elicitation technique is used to explore and identify the key environmental and socio-economic drivers of change within the Volta River basin in Ghana, West Africa. System dynamics modelling approach (i.e., casual loop diagrams, dynamic and simulation modelling) is then used to develop a system dynamic model that captures the interconnections and feedback effects among these key drivers and other environmental, technical, market dynamics, health and demographic trends. This allowed us to see the overall system structure and determine the behaviour of the system over time from a system dynamic point of view. The results and the developed model also allowed for the identification of leverage points and exploration of management options and pathways for sustainable water and agri-food systems management within the river basin system. The project main contribution is the development of an integrated and system dynamics model that can be used for the sustainable and integrated management of complex water and agri-food systems the context of increasing uncertainties and growing environmental and socio-economic changes.

[P043] Robusta coffee model: An integrated model for coffee production at farm and regional scale

Theme: 2. Solutions through Integrated Farming Systems

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The Vietnamese coffee industry is the world's second largest producer of coffee beans. The industry is significantly influenced by seasonal climate variations, water shortages, and extreme climatic events, especially drought. Given a 15% expected increase in global coffee demand and the potential adverse effects of projected climate variability, the success of the Vietnamese coffee industry depends heavily on minimising the risks along the supply chain and capitalising on potential opportunities. Advances in seasonal climate forecasts, when integrated with crop production systems, can greatly improve industry preparedness and productivity. We present the progress on the development of a 'Robusta variety' coffee production model, an integrated forecasting system, which aims to provide coffee production estimate based on simulating coffee growth biophysical processes and seasonal climate forecast systems. The model uses daily values (such as daily minimum and maximum temperatures, solar radiation, and rainfall) and simulates the growth of the coffee tree (e.g. biomass) and the production of green beans. The initial simulated results are encouraging, however, while the model successfully picks up the climatic variability, the precision is not yet outstanding. Further refinement and improvement of the parametrization are ongoing to provide more reliable and comprehensive outputs at different lead times. While additional work is yet to be done the preliminary results look promising and show that seasonal climate and crop forecasting offers substantial benefits to coffee growers and industry through increased profitability, better logistical arrangements and preparedness for extreme events such as floods and droughts.

[P044] Use of proximal sensing in the monitoring of agronomic experiments

Theme: 2. Solutions through Integrated Farming Systems

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