATION AND SELECTION CRITERIA*	
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	EDUCATION/QUALIFICATIONS	Essential	Desirable	How Tested?**
1.	A PhD in agricultural science, animal science, agricultural economics, nutrition/dietetics or a closely related field	✓		CV
	EXPERIENCE/KNOWLEDGE/SKILLS	Essential	Desirable	How Tested?
1.	A strong record of scientific publications in high impact journals	✓		CV
2.	Meeting **<u>two (2) or more</u>** of the following 'elective' requirements, as evidenced by scientific publications or supporting documents: • experience in livestock experiments • experience in plant/forage analysis • experience in dietary analysis for humans or livestock • experience in structured household surveys • ability to carry out mathematical optimisation (to derive least-cost rations), e.g. linear/concave/dynamic programming • ability to carry out programme evaluation using multiple econometric approaches	✓		CV, CL
3.	Good understanding of statistical theory and competency in statistical software, as evidenced by scientific publications or supporting documents	✓		CV, CL
4.	Genuine interest in interdisciplinary agricultural research, as evidenced by scientific publications or supporting documents	✓		CV, CL
5.	Ability to work as a team player, as evidenced by supporting documents or reference letters	✓		CL
6.	Excellent communication skills in English, both spoken and written, as or at the level equivalent to a native speaker	✓		CL, IV
7.	Knowledge in parasitology, veterinary pharmacology or livestock epidemiology		✓	CL
8.	Understanding of farmers' mentality, attitudes and behaviour, e.g. priorities when facing choices		✓	CL
9.	Understanding of current debates on global food security		✓	CL
10.	Experience of working in low and medium-income countries		✓	CL

GENUINE OCCUPATIONAL REQUIREMENTS		Essential	Desirable	How Tested?
1.	Ability and willingness to travel flexibly to partner countries on a short-term basis	✓		CL
2.	Ability and willingness to work during unsociable hours (within reasonable limits) to fulfil requirements for field experiments and surveys	✓		CL
3.	Ability to start on or before 1 August 2019	✓		CL
BEHAVIOURS/ATTITUDES				How Tested?
1.	Drive for quality: Makes continuous efforts towards incremental improvements to processes			IV
2.	Strategic thinking: Draws on experience when undertaking duties and identifies development needs when experience is lacking			IV
3.	Creativity and innovation: Responds positively to change and tries multiple approaches to efficiently solve problems			IV
4.	Team play: Supports colleagues by spontaneously sharing knowledge and searching for opportunities for greater synergy			IV
5.	Effective communication: Delivers information to appropriate audiences in an accurate, suitable and timely manner			IV

* Minimum requirements of the post and how they will be assessed

** Evidence that the candidate satisfies minimum criteria will be established from: CV (curriculum vitae), CL (cover letter, supporting documents and reference letters) and/or IV (interview)