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Coloradans' Perceptions About Land and Water Resources for Agriculture

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This survey on *Colorado Attitudes about Food and Agriculture* highlights several key findings with respect to Coloradans' perceptions about and priorities for agricultural land and water use.

1. Coloradans continue to look to agriculture for benefits outside of food production, but the importance placed on those other benefits seems to be decreasing. In 2016, only 55% of respondents felt that agriculture's most important use was food production, down from 77% in 1996. In contrast, 62% thought open space was agriculture's most important use, similar to 2011, but down from 73% in 1996.

2. Coloradans continue to believe that land and water should be protected, and 47% believe in using financial incentives to do so, compared to 32% who advocate for zoning regulations, and 13% who feel markets will protect agricultural resources. Respondents' background in agriculture impacts their perceptions of which tool should be used, with 50% of those who have lived on a farm or ranch advocating for financial incentives, and 30% agreeing with the use of a regulatory approach.

3. Eighty-six percent of all respondents believe open space programs will help to minimize farm and ranch land loss, and 83% agree that purchasing development rights is a reasonable way to protect agricultural lands.

4. In spite of changing priorities for the use of Colorado's agricultural landscape, the majority of respondents (68%) still chose agriculture to receive water first in a dry year, followed by in-stream flows for wildlife (19%). Lawns and landscaping and recreational uses ranked solidly as third priority use of water in a scarce year.

5. Overall, nearly 70% of Coloradans agree that agriculture is using practices that conserve soil and water resources, and 86% agree with using public funds to do so. Fifty-eight percent believe that agriculture is usually or almost always responsible in terms of environmental protection, with a greater share of those who feel this way having once lived on a farm or ranch.

Introduction

Every 5 years the Colorado Department of Agriculture (CDA) collaborates with researchers to assess Coloradans' perceptions and attitudes about issues concerning agriculture in the state. The 2016 survey marks the fifth time CDA has conducted this survey and the second time that Colorado State University's

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marks the fifth time CDA has conducted this survey and the second time that Colorado State University's Department of Agriculture and Resource Economics has led the assessment and analysis. The latest survey was conducted by TNS (http://www.tnsglobal.com/us) in August and September 2016 and includes responses from nearly 1,000 Colorado residents who completed an online questionnaire designed by CDA and Colorado State University. Overall, the survey covers questions about the respondents' background in agriculture, age, gender, education, income and race and ethnicity; knowledge about and purchasing behavior regarding Colorado products; implications of population growth and development on agriculture; opinions about farming practices; trusted information sources; and interest in agritourism. This factsheet focuses on respondents' opinions about land and water use for agriculture and implications for future resource use and availability.

Understanding perceptions about the use of Colorado's land and water resource base are essential to developing agricultural policies and programs, and allocating public resources that are both appropriate to maintaining these resources for agriculture and palatable to Coloradans. In 2016, with education added to the list of choices, only 15% of all respondents felt that agriculture was the state's primary economic sector—this is down from 37% in 1996 and 2001, and 25% in 2011. Overall, in the most recent survey respondents ranked education and public service as the state's most important sector (38%), followed by tourism and recreation (19.1%); high tech (17.1%); agriculture (15%); and mining and petroleum (11%).

When trying to understand changes in public opinion with respect to the agricultural resource base, it is useful to look at the characteristics of the subset of respondents who value agriculture as being important to Colorado's future growth. In 2016, only 4% of all Coloradans reported that they live on a farm or ranch (Table 1). Among those who rank agriculture as the most important economic sector, nearly 7% currently live on a farm or ranch, and 26% have lived on one (compared to 20.5% of all respondents). Furthermore, this latter group has lived in Colorado longer than other respondents, is more likely to be female, has a lower income level, and is more likely to raise their own food at home (see Table 1).

Table 1. Demographic characteristics of all respondents compared to those who value agriculture as an economic driver

	All Coloradans	Those who think ag is important for Colorado's future
Live on a farm or ranch now	4.2%	6.8%
Ever lived on a farm	20.5%	26.1%
Lived in CO 20 years or more	57.1%	65.5%
Female	57.6%	64.9%
Earn above $50,000 per year	75.0%	67.6%
Average age (Median age)	48.0 years (48.0)	50.9 (53.5)
Raise own food products	31.8%	37.6%

This survey does find that Coloradans still value agriculture for its contribution to overall quality of life. When asked how important the presence of ranches, farms and agriculture is to the quality of life in Colorado, 60% indicated it is very important, while 30% said it was moderately important. It should be noted, however, that increasingly this survey reveals that Coloradans feel less strongly about the role of agriculture in contributing to quality of life. For example, in 1996 80% said agriculture was very important, and only 17% indicated it was moderately important.

Coloradans' Perceptions About Land and Water Resources for Agriculture

The evolving importance and value of agriculture's resource base

The number of respondents who felt that it was very or extremely important to maintain land and water in agriculture has remained well above 90% since this survey was first conducted in 1996, although it declined slightly from nearly 98% to 95% from 2011 to 2016 (see Figure 1 below). These results certainly have implications for continued efforts to dedicate land and water resources to agricultural uses.

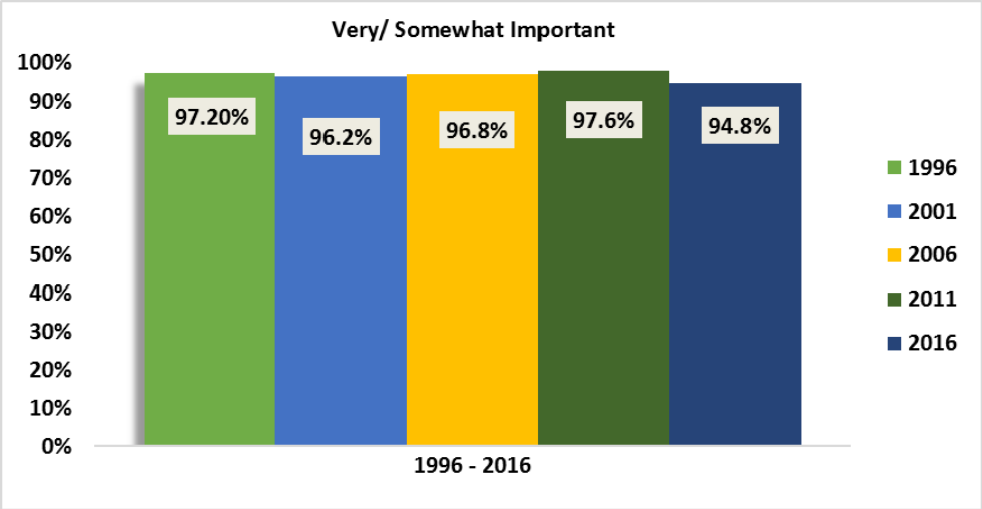


Figure 1. Importance of maintaining land and water in agriculture

For those who said they were interested in keeping land in agriculture, the survey asked what they felt were the most important uses for this land, given that agricultural land has been recognized for years as providing multiple benefits beyond its productive value.[1] Most of those surveyed still feel that open space is important, but other values associated with agricultural land have decreased in importance to Coloradans. For example, land as a source of employment and heritage has decreased in importance by about one third (see Figure 2). In 1996, food production was ranked highest by 77% of respondents; however, the current 2016 data show a decline to 55%.

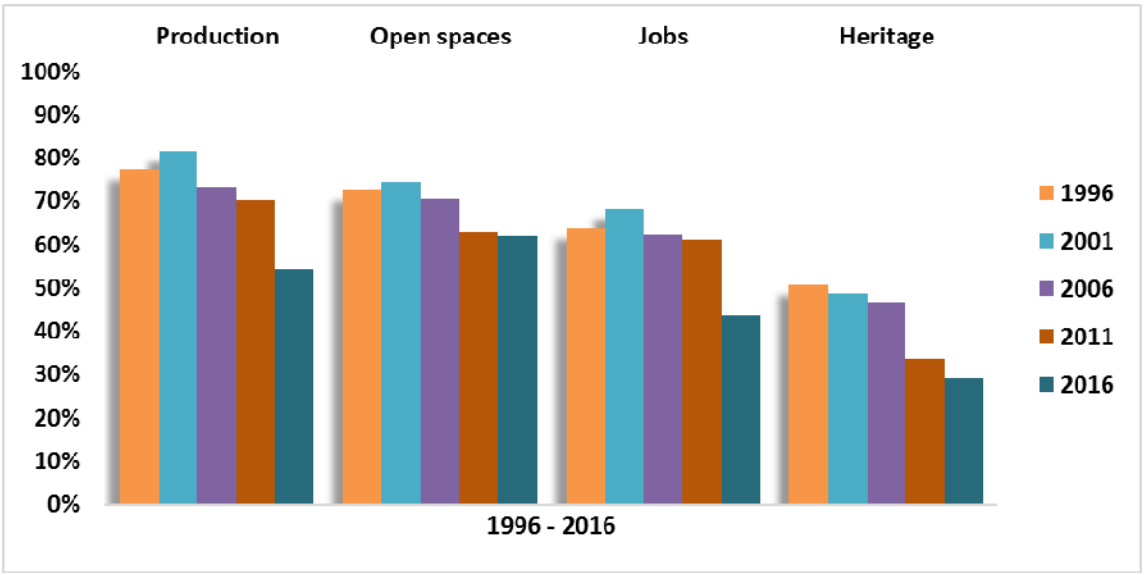


Figure 2. Respondents' most important reason for maintaining agricultural land and water

[1]See for example, a 2001 Land Stewardship project entitled, "The Multiple Benefits of Agriculture: an Economic, Environmental, and Social Analysis, available at: http://mysare.sare.org/wp-content/uploads/1004LNC99-146.002.pdf).

Figure 3 shows responses to the question, “What basic approach should be used to protect agricultural land and water in Colorado?”

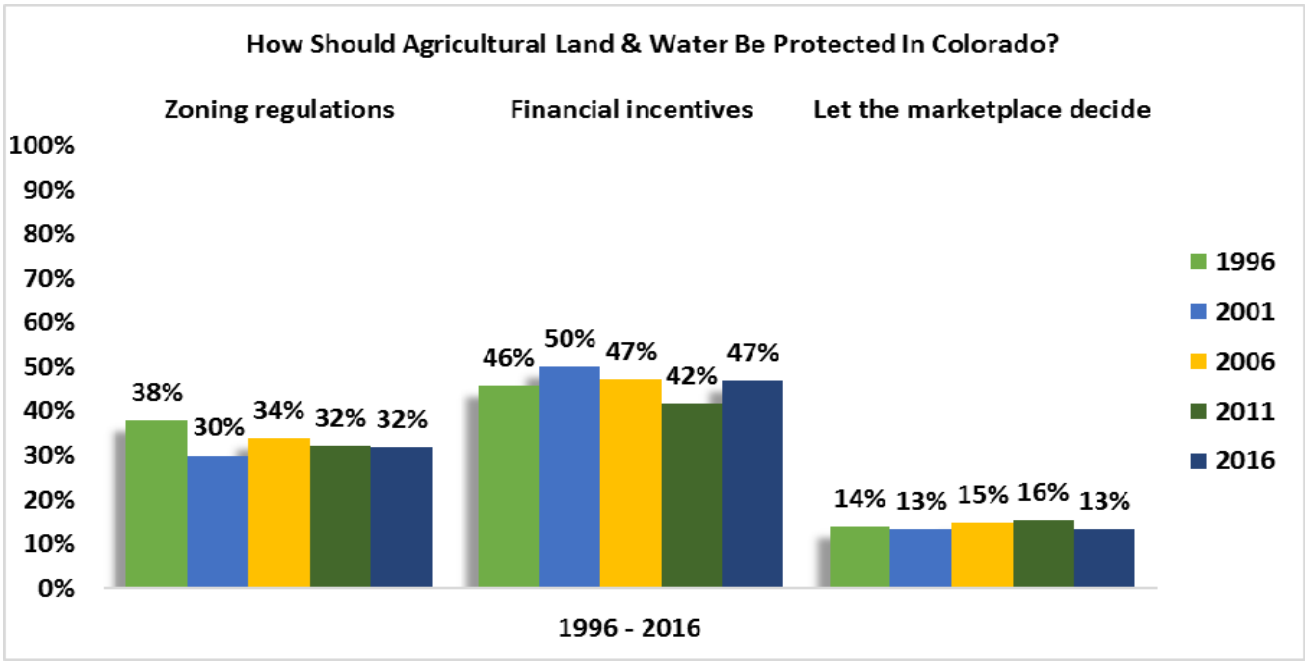


Figure 3. Methods for protecting Colorado’s agricultural land and water

Since 1996, the proportion of respondents who believe that markets will not adequately protect agricultural land and water has remained relatively unchanged, as has the proportion who believes financial incentives are most effective. This aligns with how voters have agreed to fund conservation measures at all levels of government since 1996, and with how respondents answered a survey question about public funding for the purchase of development rights.

2016 survey respondents with a background in agriculture were more inclined to believe in using financial incentives to protect agricultural lands, compared to those who had never lived on a farm or ranch (see Figure 4). On the other hand, those without a background in agriculture believed a bit more strongly in using regulation to protect agricultural lands (32.2% to 29.6%), and only about 13% of each group felt that markets would keep agricultural lands in production.

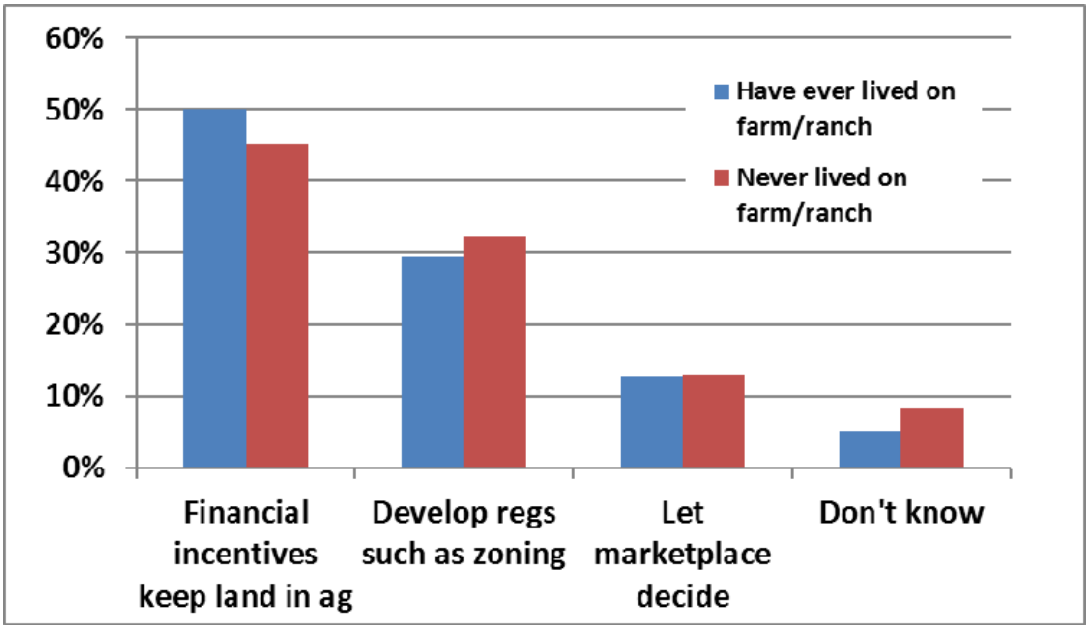


Figure 4. Respondents' background in agriculture as it influences methods preferred to protect agricultural land and water

In addition, those who felt that agriculture was the most important economic sector for Colorado's long-term future also felt more strongly about the tools that should be employed to protect the agricultural resource base. For example, Table 2 below shows that, although both categories of respondents ranked financial incentives the highest, a greater proportion of those who feel agriculture is the most important sector advocated for financial incentives (nearly 53% compared to 45% of those who don't see a long-term future for ag). On the other hand, those who valued agriculture more as an economic sector also didn't believe that market transactions could adequately protect agricultural resources (nearly 9% compared to 14% of the latter group). Furthermore, there was more uncertainty about which approach should be used among those who don't value agriculture as an economic driver in Colorado (8.5% said they didn't know which method to advocate, compared to 3.4%). Lastly, 76% of those who valued agriculture more also thought that open space programs should be used to minimize farm and ranch land loss, compared to 67% of those who valued agricultural land less, again reinforcing that group's focus preference for financial incentives.

Experience in agriculture also shaped respondents' priorities about how land and water should be protected, and a greater proportion prefer financial incentives (50%) to regulations (30%), as one would expect since regulations can restrict activities for some agricultural operations.

Table 2. Methods for protecting agricultural land and water

	Think ag is most important sector		Have ever lived on a farm/ranch		All respondents
	No	Yes	No	Yes	
Financial incentives keep land in ag	45.1%	52.7%	45.3%	50.0%	46.2%
Develop regulations such as zoning	30.9%	33.8%	32.2%	29.6%	31.3%
Let marketplace decide	14.0%	8.8%	13.0%	12.8%	13.2%
Don't know	8.5%	3.4%	8.4%	5.1%	7.7%

Since 2001, the majority of Coloradans have consistently believed that open space programs are a part of protecting agricultural landscapes, with 86% agreeing, up from 83% in 2011 (see Figure 5).

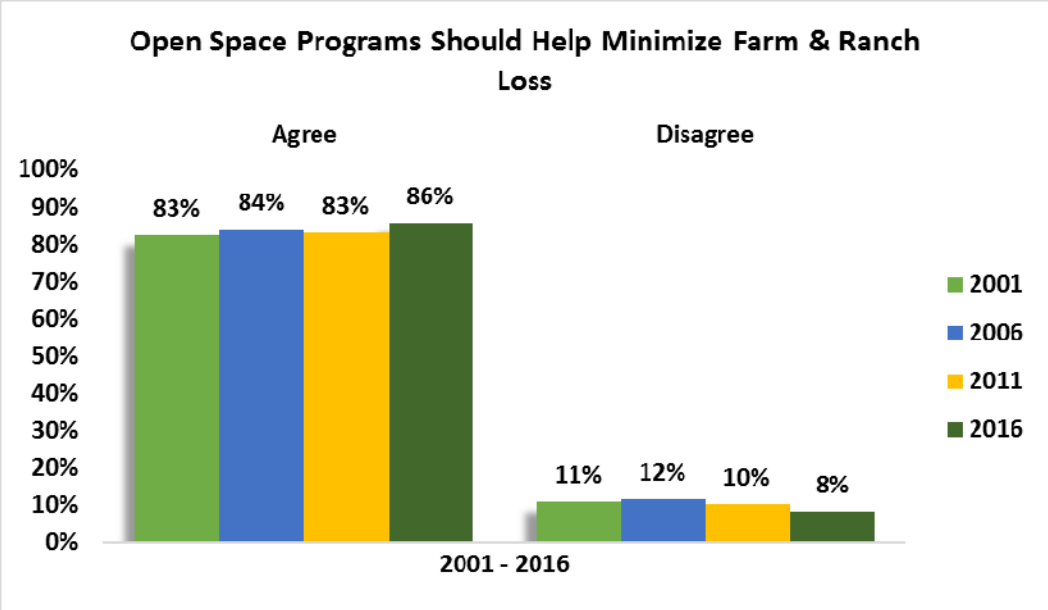


Figure 5. Using open space programs to protect agricultural land

The purchase of development rights has been an important agricultural land protection tool, and one that keeps working lands available for production. As a financial incentive for land protection, an increasing number of respondents indicated that the purchase of development rights using public funds is a reasonable way to protect agricultural land. Such programs pay farmers and ranchers to keep their land available for agriculture by selling an agricultural conservation easement to a qualified public agency or private conservation organization. Landowners retain full ownership and use of their land for agricultural purposes, but development rights are extinguished in exchange for compensation.

Figure 6 shows that, in 2016, 83% of survey respondents felt that purchasing development rights was a reasonable way to protect agricultural land, with only 12% disagreeing.

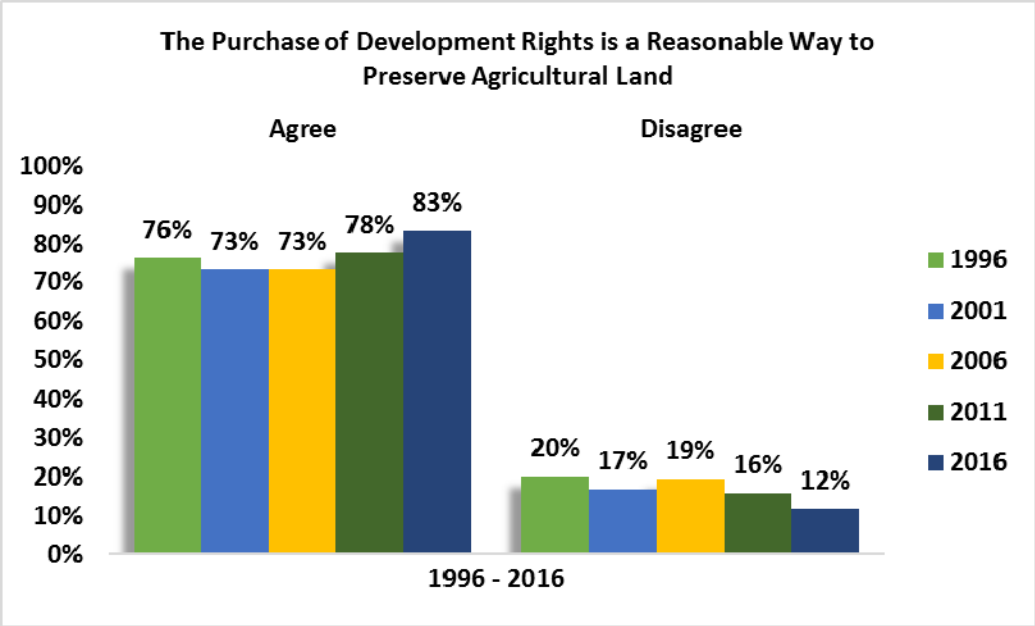


Figure 6. Purchase of development rights for agricultural land protection

Water resources and the future of agriculture

Colorado's Water Plan, approved by the Governor in 2015, finds that one of the state's key challenges is the drying up of water traditionally used in agriculture. The report finds that:

> The purchase and permanent transfer of agricultural water rights from willing sellers, which is accommodated by Colorado water law and local control structure, are diminishing irrigated agriculture. At the current rate, there will be a major reduction in Colorado's agricultural lands in the future. This will impact Colorado's economy and food security. In addition, agriculture-dependent communities risk drying up alongside their agricultural economies.[3]

An objective of this plan is to ensure that agricultural economic productivity keeps pace with state, national and global needs, in part by sharing a minimum of 50,000 acre-feet of agricultural water by 2030, using alternative transfer methods.[4]

By highlighting the threats to agriculture and the specific means to ensure water remains available for production agriculture, the state of Colorado has placed a high priority on protecting water resources. Knowing the state's water resources are finite, survey respondents were asked how they would allocate water in a dry year. In first priority they chose agriculture (68%-down from 77% in 2011 and the lowest prioritization to date); in-stream flow levels for wildlife (19%-up from 9% in 2011); lawns and landscaping (6%-up from 3% in 2011); and rafting and fishing (2%-down slightly from 3% in 2011). Responses were similar when respondents were asked to select the second priority for water in a dry year, and 58% chose in-stream flows. Lawns and landscaping and rafting and fishing were still very low priority uses, while agriculture was selected by 22%. Lastly, the third priority use selected by the majority of respondents was rafting and fishing (44%), followed by lawns and landscaping (29%). Figure 7 shows that agriculture does receive the

[3]From Colorado's Water Plan, Executive Summary, 2014. https://www.colorado.gov/pacific/sites/default/files/CWP-ExSum-2104-Spreads-Web.pdf.
[4]Colorado's Water Plan Implementation Update. November 2016. http://cwcbweblink.state.co.us/weblink/0/doc/201180/Electronic.aspx?searchid=ce48bd66-7dd8-4cf5-8eed-d64dac575ab3.

highest allocation in a dry year, when compared to how respondents prioritized water for other uses.

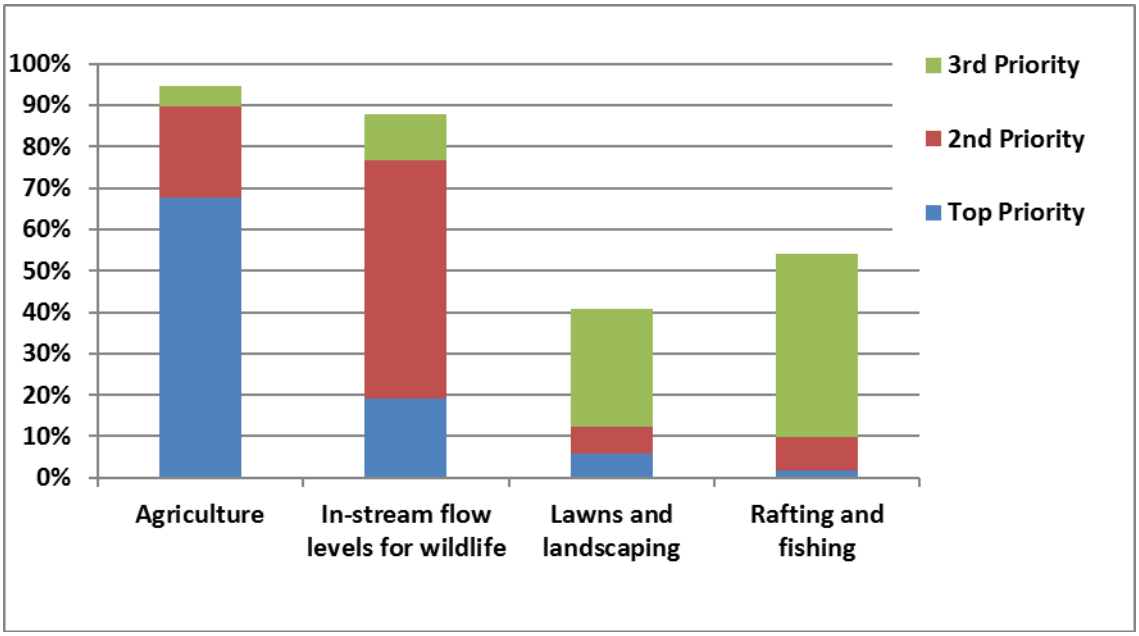


Figure 7. Priorities for water use allocation in dry years, 2016 survey responses

Table 3 shows that the length of residency in Colorado has an impact on how people would allocate water to agriculture in a dry year. For example, nearly two-thirds of those newest to the state would allocate water to agriculture in first priority, compared to three quarters of Coloradans or those who have lived in-state for more than 20 years. Overall, the longer a respondent lived in-state, the more likely s/he was to accord agriculture a higher priority ranking in a water-deficit year.

Table 3. Agriculture's priority ranking for water use allocation in a dry year, by length of time 2016 survey respondents have lived in Colorado

Agriculture's priority in a dry year	Years lived in Colorado				
	Fewer than 5 years	6-10 years	11-20 years	>20 years	Colorado native
1st priority	61.7%	66.0%	72.3%	75.4%	75.3%
2nd priority	30.5%	29.0%	20.9%	20.9%	20.0%
3rd priority	7.8%	5.0%	6.8%	3.7%	4.7%

In alignment with results discussed earlier in this factsheet and prior years' surveys, the 2016 survey shows that nearly 70% of Coloradans agree that agricultural practices to conserve soil and water are effective, and 86% agree that public funds should be used to protect these resources.

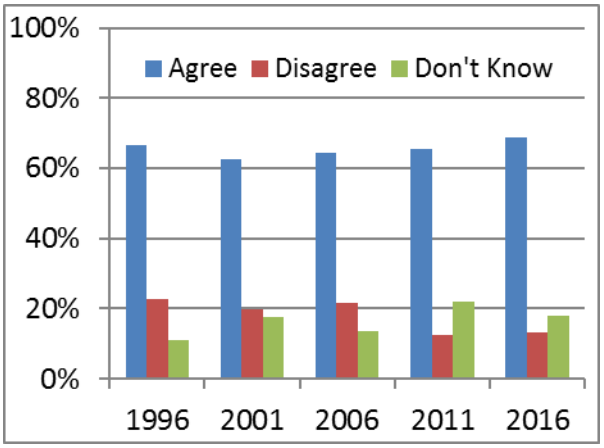
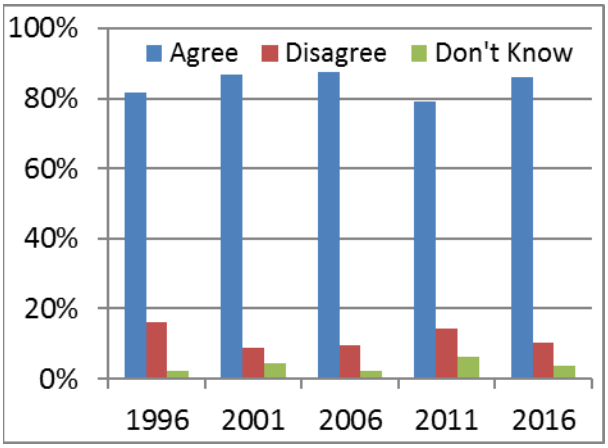


Figure 8.

Respondents' agreement with effectiveness of agricultural practices to conserve soil and water



Respondents' agreement with using public funds to protect agricultural resources

It is interesting to note that, since 2011, fewer respondents have disagreed with how agriculture may conserve water and soil, and only 10% disagreed with using public funds to protect these resources. This is in contrast to responses to a broader question about how responsible Colorado agriculture has been in protecting the environment, where only 9% said agriculture is almost always responsible and 49% indicated that agriculture is usually responsible. Nearly 30% of all respondents feel that agriculture is only "sometimes" responsible for environmental protection (see Table 4 below).

Table 4. Coloradans' perceptions of agriculture's role in environmental protection

	1996	2001	2006	2011	2016
Almost always responsible	16%	22%	16%	8%	9%
Usually responsible	44%	38%	41%	46%	49%
Sometimes responsible	29%	20%	27%	30%	28%
Almost never responsible	2%	4%	5%	2%	3%
Don't know	10%	16%	11%	14%	12%

Lastly, the 2016 data reveal that those respondents who had once lived on a farm or ranch were slightly more likely to feel that agriculture was usually or always responsible in terms of environmental protection, compared to those who had never lived on a farm or ranch (see Figure 9). Although more respondents with no background in farming or ranching stated agriculture was sometimes responsible, a greater proportion of those with direct agricultural experience thought the sector was almost never responsible. Finally, a greater percentage with no agricultural experience stated that they didn't know (13% compared to 6.6%).

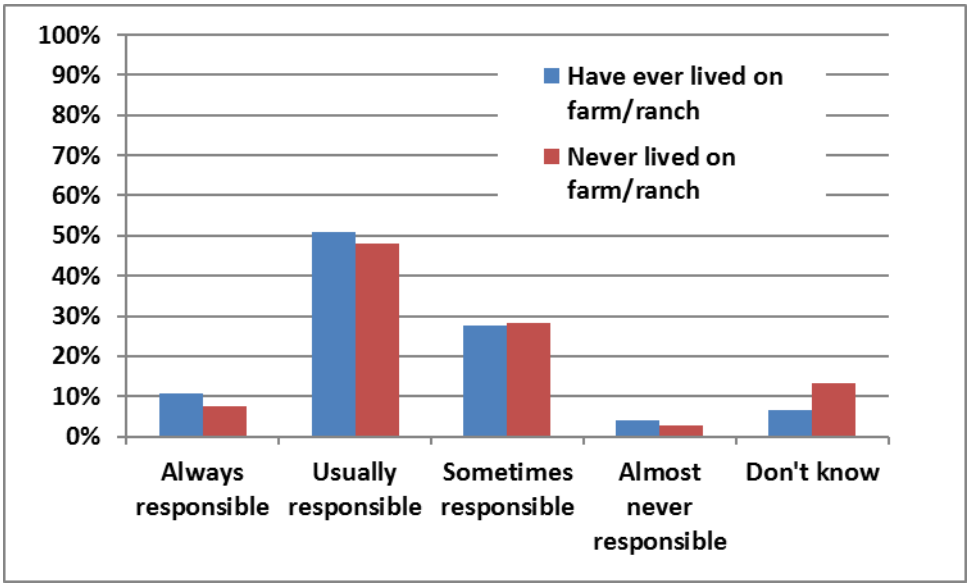


Figure 9. Perceptions of agriculture's role in environmental protection by experience in agriculture

Study Implications

Clearly open space is a critical value for Coloradans. In fact, Colorado is a relative leader in the US in terms of generating conservation funding for land protection, with much of it dedicated to open space. According to the Trust for Public Land, Colorado is third in the nation for the total number of measures passed to support land conservation; 6th in the amount of total funds approved by voters; and 5th in the total amount of conservation funding approved.

Table 5 below provides an overview of land protection funding across the state of Colorado, as summarized by the Trust for Public Land. These data show that Colorado voters have passed between two-thirds and three-quarters of any legislation that features land acquisition and protection. Overall, 80% of all legislation on land conservation has gone directly to acquisition and protection, except in the case of special districts, where there has been more funding available for capital improvements.

Table 5. Coloradans' support for land conservation, 1996-2016

	Proposed	Total funds approved	Conservation funds approved	Passed	% Pass	% of total funding targeted to conservation
State of Colorado	3	$715,000,000	$715,000,000	2	67%	100%
County	61	$2,922,774,117	$2,392,257,567	46	75%	82%
Municipal	95	$1,874,359,404	$1,332,463,286	72	76%	71%
Special District	19	$143,000,000	$68,675,000	12	63%	48%
Totals	**178**	**$5,655,133,521**	**$4,508,395,853**	**132**	**74%**	**80%**

Although the 2016 survey results show support for keeping land in agriculture, its value as open space appears to have trumped its value for food production. Colorado residents responded that they are willing to support a variety of policies, programs, and investments so that the state continues to benefit from open space. Almost half of Coloradans have been and continue to be willing to use financial tools to protect the state's agricultural land and water. Since 1996, the proportion of respondents who believe that markets will not adequately protect agriculture land and water has remained relatively unchanged, as has the proportion who believes financial incentives are most effective. Furthermore, the majority of Coloradans have consistently believed that open space programs are a part of protecting agricultural landscapes, with 86% agreeing, up from 83% in 2011.

At the state level, Colorado has protected 711,741 acres using $192.5 million to purchase land through fee simple acquisitions and easement purchases on agricultural lands.[5] Local governments have used a variety of funding sources to purchase easements including bonds, local government contributions, private contributions, sales and use taxes and property taxes to protect well over 80,000 acres of agricultural land, since the inception of these programs.[6]

Understanding the multiple and publicly supported values that Coloradans hold for agricultural land—open space, food production, and other values—does provide some important information for policymakers. The fact that Coloradans recognize that agricultural resources do provide multiple public benefits means that local and state policymakers can use a range of approaches and tools—from taxes and other funding mechanisms to purchase land and/or development rights, and land use tools such as transfers of development rights. This increases the opportunities to keep productive agricultural land from being converted to uses that are not aligned with residents' values and attitudes.

Acknowledgements

The Colorado Department of Agriculture and Colorado State University wish to thank the Colorado Fruit and Vegetable Growers Association, Colorado citizens and all other partners of Colorado agriculture whose support helped make this study possible. For the full report, see https://www.colorado.gov/pacific/sites/default/files/2016%20Public%20Attitudes%20Report%20Final.pdf.

[5]American Farmland Trust. 2016. State of State PACE programs. http://www.farmlandinfo.org/sites/default/files/State_Purchase_of_Agricultural_Conservation_Easement_Programs_2016_AFT_FIC_09-16.pdf.
[6]American Farmland Trust. 2016. State of Local PACE Programs. http://www.farmlandinfo.org/sites/default/files/Local_Purchase_of_Agricultural_Conservation_Easement_Programs_2016_AFT_FIC_0.pdf.