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## Production and Farm Management Report

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### WATER LEASING: OPPORTUNITIES AND CHALLENGES FOR COLORADO'S SOUTH PLATTE BASIN <sup>1</sup>

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#### Study Purpose and Methods

Population growth and urbanization are increasing municipal water demand in Colorado. Agricultural water is a preferred source for meeting growing demands, but permanent water transfers often require formerly irrigated land to be fallowed, thus removing a key industry from the regional economy. One alternative that is gaining interest allows farmers to lease a portion of their water portfolio to cities. Water is made available for lease as farmers fallow their land on a rotational basis or reduce the consumptive use of their cropping operations by limiting irrigation.

However, leasing of this type is rare in Colorado, and it is uncertain if leasing markets will evolve. A leasing market's success or failure will have much to do with farmers' attitudes about leasing. To examine the viability of water leases from the perspective of agricultural water right holders, a questionnaire was mailed to farmers in Colorado's South Platte River Basin. The survey was scored using a Likert scale, where the extent of agreement with a statement was

indicated by selection of one of five responses: *strongly disagree*, *disagree*, *neither agree nor disagree*, *agree*, or *strongly agree*.

#### Results

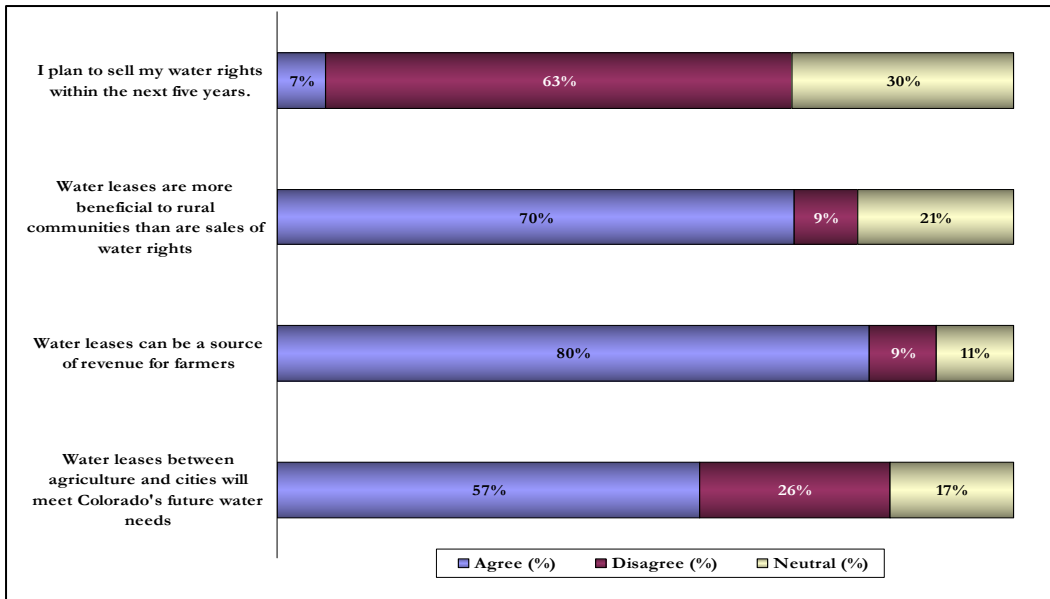
Figure 1 displays respondents' general beliefs regarding the possibility of water leases. Fewer than 7% of respondents expect to sell their water rights within 5 years, which is encouraging—if water sales were *more* likely, the chance of successful water leasing arrangements between farmers and water providers would be *less* likely. The majority of respondents believe that water leases can be a source of revenue for farmers and that water leases are more beneficial to rural communities than are water sales. A smaller majority agrees that water leases will help meet Colorado's future water needs.

Figure 2 displays respondents' individual willingness to participate in water lease arrangements. 61% of respondents would be willing to lease, rather than sell, their water. While rotational fallowing is acceptable to

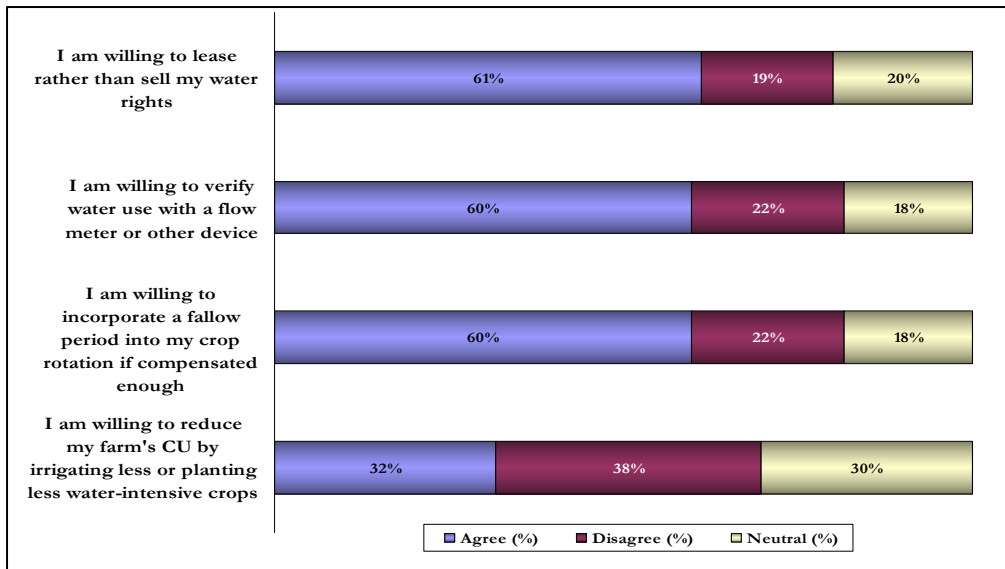
<sup>1</sup> This project was supported by the National Research Initiative of the Cooperative State Research, Education and Extension Service, USDA, Grant # 2006-55618-17012, the Colorado Agriculture Experiment Station and a cooperative agreement with the Parker Water and Sanitation District.

<sup>2</sup> Authors are all from Colorado State University and include Jennifer Thorvaldson, Ph.D. candidate, James Pritchett, Ph.D., and Ajay Jha, Ph.D., Department of Agricultural and Resource Economics; Neil Hansen, Ph.D., Department of Soil and Crop Sciences.

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**Figure 1: Respondents' General Attitudes toward Water Leases**



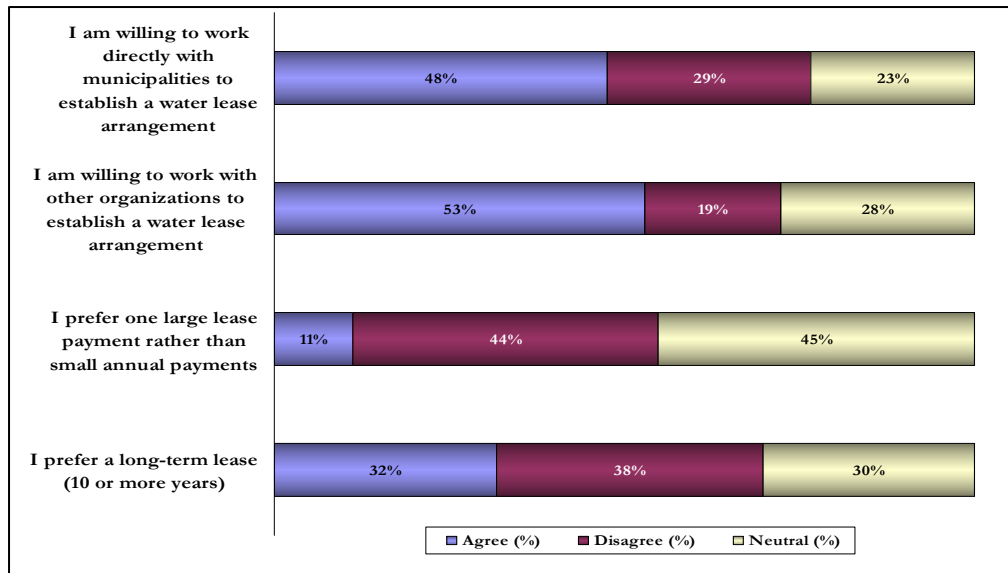
**Figure 2: Respondents' Willingness to Enter into a Lease Agreement**

63% of respondents, fewer respondents are willing to adopt limited irrigation strategies, perhaps because the agronomical and financial ramifications of such programs are less familiar and less certain. Additionally, limited irrigation programs may require more intense management.

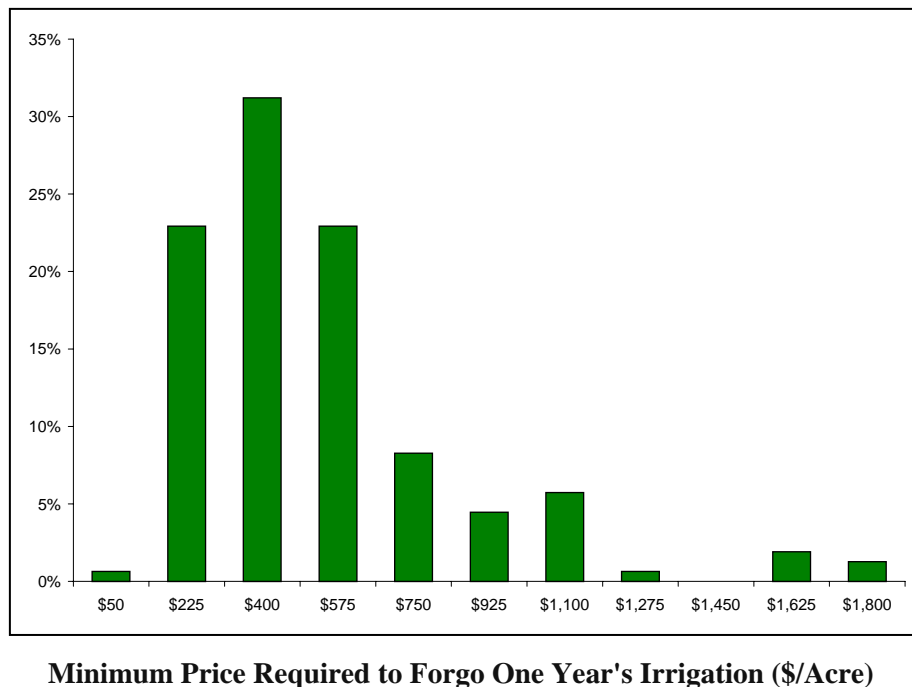
Figure 3 displays some of the lease provisions desired by respondents. While less than half of all respondents are willing to negotiate directly with a municipality, a greater percentage of respondents are willing to negotiate with other organizations. More respondents prefer smaller annual payments rather than one large payment, while they are evenly split in their preferences regarding the length of the lease.

Figure 4 displays the *minimum* price respondents would have to be paid in order to forgo irrigation for one year as part of a leasing arrangement. The vast majority of responses populate an interval between \$225 per acre and \$575 per acre—amounts that are consistent with those being paid by the few existing lease programs in Colorado.

Figure 5 displays the percent of water respondents would be willing to commit to an annual lease and the percent of land that would be followed as a result. Respondents tend to cluster into two groups – those who are willing to commit all of their land and water to a lease and those who are willing to commit half of their holdings or less to a lease.

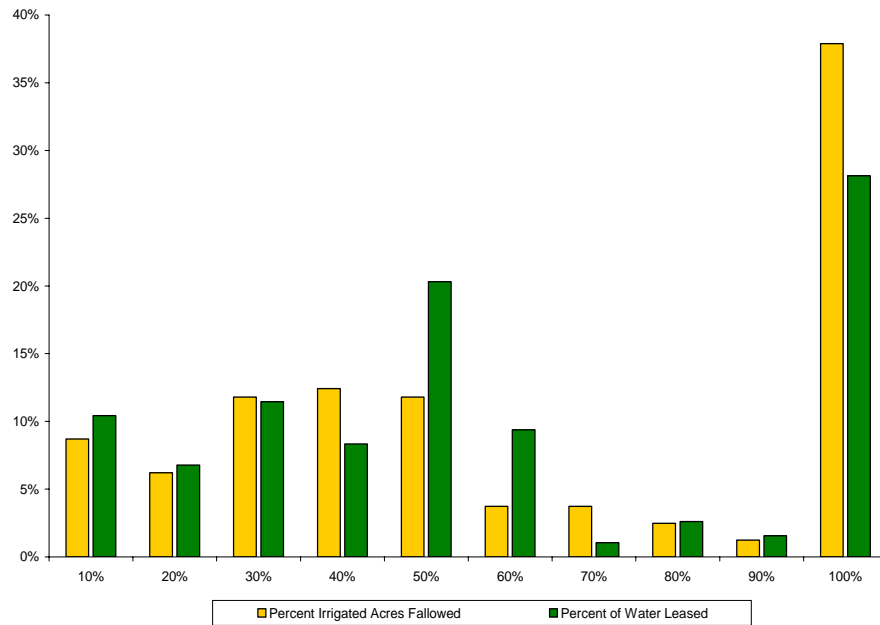


**Figure 3: Respondents' Lease Preferences**



**Minimum Price Required to Forgo One Year's Irrigation (\$/Acre)**

**Figure 4: Minimum Lease Payment Respondents Seek for Forgoing One Year's Irrigation**



**Percent Land Fallowed and Water Leased**

**Figure 5: Percent of Acres Fallowed and Percent of Water Supplies Committed to an Annual Lease**

It is encouraging that one-third of respondents are willing to lease all of their water—this provides evidence that there would be sufficient water supplied to make the transaction economically viable. At the same time, it is encouraging that not all respondents fall into this cluster, as that would leave little water in agriculture. Respondents in the left-hand cluster are likely to stay in farming, which will provide economic activity and help avoid the ‘hot spot’ problem of concentrated clusters of acres taken out of irrigation.

On average, respondents will fallow 200 acres per respondent. In total, respondents indicated they would fallow 33,352 acres. This would free between 50,000 and 67,000 AF of water annually,<sup>3</sup> an amount that is likely sufficient to make leasing a viable option for cities.

**Conclusions and Opportunities for Further Research**

Reallocation of water from agricultural to municipal use is inevitable given the rapid population growth of

the heavily urbanized West. These water transfers are controversial largely because they may fallow large swaths of irrigated lands that often make up a significant portion of the local rural economic base. In place of these ‘buy and dry’ transfers, stakeholders are interested in the opportunity to create water leasing markets to partially meet future demands.

Analysis of the stated preferences of South Platte farmers indicates that a significant amount of water may be leased at a reasonable price. However, before leasing markets evolve in the South Platte Basin, the willingness-to-pay of municipal water suppliers needs to be revealed and the transactions costs of leasing markets needed to be examined. Transactions costs have been measured by Colby (1990) but an update is needed to determine if leasing arrangements incur the same costs as permanent water transfers.

<sup>3</sup> Actual amount will depend on how water courts evaluate their historical consumptive use.