

Nonpecuniary Effects on Farmer Behavior: Evidence from Washington State Farmers with Surface Water Irrigation

Both monetary and nonpecuniary (i.e. non-monetary) benefits of farming play a role in farmer behavior. Farmers who agree more to receiving social and lifestyle benefits from farming are more likely to continue farming in the next 10 years while those with over 1000 acres of farmland are more likely to participate in water markets as buyers or sellers. These findings are useful to understand the farmer's decision-making behavior in the Western US.

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This research highlight is based on a published work (see last page).



Climate change puts additional pressure on the limited water supplies in the Western United States (US). Most of the water in this region goes to agriculture so it is important to understand farmers' choices as they are the central drivers of water use. Farmers can participate in financially lucrative water markets to alleviate the pressure on limited water supplies, but market participation means the farmer will no longer be able to farm. As such nonpecuniary benefits of farming often keep farmers in the field rather than participating in markets. Nonpecuniary benefits are non-monetary benefits from operating a farm that impacts

individual utility and may explain why some choose to farm despite more profitable opportunities such as water trading and off-farm labor being available. There is a lack of research on the effect of nonpecuniary benefits on the behavior of farmers who irrigate and are in the western US, so this work examines the relationship between nonpecuniary benefits of farming and farmers' decisions regarding (1) increasing future production, (2) remaining in farming, (3) holding an off-farm job, and (4) participating in water markets.

This work ran an online survey for Washington State farmers with

surface water rights. From March to May 2023, farmers who are surface water right holders registered in one of four Washington basins were recruited to participate in the experiment: Methow, Okanogan, Walla Walla, and Yakima. Informational materials were mailed to farmers inviting them to complete the survey and 105 people participated. Participants were given 22 statements and asked to indicate to what extent they agreed or disagreed with them on a scale from 1 (completely disagree) to 7 (completely agree). The statements were designed to cover a wide range of pecuniary and nonpecuniary benefits of farming

(see Table 1). Most farmers somewhat agree (mean greater than 6) that farming communities are a great place to live and raise children. These statements classify as nonpecuniary benefits of farming. Respondents slightly agree (mean greater than 5) that farmers look out for each other, and being your own boss is the best thing about farming. They slightly disagree that they make a good living from farming (mean=3.90), farming is hard work but the financial rewards make it worthwhile (mean=3.77), and there are substantial monetary rewards from farm work (mean =3.32). Farmer decisions and demographic information were asked at the end of the survey.

Results were analyzed to examine the association between farmer demographics and variables on real world farmer behaviors: (1) increasing farm production in the next 3 years, (2) planning to keep farming in the next 10 years, (3) currently holding an off-farm job in addition to farming, and (4) participating in leasing or selling water rights in the past.

Results suggest that both pecuniary and nonpecuniary benefits play a role in farmer behavior. First, the analysis finds that farmers with successors are significantly more likely to increase future farm production over the next three years. Farmers with a high income (greater than \$100,000 annual household

income) and receive social and lifestyle benefits from farming are more likely to continue farming in the next 10 years. In the Western US, only 58 percent of farmers do not have off-farm jobs. This work finds that farmers over 60 years old with high income and more full-time employees are less likely to have an off-farm job.

Participants with smaller farms are more likely to have a job off-farm and less likely to continue farming in the next ten years. Participants with farms with over 1000 acres are significantly more likely to participate in water markets. These farmers may be buyers or sellers. The authors speculate large farmers may be participating in water markets more often than others as buyers.

Table 1: Benefits of Irrigated Farming

Statements given that farmers responded with 1 (completely disagree) to 7 (completely agree)		
	N	Mean (sd)
1. I believe a rural environment is a great place to raise children	105	6.58 (0.89)
2. Growing up on a farm is great for children	105	6.59 (0.79)
3. I enjoy the peace and quiet that comes with farming	105	6.55 (1.00)
4. I love working outdoors	105	6.59 (0.98)
5. I think farming communities are a great place to live	105	6.37 (0.99)
6. It's great being able to work with nature	105	6.60 (1.00)
7. I believe being your own boss is the best thing about farming	105	5.93 (1.09)
8. Farming is more rewarding in terms of quality of life, independence, lifestyle, than it is in terms of money	105	5.93 (1.01)
9. I feel like farmers look out for each other	105	5.71 (1.14)
10. I talk regularly with other farmers about farming	105	5.30 (1.44)
11. I do not make a fortune farming, but the lifestyle is great	105	5.97 (1.16)
12. I think people living in rural areas are generally nicer than those living in urban areas	105	5.52 (1.39)
13. I enjoy farming much more than I would other potential sources of employment	105	5.22 (1.34)
14. Being able to talk with other farmers is the best thing about farming	105	4.12 (1.41)
15. I could make more money in other employment, but I would miss farming	105	4.78 (1.46)
16. I make a good living from farming	105	3.90 (1.75)
17. Farming is hard work, but the financial rewards make it worthwhile	105	3.77 (1.60)
18. There are substantial monetary rewards from my farm work	105	3.32 (1.61)
19. Owning my own land is important to me	105	6.72 (0.60)
20. My neighbors would be upset with me if I leased or sold water rights	100	4.45 (1.77)
21. None of my friends or neighbors have a positive view about selling or leasing their water right	100	4.59 (1.52)

People farm for a variety of reasons and not all farming decisions are profit-driven. Therefore it is important to look at more than income or pecuniary benefits of farming when examining farmer decisions and utility. This study shows nonpecuniary benefits also play a role in farmer behavior and utility maximization in Washington state. For example, higher income was not significantly correlated with a farmer increasing production over the next three years but having a farm successor was significantly correlated. Also, farmers with higher income and who enjoyed social and lifestyle factors of rural communities were more likely to continue farming in the next 10 years. Therefore, nonpecuniary benefits of farming should be taken into consideration when enacting programs to conserve land and participate in water markets that take people away from actively farming their cropland.

An irrigation pipe and wheel on a Washington farm



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Full paper available at:

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