Holistic Agroecology Learning Landscape in Farming and Food Systems

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ABSTRACT

Learning to embrace complexity and change in future agroecosystems requires holistic focus on production, economic, environmental, and social dimensions that are both complex and unpredictable. This is essential for designing responsible action.

We have organized field and classroom learning activities that recognize importance of spatial, temporal, and conceptual hierarchies of thinking that farmers can translate into practices and systems designs that can be resilient and sustainable in tomorrow's agricultural environment. In addition to biogeochemical factors, we incorporate critical socioeconomic and political aspects into students' exploration of current systems. Conceptualizing future farming and food systems must consider scarcities in land and non-renewable resources, population pressures, and changing consumer demands.

Departing from discipline-based courses and 'monoculture thinking', we mentor students in a summer course Agroecosystems Analysis in the process of interviewing farmers about current systems and exploring plans for the future. Important in the process is learning about resource constraints, land potentials, human resources, and individual farmer ingenuity in projecting their farming operations into the next generation.

Both short-term goals and long-term realities are interpreted through farmer's world view of ecology and production, and how incommensurate objectives require trade-offs that are negotiated with all players associated with each farm's unique location and financial situation. In the process, we build on the knowledge of farmers as a crucial source of information and inspiration, while linking science and practice in the evaluation of current systems and design of options that are most likely to be successful in the future.

The framework for analysis includes integrative agroecological practices at the field level, evaluation of sustainability at the farm level, observation of farms as components of rural landscapes, and speculation about long-term viability of rural communities in the face of farm consolidation and market globalization. These concepts inform our design of educational activities in 'learning landscapes using agroecology as an organizing principle.

THE COURSE

The week-long immersion course is offered each summer, is based in Northwest Iowa, and involves visits to 9 or 10 unique agricultural and prairie ecosystems, most of which are owned and operated by individual farm families. Main goals are to enable participants to better understand the structure and function of farms in the Midwest. Students identify the major forces responsible for shaping farms as we see them today, and to conduct an initial assessments of the sustainability of farm practices, enterprises, and whole-farm operations.

The method of instruction includes open-ended cases where students follow a discovery process to devise alternative solutions to real-world situations. No single or 'right' answers exist to the question of how a future scenario should appear, however students devise and evaluate several possible future strategies and impacts of each scenario. It is made clear there is no specific, pre-determined solution to the key issues or situations. This method promotes a culture of curiosity.

Students, farmers, invited guests, professors, and other stakeholders make up the learning community. We believe that all participants have things to learn and insights to share. We typically have 24 students and 5 faculty members from Dordt College, Iowa State Univ., Univ. Minnesota, and Univ. Nebraska engaged in the course. A cohesive learning community is developed and strengthened via sharing personal biographies, enjoying meals together, working in teams, participating in daily debriefing sessions, and consistently encouraging and affirming the contributions of community members as the course proceeds.
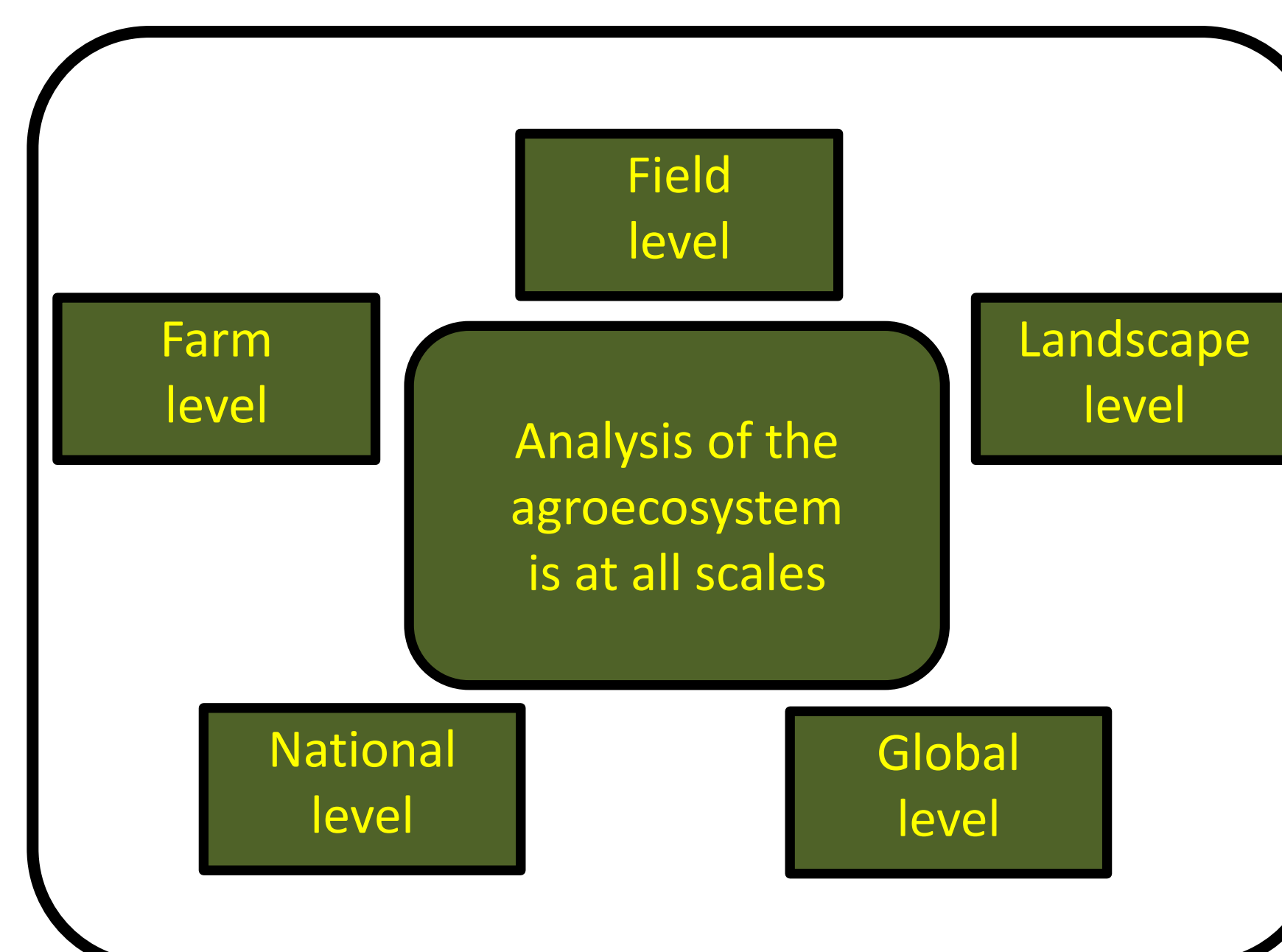
CONCLUSION

Success in the course is indicated by consistent enrollments, enthusiastic final reviews by students, and individual performances of students in their future graduate study and other jobs where they employ a systems perspective in their activities.

Hands-on learning about soils and geology.

In the field with the farmer as the teacher.

Field level
Farm level
Analysis of the agroecosystem is at all scales
Landscape level
National level
Global level

Discussing economic, social and environmental issues.

Experiencing diverse farm operations of various sizes.

AGROECOSYSTEM ANALYSIS

Pre-course readings describing alternative models of agroecosystem analysis are used to provide students with essential background knowledge. Students are assigned to diverse teams based on gender, university, major of study, and life experience to discuss the merits of each of the models. Each team determines the model or combination of models they will use to analyze sustainability of farm systems. One initial challenge is the open-ended method of analysis and lack of one recommended universal model, and how to include multiple components in their own chosen model. Some students struggle with deciding what is most important and how to collect information and analyze results in the absence of a clear road map to explain exactly how to accomplish the task. The teams use information from farmers and observations during farm visits to identify key issues of sustainability for each farm. Final oral and written project reports are evaluated by the instructors in order to achieve consensus on grades and generate comments that are sent to each of the teams to enhance their learning experience.

RELATED PUBLISHED ARTICLES

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