

■ シラバス標準モデル

Course title		Special Lecture on Global Issues in Agricultural Science 7				Affiliated department, Job title,Name		Alexander K Kahi			
Target year	1st year students or above	Number of credits	1	Course offered year/period	2025/Intensive, Second semester	Day/period	13:15–16:30, 15:00–18:15, Novembe	Class style	Lecture	Language	English
[Overview and purpose of the course]											
【This intensive course, themed “African Livestock: Avenue for Sustainable Development – A Breeder’s Perspective,” will be taught in person by Prof. Dr. Alexander Kahi, Professor and Director of the Centre of Excellence for Livestock, Innovation and Business (CoELIB) at Egerton University, Kenya】 The purpose of this course is to equip students with the knowledge and skills necessary to address the challenges and opportunities in Africa's livestock sector. By exploring successful livestock production systems, conservation of genetic resources, breeding and genetics, and future directions, students will be able to contribute to the development of sustainable and resilient livestock ecosystems in Africa. The course is divided into four modules, each focusing on a critical aspect of livestock production in Africa: (1). Introduction to Livestock Production in Africa: Exploring the livestock production landscape, socio-economic significance, challenges, and opportunities in Africa. (2). African Livestock Genetic Resources: Understanding the unique attributes, conservation, and improved use of African livestock genetic resources. (3). Breeding and Genetics in Livestock Production: Examining the breeding and genetics landscape, challenges, and opportunities in Africa’s livestock industry and (4). African Livestock Futures: Discussing livestock development strategies, circular food systems, and future directions for the industry.											
[Course objectives]											
This course provides an in-depth exploration of livestock production in Africa, covering the socio-economic significance, challenges, and opportunities in the sector. Students will gain a comprehensive understanding of the livestock production landscape, genetic resources, breeding and genetics, and future directions for the industry. Students will gain a comprehensive understanding of the complexities and opportunities in Africa’s livestock sector, enabling them to contribute to the development of sustainable and resilient livestock ecosystems. By the end of this course, students are expected to be able to: - Explore the livestock production landscape, socio-economic significance, challenges, and opportunities in Africa. - Understand the unique attributes, conservation, and improved use of African livestock genetic resources. - Examine the breeding and genetics landscape, challenges, and opportunities in Africa’s livestock industry - Discuss livestock development strategies, circular food systems, and future directions for the industry.											
[Course Schedule and contents]											
【This intensive course will be held in person in mid-November 2025. More details (dates, time, classroom, etc.) will be announced later.】 Module 1) Introduction to Livestock Production in Africa: Livestock production landscape in Africa. Livestock species and related production systems. Socio-economic significance of livestock production in Africa. Cross-cutting challenges in livestock production. Successful livestock production systems – country-level case studies. Opportunities in livestock production. CoELIB: – Building resilient livestock ecosystems in Africa. Module 2) African Livestock Genetic Resources. Unique attributes of African Livestock Genetic Resources. Conservation of livestock genetic resources. Options for improved use of livestock genetic resources. Conservation of livestock genetic resources – lessons from Japan. Examples of conservation efforts in Africa. Module 3) Breeding and Genetics in Livestock Production. Breeding and genetics landscape in Africa: Challenges to breeding interventions. Principles of animal breeding. Development of breeding objectives. Traits of economic importance in Africa's livestock industry. Community based breeding programmes. Socio-economic drivers of successful breeding programmes – Example of drivers of successful breeding programmes for selected livestock species in Africa. Emerging and contemporary issues in animal breeding and genomics. African Animal Breeding Network (AABNet). Module 4) African Livestock Futures: Livestock Development Strategy for Africa. Realizing the potential of livestock for food security, poverty reduction and the environment – key quantitative findings and policy recommendations. Role of livestock in a circular food system. African Bioeconomy University Alliance (ABU) – Student presentations and conclusions Note: Each module consists of two classes of 90 minutes each.											
[Course requirements]											
No prior requirements.											
[Evaluation methods and policy]											
Class participation and discussion (40%) Group project on a contemporary and emerging issue and brief presentations (40%) Test covering key concepts and case studies (20%)											

Note: Detailed information will be provided on the first day of class.

Refer to “2024 Guide to Degree Programs” for attainment levels of evaluation.

[Textbooks]

No textbook is required.

[References, etc.]

1. **A**frican Bioeconomy University Alliance (ABU). <http://www.africa-bioeconomy-university.org>

2. **A**frican Livestock Futures – Realizing the potential of livestock for food security, poverty reduction and the environment. https://pure.iiasa.ac.at/id/eprint/11154/2/LiveStock_ExSum_ENG_20140725_02_web.pdf

3. **C**ommon Market for Eastern and Southern Africa (COMESA). (2025). Livestock program at COMESA. COMESA. <https://www.comesa.int/livestock-program-at-comesa/>

4. **C**ommunity-based management of animal genetic resources Proceedings of the workshop held in Mbabane, Swaziland, 7–11 May 2001 – <http://www.fao.org/3/a-y3970e.pdf>

5. **O**ikeng, A., Olori, V.E., Houaga, I. et al. 2025. The African Animal Breeding Network as a pathway towards genetic improvement of livestock. *Nat Genet* 57, 498–504. <https://doi.org/10.1038/s41588-025-02079-4>

6. **F**AO. (n.d.a). The state of food and agriculture in Africa: Livestock production and productivity trends. Open Knowledge Repository.

7. **F**AO. (n.d.b). Livestock and enteric methane: East Africa. FAO. Retrieved September 2, 2025, from <https://www.fao.org/in-action/enteric-methane/countries/east-africa/2/>

8. **F**AO. (2018). The future of food and agriculture – Alternative pathways to 2050. FAO.

9. **F**ood and Agriculture Organization of the United Nations. (2020). The role of women in livestock production in Africa. FAO. <https://www.fao.org>

10. **F**AO. (2022a). FAOSTAT: Live animals and production data. Food and Agriculture Organization of the United Nations. <https://www.fao.org/faostat>

11. **F**AO. (2022b). Africa sustainable livestock 2050. FAO. <https://www.fao.org/africa>

12. **F**AO, AUC, ECA and WFP. 2023. Africa – Regional Overview of Food Security and Nutrition 2023: Statistics and trends. Accra, FAO. <https://doi.org/10.4060/cc8743en>

13. **F**AO & OECD. (2023). Regional briefs: Sub-Saharan Africa – OECD–FAO agricultural outlook 2023–2032. OECD Publishing. https://www.oecd.org/en/publications/oecd-fao-agricultural-outlook-2023-2032_08801ab7-en/full-report/regional-briefs_adcb9fec.html

14. **F**AO 2007. The State of the World’s Animal Genetic Resources for Food and Agriculture, edited by Barbara Rischkowsky and Dafydd Pilling, Rome

15. **G**ibson et al. 2005. Options and Strategies for the Conservation of Farm Animal Genetic Resources. https://www.bioversityinternational.org/fileadmin/user_upload/online_library/publications/pdfs/1139

16. **H**annah, H. R., Van Zanten, Martin K. Van Ittersum and Imke J. M. De Boer. 2019. Role of farm animals in a circular food system. *Global Food Security* 21: 18–22. <https://doi.org/10.1016/j.gfs.2019.06.003>

17. **I**ntergovernmental Panel on Climate Change. (2022). Climate Change 2022: Impacts, adaptation and vulnerability. IPCC. <https://www.ipcc.ch>

18. **I**nstitute for Agriculture and Trade Policy (IATP). (2023). Kenya livestock sector report. IATP. <https://www.iatp.org/kenya-livestock-sector>

19. **K**ahi, A. K., C. B. Wasike and H. Hirooka. 2006. Beef cattle breeding in Japan and lessons and prospects for research and development for Kenya. In: Proceedings of APSK 2006 Annual Scientific Symposium, 8th – 10th March 2006, Isiolo, Kenya.

20. **K**ahi, A. K. 2007. Genetic improvement of an indigenous livestock breed – Boran cattle in Kenya. In: FAO 2007. The State of the World’s Animal Genetic Resources for Food and Agriculture, edited by Barbara Rischkowsky and Dafydd Pilling, Rome

21. **K**ahi, A. K., R. C. Bett and T. O. Rewe. 2010. Socio-economic drivers of successful genetic improvement programmes. 9th World Congress on Genetics Applied to Livestock Production, 1st – 6th August 2010, Leipzig, Germany

22. **K**ahi, A. K., T. O. Rewe and I. S. Kosgey. 2005. Sustainable community-based organizations for the genetic improvement of livestock in developing countries. *Outlook on Agriculture* 34: 261–270. <https://doi.org/10.5367%2F000000005775454706>

23. **M**ustard Insights. (n.d.). Livestock farming: Meeting up with animal protein supplies across Africa. Mustard Insights Blog

24. **R**uters. (2025, June 2). Nigeria imports Danish cows in bid to slash \$1.5 billion milk import bill. Reuters. <https://www.reuters.com/world/africa/nigeria-imports-danish-cows-bid-slash-15-billion-milk-import-bill-2025-06-02/>

25. **R**ège J.E.O., A. K. Kahi, M. Okomo-Adhiambo, J. Mwacharo and O. Hanotte. 2001. Zebu cattle of Kenya: uses, performance, farmer preferences, measures of genetic diversity and options for improved use. *Animal Genetic Resources Research* 1. ILRI (International Livestock Research Institute), Nairobi, Kenya. ISBN 92–9146–094–X. 103pp.

26. **S**imianer, H. and A. K. Kahi. 2000. Valuation of indigenous farm animal populations and breeds in comparison with imported exotic breeds – with a focus on sub-Saharan Africa. Consultant, Applied Genetics Network, Stuttgart, Germany. Report published in Animal Genetic Resources Virtual Library, International Livestock Research Institute (ILRI), Addis Ababa, Ethiopia

27. **S**tatista. (2025). Agriculture value added to GDP in South Africa [Statistics]. Statista. <https://www.statista.com/statistics/1121213/agriculture-value-added-to-gdp-in-south-africa/>

28. **T**heGlobalEconomy.com. (2022). Livestock production index – Africa. The Global Economy. https://www.theglobaleconomy.com/rankings/livestock_production_index/Africa/

29. **T**he Livestock Development Strategy for Africa (LiDeSA) 2015 – 2035: The Roadmap to a Successful Livestock Sector. <http://repository.au-ibar.org/handle/123456789/540>.

30. **W**ilson Center. (2020). Is livestock Africa’s next big investment opportunity? Wilson Center.

[Study out of class (preparation and review)]

No prior requirements

(Other information (office hour, etc.))

Offices hours will be provided following consultation with the course students: To be arranged.