THE ECONOMIC IMPORTANCE OF WYOMING AGRICULTURAL PRODUCTION

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Agriculture, a key sector in the Wyoming economy

The agriculture industry plays an important role in the state's economic base by bringing outside revenue into the state through export sales. This outside revenue is essential to regional economic health because it initiates local economic activity. Agriculture also provides important economic diversity, as many areas of the state are highly dependent on the extraction of fossil fuels.

The purpose of this report is to estimate the economic importance of Wyoming agriculture to the state's economy. This analysis considers both the economic activity and the resulting employment and labor income directly associated with agricultural production, as well as the secondary economic impacts on other sectors of the Wyoming economy. These secondary impacts are associated with sectors the agriculture sector purchases inputs and services from and employees of the agriculture sector and the other support sectors purchase from. Examples of agricultural support sectors include businesses such as feed stores, veterinarians, and bulk fuel dealers. Examples of employee support sectors include businesses such as grocery stores, health care, and restaurants.

The 2012 Census of Agriculture (USDA, 2014) indicated there were 11,736 farms and ranches in Wyoming. These agricultural operations managed 30.4 million acres of land and $22 billion of investments in land, buildings, machinery, and equipment. The 30.4 million acres included private land and non-private property rented for agricultural use. This designation excludes land leased for grazing under government permits on a per-head basis. Grazing land leased under government permits could include up to 17.4 million acres managed by the Bureau of Land Management, 6.9 million acres managed by the U.S. Forest Service, and 3.6 million acres managed by the state of Wyoming. Overall, the majority of land in Wyoming has the potential to be used for agricultural production.

In 2012, Wyoming farms and ranches comprised 2.4 million acres of cropland, were home to about 1.3 million head of cattle and calves, 355,000 head of sheep and lambs, 85,000 head of hogs and pigs, 72,000 horses, 27,000 chickens, and 9,000 goats, and produced 3 million pounds of honey. Families or individuals, partnerships, and family-held corporations account for 96 percent of the farms and ranches in Wyoming and 88 percent of the land in agriculture in Wyoming. Non-family-held corporations account for less than 1 percent of the farms and ranches in Wyoming and only 2 percent of the land in agriculture in Wyoming, with the remainder being held by cooperative, estate, or trust institutions.

In 2014, the U.S. Department of Commerce data indicated Wyoming agriculture generated gross income of $2.1 billion. This amount only represents agricultural production related income and does not include non-agricultural production land payments, such as easements. As shown in Table 1, 66 percent of Wyoming agriculture's gross revenue in 2014 came from livestock marketing, 18 percent came from crop marketing, 8 percent from

government payments, and 8 percent from miscellaneous income (including machine hires, custom work, sales of forest products and agritourism). In addition, Table 1 shows that Wyoming agriculture spent $1.9 billion for production expenses in 2014, resulting in a realized net income of $127.8 million.

Table 1. Wyoming Agricultural Income and Expenses, 2014

Description	Amount (000$)	Percent
Cash receipts: Livestock	$1,385,016	66.2%
Cash receipts: Crops	378,714	18.1%
Government payments	156,277	7.5%
Miscellaneous income	171,842	8.2%
Total Gross Income	**$2,091,849**	**100.0%**
Feed purchased	$272,917	13.9%
Livestock purchased	358,129	18.2%
Seed purchased	34,500	1.8%
Fertilizer and chemicals purchased	75,663	3.9%
Petroleum products purchased	104,262	5.3%
Hire labor expense	193,467	9.8%
Other production expenses	925,395	47.1%
Total Production Expenses	**$1,964,333**	**100.0%**
Realized Net Income	**$127,516**	

Source: U.S. Department of Commerce, Bureau of Economic Analysis

Table 2. Economic Contribution of Wyoming Agricultural Production

	Amount	Source
Output		
Direct	$2,091,849,000	BEA
Secondary	2,135,466,871	IMPLAN
Total	**$4,227,315,871**	
Employment		
Direct	14,032	BEA
Secondary	19,406	IMPLAN
Total	**33,438**	
Labor Income		
Direct	$318,632,000	BEA
Secondary	630,115,070	IMPLAN
Total	**$948,747,070**	

Methodology

This analysis is based on the U.S. Department of Commerce Bureau of Economic Analysis (BEA) 2014 CA45 Farm Income and Expense Report for Wyoming (U.S. Department of Commerce, 2017). This data comes primarily from farm income and expenses reported to the IRS by Wyoming farmers and ranchers on their 2014 tax returns. This data provides an aggregate view of the income and expenditure patterns for the various types of agriculture found in Wyoming. The BEA expense data was supplemented with 2012 Census of Agricultural Farm Production Expense information. A Wyoming state-level IMPLAN model (IMPLAN, 2017) was then used to estimate the secondary effects of Wyoming agricultural production on the state's economy using an "analysis-by-parts" approach (IMPLAN, 2017).

Economic Contribution

Table 2 summarizes the economic importance of Wyoming agricultural production to the state's economy. Based on the BEA's agricultural gross revenue estimate of $2.1 billion, the IMPLAN model estimates an additional $2.1 billion of secondary economic effects for a total economic contribution of $4.2 billion in the Wyoming economy. This represents $2.02 of total economic activity in the state's economy for every $1.00 of gross revenue for agriculture in Wyoming.

The $4.2 billion in total economic activity associated with Wyoming agriculture, in turn, supported 14,032 jobs directly in agriculture and is estimated to support an additional 19,406 secondary jobs in support industries for total employment of 33,438 jobs attributable to Wyoming agricultural production (Table 2). This represents 2.4 total jobs in the state's economy for each job in Wyoming agriculture. Finally, the 33,438 jobs supported by Wyoming agriculture is associated with $318.6 million in direct labor earnings in agriculture and is estimated to support an additional $630.1 million in support industries labor earnings for total labor earnings of $948.7 million (Table 2). The direct labor earnings included proprietor income and hired labor but not unpaid family labor. This represents $2.98 of total

labor earnings for every $1.00 of agricultural labor earnings in Wyoming.

The estimates in the previous paragraph indicate that in addition to direct economic contributions from agricultural production, Wyoming agriculture generates significant secondary contributions to the state's economy. After adjusting for imports from outside the state, Wyoming agriculture is estimated to spend $0.82 of every $1.00 of non-labor production expenditures within the state's economy. This occurs because agriculture is able to source many of its production inputs and services from other businesses in the state. This results in an additional $1.4 billion of secondary expenditures in the state's economy which significantly increases agriculture's overall economic contributions to the Wyoming economy.

Open Space

Beyond the jobs and income from agricultural production, Wyoming agriculture also provides important natural resource amenities such as open space on private lands. Open space provides landscapes, lifestyles, wildlife habitat, and other ecosystem services that have economic value both to residents and visitors. As noted in the State of Wyoming, Economic Analysis Division's 2016 County Profiles (State of Wyoming, 2017a) there are an estimated 26.5 million acres of private land in Wyoming. The State of Wyoming, Department of Revenue's 2016 Annual Report (State of Wyoming, 2017b) indicates there are 24.7 million acres of private land assessed for agricultural use in Wyoming. Comparing these to two numbers indicates that over 93 percent of the private land in Wyoming is in agricultural use, with 91 percent of the agricultural land classified as range lands (22.5 million acres). Rashford et al. (2013) estimate that in addition to forage values, ecosystem services values were $6.82 per acre of rangeland in Wyoming. This represents $153.4 million of ecosystem services provided by private rangeland in Wyoming.

Agriculture and other private lands in Wyoming also make an important contribution to wildlife habitat and hunting in the state. The U.S. Fish and Wildlife Service (2014) estimated that over -half of resident and nonresident hunters in Wyoming hunt on either a combination of public and private land (35 percent) or only private land (16 percent). Coupal et al. (2004) estimated that 56 percent of year-long big game seasonal range in Wyoming is on private land, 44 percent of winter big game seasonal range is on private land, and 25 percent of spring, summer, and fall big game seasonal range are on private land. For some species, such as white-tail deer, 85 percent of their seasonal range is on private land. Both mule deer (58 percent) and pronghorn (51 percent) are also substantially dependent on private land seasonal range. The authors estimated that seasonal big game range on private lands supported more than $58 million in hunter expenditures in 2000 or just under 50 percent of the total. They note these expenditures represent a positive economic spillover from agricultural and other private landowners to the broader economy in Wyoming.

As a result of natural resource amenities associated with agricultural land, there is substantial public support for the retention of lands in agriculture. For example, a survey sponsored by the Wyoming Stock Growers Association, the Wyoming Stock Growers Land Trust, The Nature Conservancy, and the Ruckelshaus Institute at University of Wyoming (Freedman and Korfanta, 2014) found that nearly 80 percent of Wyoming residents felt they personally benefit from the presence of farms and ranches in Wyoming.

Summary and Conclusions

Agriculture plays an important role in the Wyoming economy, generating $2.1 billion of gross revenue in 2014. This production generates total economic activity of $4.2 billion in the state's economy, which supports more than 33,000 total jobs and nearly $950 million of total labor earnings. It also generates an estimated $77.5 million in tax revenue for state and local government in Wyoming. From a government cost standpoint, previous research has shown that agriculture costs only $0.54 in government services for every $1.00 of revenue (Coupal et al., 2002). In addition to jobs, income, and tax revenue from agricultural production, Wyoming agriculture also provides important natural resource amenities, such as open space on private lands in Wyoming. As a result of these benefits, there is public support in Wyoming for retention of land in agriculture.

This report focuses on the economic importance of agriculture production at the state level. The economic importance of agricultural production may be relatively more important for individual counties in Wyoming that are not as dependent on fossil fuel extraction for their economic base.

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