

Project question: How do Arkansas agricultural production systems affect the environment?**Agricultural impacts on the Arkansas environment:**

To assess the likelihood of a sustainable solution to the feeding our society, we must consider the environmental stresses associated with pushing our agricultural systems to their limits. The impact of agriculture on the Arkansas environment includes soil erosion and degradation, the environmental effects of fertilizer use and pesticide use, and irrigation and water resources.

- Erosion damages crop productivity by reducing the availability of water, nutrients, and organic matter. Water resources are also degraded by sediments and pollutants associated with erosion.
- Most fertilizers supply the three major nutrients of nitrate, phosphate, and potassium. But a significant portion of nutrients do not reach the crops as intended. Instead, they leach into ground and surface water, where they become serious pollutants.
- Pesticide affect workers directly, and pesticide poisoning is a serious and widespread problem throughout much of the developing world. Residues in food affect consumers: measureable levels of chlorinated pesticides can be found in breast milk, and cumulative impact of pesticide on the human body is a serious concern.
- The farmland most dependent on irrigation often lies in precisely those arid regions where water is in short supply. This leads to overdraft of groundwater-pumping out underground reservoirs faster than the natural water cycle can refill them. As a result, currently productive agricultural regions face a waterless future once the aquifers are exhausted.

Description of the project:

Students will work individually to create a draft presentation and issue brief proposal, a final presentation, and a final issue brief on one of four Arkansas agricultural/environmental issues: soil erosion, fertilizer use, pesticide use, or irrigation. Dr. Kovacs will assign who works on which of the agricultural/environmental issues in Arkansas with input from the student. Each student is responsible for researching all relevant aspects of the issue in question. The student will then be responsible for creating a presentation and paper about the issue and applying an environmental economic critique of the issue using the tools and concepts discussed in class.

Honors Course Grading:

Exam 1, 2 & 3	60%	Assignments and Final Exam	15%
Daily Quiz	10%	Honor Project	15%
Total	100%		

The project grade is comprised of a draft presentation and a one-page issue brief proposal of the issue you will analyze (20%), a final presentation (40%), and a final issue brief (40%). A printout of the draft presentation and issue brief proposal is due by April 5th at the beginning of class (by 12:55p.m.), the final presentation is made the week of April 22nd, and the final issue brief is due in my box in AGRI 217 by 4:30p.m. on May 5th.

Draft presentation and Issue brief proposal (20% of project grade):

The draft presentation should be made in powerpoint and contain at *least eight slides and no more than fifteen slides*, and the issue brief proposal should be *one-page single spaced*. The draft presentation and issue brief proposal is *due by April 5th at the beginning of class (by 12:55p.m.)*. These should have an introduction to your issue brief. This should include a description of the issue and why it is of concern today. Indicate the environmental and the economic concerns surrounding the issue. Provide background on what has been done in the past to address the issue, what a

current suggested policy is, the significance of the policy, and whether the policy is appropriate according to the relevant criteria (e.g. cost-effectiveness, technology adoption, and ease of monitoring) for addressing the issue. A concluding slide should indicate challenges and opportunities for addressing the issue.

Final presentation (40% of project grade):

The final presentation will be evaluated based on the content (50%), the powerpoint (25%), and the presentation (25%). The content is graded on how well the information provided conveys the issue and the policy, the pros and cons of the policy, the significance of the policy, and the challenges and opportunities. The powerpoint is graded on whether there is the right amount of data per slide, the information could be read and understood, and whether there are any special features. The presentation is graded on whether your voices are clear and can be heard, engaged the audience, knew the subject, and stayed within the time limit.

Final issue brief (40% of project grade):

The final issue brief requires the student to analyze a contemporary environmental issue of their choosing in *a 4-6 pages single-spaced paper*. The final issue brief is ***due in the instructor's box in AGRI 217 by 4:30p.m. on May 5th***. The final brief should have the analysis of the policy you have chosen. The analysis description should have one table or figure that the reader can reference. Does the policy work as desired, and if so, then how well? Relate the findings to the relevant criteria of the policy (e.g. *cost-effectiveness*, technology adoption, ease of monitoring, etc.) for addressing the issue. The conclusion should indicate how effectively the policy you have chosen to study would remedy the environmental problem. What will happen to the socio-environmental and economic benefits in the future? Perhaps there are other policies that could work just as well as the one you have chosen. Suggest how other policies might compare to the one you chose.

Additional useful material for creating the issue brief can be found in the Resources and Readings folder in the Honors folder for the class on Blackboard.

This includes the power point presentations: Ag_Food_Enviro_1.pptx and Ag_Food_Enviro_2.pptx

Useful links for agricultural/environmental issues in Arkansas:

Annual reports for the Arkansas Nonpoint Source (NPS) Pollution Management Program

https://static.ark.org/eeuploads/anrc/AnnualReport_FY2015_FINAL.pdf

https://static.ark.org/eeuploads/anrc/AnnualReport_FY2014.pdf

https://static.ark.org/eeuploads/anrc/2013_-_Annual_Report_final.pdf

Arkansas 2011-2016 NPS Pollution Management Plan

https://static.ark.org/eeuploads/anrc/Full_NPSPlan_Document.pdf (See page 51-73.)

Arkansas Water Plan

<http://www.arwaterplan.arkansas.gov/plan/ArkansasWaterPlan/Default.htm>

Annual reports for Arkansas Groundwater Protection and Management

https://static.ark.org/eeuploads/anrc/FINAL_DRAFT_groundwater_rpt_2015-2016.pdf

https://static.ark.org/eeuploads/anrc/2015_Report_Final_Commpressed.pdf

<https://static.ark.org/eeuploads/anrc/2013-2014AnnualReport.pdf>