Estimating the Short and Long-term Economic and Social Impacts Of the 2012 Drought in Colorado

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Location of work and project team: This study is focused on Colorado and includes a statewide survey of agricultural producers. Historical trends in agriculture production will be noted for the state. The project team will consist of researchers in the Department of Agricultural and Resource Economics (DARE) at Colorado State University in Fort Collins, CO

Purpose and Need:
Colorado's 2012 drought is significant in its geographic reach and economic impacts. The objective of this study is to develop a better understanding of the immediate and longer term economic and social impacts associated with the current drought.

A drought leads to immediate reductions in output and lost revenues for agricultural producers. Given the critical role that agriculture plays in most rural communities, the initial revenue losses associated with decreased production represent only a portion of the true impact. Reduced spending by farms and ranches (via "backward linkages") negatively impacts households (lost income) and producers in other industries, both locally and throughout Colorado. Lost business activity impacts the resilience of farm and allied business as these entities struggle to achieve debt repayment.

This project continues the drought research and outreach that Chris Goemans, Allie Gunter, Ron Nelson, Dawn Thilmany and James Pritchett have completed for the 2011 drought in southern Colorado. The research team found that the drought reduced household incomes forcing some operators to pursue off-farm employment opportunities, as well as seek federal assistance to address operational losses, debt repayment and lower standards of living. Moreover, the findings suggest the drought had a significant impact on the resiliency of farming operations, increasing the likelihood that Arkansas Valley and San Luis Valley producers would permanently decrease or cease agricultural operations. Impacts were felt disproportionally by dryland farmers and cow-calf producers.

The ongoing 2012 drought will have a more intense and far reaching impact compared to last year's localized drought. The geographic reach of the drought has extended statewide and nationally. Associated commodity price increases will exacerbate livestock producers' tenuous financial positions. In addition, the drought includes a dramatically lower snowpack in 2012, and this means the impacts will be shared by irrigated crop producers in addition to dryland production. Updated, timely and accurate economic estimates are needed by stakeholders and policymakers evaluating the drought.

The first phase (Phase 1) of this study focuses on producer impacts, but drought losses also include the indirect impacts to allied businesses and the impacts induced by lost agricultural and allied wages. Our goal with this study is to develop a more complete view of the impacts

associated with the 2012 drought by surveying impacted farms, ranches and agribusinesses, and then use this information to characterize regional economic impacts that are felt more widely in Phase 2. During the survey process, we will also ask farmers if they have been subject to groundwater well curtailment, and their business response to this curtailment. The production impacts of drought and curtailment will be placed in context by collecting, analyzing and reporting historical agriculture production information for Colorado, a process completed for the Arkansas River Basin and San Luis Valley in the study of last year's drought.

Methods and Project Outline: The general objective of this phase is to describe the managerial responses of farms and ranches during the ongoing drought, identifying their current financial standing and assessing their ability to respond to financial challenges and opportunities during the next three to five years. This information will be collected and is useful in quantifying the economic impact of the 2012 drought. These changes also have ripple effects that also flow through the general economy. As an example, if ranchers choose to depopulate the cow herd in response to poor forage conditions, the reduction in the ranch's asset base decreases local feedlot placements, reduces demand for corn silage locally and impacts the ranch balance sheet. Likewise, this curtails the manager's ability to take advantage of favorable price conditions in the future. Impacts of this type are not typically captured in standard data collection and regional economic models.

Phase 1: A questionnaire will be designed, delivered and results summarized by graduate and undergraduate students in the Department of Agricultural and Resource Economics at Colorado State University. Students will serve under the direction of Dr. James Pritchett and Dr. Chris Goemans.

The survey design will be based on the recommendations of an advisory committee and accepted methods. The survey will be consistent with the 2011 drought study and will likely have the following characteristics:

(a) Be internet based in order to improve response rates and decrease costs;
(b) Target farmers, ranchers, local lenders, local agribusiness and government officials;
(c) Include Likert-scale based behavioral questions[1]
(d) Include categorical, quantitative questions [2]

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[1] e.g., Please rate the following statement according to your level of agreement.
If the drought persists, my operation will need to increase the amount of term debt that it currently uses to finance operations.(Check one response)

- o Strongly Agree
- o Agree
- o Neutral
- o Disagree
- o Strongly Disagree

[2] e.g., The current number of cows on my ranch is between (check one response:)

- o 0 and 49 cows
- o 50 to 149 cows
- o 150 to 299 cows
- o 300 to 499 cows

(e) Hold all responses as confidential.

Survey responses add to the breadth and depth of the knowledge that stakeholders have in assessing the impact of the recent drought on agricultural producers. This information is particularly useful in:

a) Targeting future technical and financial assistance to farmers, ranchers, communities and businesses in southern Colorado. This information is of particular importance to CSU Extension, USDA-NRCS, USDA-FSA, Colorado Department of Agriculture and commodity and ag advocacy organizations;
b) Communicating the effectiveness of crop and pasture, range and forage insurance programs to USDA-Risk Management Agency;
c) Assessing the outcomes of changes made to Colorado Drought Mitigation and Response plan that was substantially revised in 2010. Recommendations for future adaptation can be drawn from the survey responses, but would certainly need be part of a larger effort;
d) Identifying the perceived success of local drought management strategies to assist in future planning;
e) Informing policymakers who may be part of disaster assistance and commodity program hearings for Farm Bill 2012.

Phase 2 In Phase 2, survey responses will be aggregated and summarized. The summarized data will be used to gauge the direct, indirect and induced impacts of the drought to Colorado's economy. The impact analysis describes the broader effects of the drought on mainstreet businesses in rural Colorado and on household income. Effects depend importantly on the proportion of inputs purchased locally, as well as the agricultural and value added products exported outside of the state.

Timeline (assumed start date of 11/1/2012):

November: Build relationships with stakeholder groups and media organizations to ensure adequate survey response

November: Convene advisory groups and design survey

November: – Pretest survey and make adjustments as warranted.

November – mid January -- administer survey and collect responses

January - February: analyze survey data and summarize results

February: Results available for Governor's Outlook Forum.

February – April: Phase 2 economic impact analysis is conducted and sumamrized

May 15, 2013: Written deliverables provided to CWCB and CDA

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o 500 cows or greater

Deliverables:
The project team will prepare and deliver a detailed report and an executive summary for decision makers of the CWCB and CDA. The final report and summary will be available on the CWCB, CDA and Colorado Water Institute websites. A project summary will also be prepared for submission to an outlet similar to Colorado Water. In addition to the project summary, a series of fact sheets will be prepared (as discussed above). Fact sheets will be delivered to the CWCB, CDA and accessible via their website. Oral presentations of project findings will be given to the CWCB, CDA and other interested parties.

Budget
Phase 1. Colorado Water Conservation Board will fund Phase 1 of the study at $35,000
Phase 2. Colorado Department of Agriculture will fund Phase 2 of the study at $15,000.

Budget: We are requesting a total of $50,000 to fund faculty time, a graduate research assistant, travel and survey materials.

Phase 1

Personnel		
	Faculty time (.77 months at $8,227/month, 24.0% fringe)	$ 7,841
	Faculty time (.71 months at $9,533/month, 24.0% fringe)	$ 8,392
	Graduate Student Time (9 months, $1,500 per month, 5.2% fringe)	$14,202
Total Direct Costs		$30,435
Indirect Cost	Indirect at a 15% TDC rate	$ 4,565
Total Costs		$35,000

Phase 2

Personnel	Faculty time (.29 months at $9,533/month, 24.0% fringe)	$ 3,429
Other		
	Graduate Student Tuition (2 semesters @ $4,196/sem.)	$ 8,392
	Travel*	$ 1,125
	Internet Survey Subscription (6 Months)**	$ 139
Total Direct Costs		$ 13,085
Indirect Cost	Indirect at 40.8% MTDC rate***	$ 1,915
Total Costs		$ 15,000

*Travel expenses include mileage and per diem resources sufficient for appropriate data collection and result presentations.
**Survey will be hosted by surveymonkey.com, an internet survey provider.
***CSU federally negotiated indirect cost rate for state agencies – excludes tuition.