



Survey on
**WATER
MANAGEMENT**
in Washington State

FOR REVIEW PURPOSES ONLY
To complete the survey, please
contact joe.cook@wsu.edu

**This version is for growers
operating within irrigation
districts. Water rights holders
should use other version.**



WASHINGTON STATE
UNIVERSITY



United States Department of Agriculture
National Institute of Food and Agriculture



Section 1: Introduction

Before you begin, we want to make sure that our information is correct. As we mentioned, this survey is being sent to people who have surface water rights or farm within irrigation districts.

1.1 Do you irrigate your farm or operation with water provided by a water purveyor, such as an irrigation district, irrigation company or irrigation association?

(1) Yes

(2) No

1.2 Do you or a member of your household or business have a surface water right filed with the State? When we refer to a “water right”, we are referring to a claim, permit, or certificate.

(1) Yes

(2) No

If you answered **No for both of these questions**, we seem to have sent you a survey in error. You do not need to complete the remainder of the survey, but please do send it back in the enclosed envelope. Thank you for your time.

1.3 Where do you farm with water provided by a water purveyor, such as an irrigation district? (**MARK ALL THAT APPLY**)

(1) Walla Walla Basin

(2) Okanogan/Methow Basin

(3) Yakima Basin

1.4 Where is your **largest** farm operated with water provided by a water purveyor?

(1) Walla Walla Basin

(2) Okanogan/Methow Basin

(3) Yakima Basin

When the survey refers to “your Basin”, please think about the Basin where you have the largest farm operated with water provided by a water purveyor.

Section 2. Water management tools: long-range forecasting

We would now like to ask a series of questions about “long-range” forecasts. By “long-range forecasts”, we mean forecasts of like precipitation, snowpack, temperature, and water availability for the coming 1 to 7 months.

2.1 Do you plan to use long-range forecasts to make production decisions like planting, irrigating, and pesticide application for the upcoming 2020 growing season?

- (1) ___ Yes (*skip the next question to text starting “Forecasts are provided...”*)
- (2) ___ No

2.2 Why do you not plan to use forecasts for the upcoming growing season? (*check all that apply*)

- (1) ___ My production decisions don’t depend on weather-related factors.
- (2) ___ The forecasts are not accurate enough.
- (3) ___ The forecasts are not provided for the measures or metrics that matter for me.
- (4) ___ Forecasts are not available covering the period of time that matters to me.
- (5) ___ Other, specify: _____

SKIP TO SECTION 3

2.3 Forecasts relevant to irrigated agricultural production are provided for various metrics. From the list below, choose two metrics that are most important to you.

- Water for irrigation
- Frost
- Precipitation
- Temperature

Write those two metrics into the first column. Then, for each of these top two metrics, circle the month you would like to receive the forecast and draw a box around the months you would like the forecast to apply to. The example below shows how you would fill the table in if you want a forecast in March for irrigation water availability April through September.

Metric (fill in below)												
Water for irrig	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

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2.4 What forecasting resources do you use for production planning? *Mark all that apply.*

- (1) ___ Public sector/government services (e.g. National Weather Service, NW River Forecast Center, Dept. of Ecology)
- (2) ___ WSU AgWeatherNet or WSU Decision Aid System
- (3) ___ Professional forecasting consultants
- (4) ___ Your own expertise, knowledge, and observations
- (5) ___ Other, specify: _____

2.5 How satisfied are you with the current accuracy of available forecasting resources that you use?

- (1) ___ Very Unsatisfied
- (2) ___ Unsatisfied
- (3) ___ Neutral
- (4) ___ Satisfied
- (5) ___ Very Satisfied

2.6 How satisfied are you with the timing of forecasts (what time of the year it is made available) from available forecasting tools that you use?

- (1) ___ Very Unsatisfied
- (2) ___ Unsatisfied
- (3) ___ Neutral
- (4) ___ Satisfied
- (5) ___ Very Satisfied

2.7 There is always uncertainty in any forecast, and this uncertainty can be communicated in different ways. Using the chance of rain as an example, which of the formats shown below do you prefer?

- (1) ___ There is an 80% chance of rain tomorrow.
- (2) ___ There is a 4 in 5 chance of rain tomorrow.
- (3) ___ Odds are 4 out of 5 that it will rain tomorrow.
- (4) ___ There is a strong likelihood of rain tomorrow.
- (5) ___ Other, specify _____

2.8 Rank the following improvements to current water availability forecasts from most important to least important. Write a `1' next to the most important improvement and a `3' next to the least important.

- (1) ___ a forecast made earlier in the year
- (2) ___ a forecast that extends further into the growing season
- (3) ___ forecast made more frequently.

2.9 Is there some other aspect of the forecast that is important to you that you would like to tell us about? If so, please tell us below:

Section 3: Estimating consumptive use

3.1 Do you estimate your consumptive use? (note that CU measurement is not necessarily the same as metered diversions).

- (1) ___ Yes
- (2) ___ No, but I would be interested in estimating this (*skip next two questions*)
- (3) ___ No, and I am not interested in estimating this (*skip to SECTION 4*)
- (4) ___ I don't know what consumptive use is (*skip to SECTION 4*)

3.2 How do you estimate consumptive use?

- (1) ___ Washington Irrigation Guide
- (2) ___ Weather-based Evapotranspiration estimates
- (3) ___ Soil water balance using soil moisture sensors
- (4) ___ Assume consumptive use is applied irrigation or a fraction of it (e.g application efficiency)
- (5) ___ Consulting firm that uses drones or other aerial images
- (6) ___ Other, specify _____

3.3 What is the most important reason you are estimating consumptive use?

- (1) ___ To improve on-farm water use efficiency (*skip next question*)
- (2) ___ To establish water use history in preparation for a possible future transfer (*skip next question*)
- (3) ___ To establish water use history to maintain current water right (*skip next question*)
- (4) ___ Other, specify _____

3.4 What is the most important way that improved estimates of consumptive use could help you?

- (1) ___ Improving irrigation scheduling over growing season
- (2) ___ Improving uniformity of irrigation application
- (3) ___ Identifying irrigation systems issues (e.g. plugged emitters, low pressure areas)
- (4) ___ Other, specify _____

Section 4: Water Transfers

One approach to managing droughts is the transfer of water rights from one water user to another, including within irrigation districts. There are many variations in the form that these transfers might take, including temporary leases and permanent sales.

4.1 How would you describe your current level of comfort buying, selling, or leasing water? (1)___ Very comfortable (2)___Somewhat comfortable (3)___Not comfortable at all (4)___Don't know

4.2 For each type of water transfer in the table below, please report whether you are familiar with this type (Column A), and whether you have ever participated in this type of transfer (Column B). If you have participated, please tell us approximately how many transactions you have participated in over the course of your career (Column C).

	Col A. Familiar?	Col. B. Ever participated?	Col. C. Approximate number of transactions over your career.
Permanent transfers of an irrigation allotment	___Yes ___No	___Yes ___No	
Moving water to other fields you operate in a different part of the district	___Yes ___No	___Yes ___No	
Rotational agreement (you and neighbor combine allotments; you use on even days, neighbor uses on odd days, split season or something similar)	___Yes ___No	___Yes ___No	
Other, describe:	___Yes ___No	___Yes ___No	

IF YOU HAVE NEVER PARTICIPATED IN A WATER TRANSFER (No to all questions in column B), SKIP TO QUESTION 4.6

4.3 You mentioned that you have participated in a water transfer. Please think about your most recent water transfer. How were you connected with the buyer or seller for that transfer?

- (1)___ Buyer/seller approached me directly
- (2)___ Found buyer/seller through a consulting firm or broker
- (3)___ Found buyer/seller through a water rights attorney
- (4)___ Found buyer/seller through word of mouth
- (5)___ Found buyer/seller through a listing posted on a physical bulletin board or online
- (6)___ Other. How? _____

4.4 How satisfied were you with the transaction?

- (1)___ Very Unsatisfied
- (2)___ Somewhat Unsatisfied
- (3)___ Neutral
- (4)___ Somewhat Satisfied
- (5)___ Very Satisfied

4.5 What were the main challenges you faced in conducting that transfer? (*check all that apply*)

- (1)___ Regulatory hurdles
 - (2)___ Risk of water rights relinquishment
 - (3)___ Professional/legal costs
 - (4)___ Quantification of water right
 - (5)___ Pricing or understanding the value of water rights
 - (6)___ Supply risk/uncertainty in water availability
 - (7)___ Identifying an interested party to transfer with
 - (8)___ Participation in grower contract that limits my flexibility
 - (9)___ Constraints from my lender
 - (10)___ Don't know; I have never attempted any water rights transfers
 - (11)___ Don't know; I used the services of a third-party consultant
 - (12)___ Uncertainty about how to quantify and document my consumptive use
 - (13)___ Other, please describe:
-

4.6 Looking forward in time, if you were to explore acquiring or selling a district water allocation, whom would you contact to help you find other buyers and sellers? (check all that apply)

- (1)___Neighbors
- (2)___Your irrigation district
- (3)___Water lawyer
- (4)___Local elected official
- (5)___Consulting firm
- (6)___Other, specify _____
- (7)___Don't know

Different people have different opinions about water markets and water transfers. Please evaluate each of the following statements for whether you agree or disagree. There are no right or wrong answers.

4.7 Water should be put to use according to the desires of the owners of water rights.

- (1)___Strongly disagree
- (2)___Disagree
- (3)___Neither agree nor disagree
- (4)___Agree
- (5)___Strongly agree

4.8 Water transfers that involve water leaving the County should be prohibited, regardless of how valuable the water may be to users outside the Basin.

- (1)___Strongly disagree
- (2)___Disagree
- (3)___Neither agree nor disagree
- (4)___Agree
- (5)___Strongly agree

Receiving information about water transfers

4.9 In what format would you prefer to receive information about water buying, selling, and leasing opportunities?

- (1)___Printed, mailed materials
- (2)___In the offices of the Irrigation district or the Department of Ecology
- (3)___Internet website (i.e. on irrigation district website or Grower's Association)
- (4)___Email
- (5)___Smartphone application
- (6)___Other _____

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4.10 Who would you trust to help you with water transfers? Rank the types of institutions you trust most to least, where 1 represents no trust, and 5 represents complete trust.

Institutions	No Trust	<i>(circle)</i>			Complete Trust
a. Non-profits, including environmental non-profits	1	2	3	4	5
b. For-profits (e.g. consulting companies, software companies, or real estate brokers)	1	2	3	4	5
c. Water/irrigation districts	1	2	3	4	5
d. Department of Ecology	1	2	3	4	5
e. Conservation districts	1	2	3	4	5
f. Attorneys	1	2	3	4	5
g. Community member or neighbor who has experience with water transfers	1	2	3	4	5
h. Other, specify_____	1	2	3	4	5

4.11 How much **money** have you spent on professional services (legal or consulting) fees to maintain, secure, lease, sell or trade your largest water right in the past five years?

- (0)___ Nothing, zero
- (1)___ \$1 to \$10,000
- (2)___ \$10,001 to 20,000
- (3)___ \$20,001 to 30,000
- (4)___ \$30,001 – 50,000
- (5)___ \$50,001- 100,000
- (6)___ \$100,000 or greater
- (7)___ don't know
- (8)___ would prefer not to say

Now we would like to ask a few questions about finding out what a “fair” price for an irrigation water allotment in your district would be. By “fair” price, we mean a price that most buyers would expect to pay and most sellers would expect to receive.

4.12 How would you rate the difficulty in knowing what a “fair” price for a water allotment in your district is?

- (1) ___ **very easy** to know what a fair price is
- (2) ___ **easy** to know what a fair price is
- (3) ___ neither easy nor difficult
- (4) ___ **difficult** to know what a fair price is
- (5) ___ **very difficult** to know what a fair price is
- (6) ___ **no experience**, don’t know

4.13 Who might you ask to learn more about the fair market value of an irrigation district water allotment?

- (1) ___ Community members or neighbors with experience
- (2) ___ Your irrigation district
- (3) ___ Water lawyer
- (4) ___ Local elected official
- (5) ___ Other, specify _____

Next, please consider a hypothetical scenario. Suppose the Board of Directors of your irrigation district was considering implementing a program that would allow growers to fallow ground on a temporary basis and lease the pooled water to other users ***outside*** the district. The program would be voluntary. Growers could opt-in to fallow all or part of their land, and would receive a set price per acre fallowed. The program would involve one-year leases only and would NOT involve permanent sales or transfers of water rights. On March 1st of each year, you could choose to participate for the upcoming growing season. Assume you would not need any legal approvals, and the Board would negotiate contracts with outside users on your behalf to get the best possible price.

4.15 Given the information you have about the program, how would you advise your Board representatives to vote on this program?

- (1) ___ Vote yes to create the program (*SKIP NEXT QUESTION*)
- (2) ___ Vote no; do not create the program

4.16 What is the main reason you would vote against the program?

4.17 Suppose the program were implemented and the offered price was attractive. How likely is it that you would participate?

- (1) ___ Very likely
- (2) ___ Somewhat likely
- (3) ___ Neither likely nor unlikely
- (3) ___ Somewhat unlikely
- (4) ___ Very unlikely
- (5) ___ Would prefer not to answer

Now suppose there was a similar program that paid participants a retainer fee regardless of whether land was fallowed or not, with an additional payment if land was fallowed. This program would be a five-year “dry year option” contract. Rather than making a decision each year, you would commit to the program for five years. As a participant, for each of the next five growing seasons you would commit to fallow ground whenever the March 1st water supply forecast fell below a pre-specified target. You would receive the retainer payment regardless of whether you had to fallow land, and a second payment in years when you fallowed land. This “strike price” would be negotiated at the beginning of the five years, not in the middle of the drought.

4.18 How would you advise your Board representatives to vote on this program?

- (1) ___ Vote yes to create program (*SKIP NEXT QUESTION*)
- (2) ___ Vote no; do not create program

4.19 What is the main reason you would vote against the program?

4.20 If the program were implemented and assuming the offered price was attractive, how likely is it that you would participate?

- (1) ___ Very likely
- (2) ___ Somewhat likely
- (3) ___ Neither likely nor unlikely
- (4) ___ Somewhat unlikely
- (5) ___ Very unlikely
- (6) ___ Would prefer not to answer

Section 5. Rules and regulations for water management

5.1 Are you familiar with Washington State’s relinquishment law (RCW 90.14.160) that requires a water right to be put to beneficial use at least one year in any consecutive five year period since 1967 or risk loss of the right (“use-it-or-lose-it” relinquishment law)?

(1) Yes

(2) No

5.2 Relinquishment is a controversial policy. Critics argue that relinquishment increases unnecessary water use, weakens investment in efficient irrigation systems, and may limit water market transactions.. Supporters argue that relinquishment prevents water speculation, , encourages use of unused water, and protects water availability for junior rights holders. In your opinion, should the state keep the relinquishment law or repeal it?

(1) Keep the relinquishment law.

(2) Repeal the relinquishment law; “use-it-or-lose-it” should no longer apply.

(5.3 – 5.4 missing intentionally)

5.5 What other water laws, rules, and regulations affect the security of your water right and your ability to use your water right most effectively? In what way do they affect you? Use the box below to give us your thoughts:

Section 6. About You

It is helpful for our research to know something about you and your farming operation (if you farm) to connect with your answers to the earlier questions. Although they are all important for us, please skip any questions you are uncomfortable answering.

For the next four questions, only consider land within your Basin (recall this is the Basin where you have the largest operation that uses water from a purveyor).

6.1 How many acres in irrigated crops or pasture do you **own** within the Basin?

- (1) ___ <10 acres
- (2) ___ 10-50 acres
- (3) ___ 51-100 acres
- (4) ___ 101-500 acres
- (5) ___ 501-1000 acres
- (6) ___ >1000 acres

6.2 Of those acres, what fraction did you lease out to other farmers in 2020 within the Basin?

- (1) ___ None, 0%
- (2) ___ 1 - 9%
- (3) ___ 10-25%
- (4) ___ 26-50%
- (5) ___ 51-75%
- (6) ___ 76-100%

6.3 Did you rent or lease from other landowners as part of your farm or ranch operation in 2020 within the Basin?

- (1) ___ Yes
- (2) ___ No (**SKIP NEXT QUESTION**)

6.4 Of the total acres you operate (owned and leased), what fraction did you rent or lease?

- (1) ___ None, 0%
- (2) ___ 1 - 9%
- (3) ___ 10-25%
- (4) ___ 26-50%
- (5) ___ 51-75%
- (6) ___ 76-100%

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6.5 If you leased to or from others, what type of rental agreement did you primarily use? (Check multiple if used about equally)?

- (1) ___ Fixed Cash
- (2) ___ Flexible Cash (include hybrid)
- (3) ___ Crop share
- (4) ___ Free
- (5) ___ Not applicable; did not lease to or from others.

6.6 In the 2020 growing season, on the land you operate with the use of your water right, which irrigated crops did you grow? Please fill in the following table about the irrigated crops on the land you operate with the use of your water right in the 2020 growing season.

a. CROP [examples, Timothy hay, livestock watering, pasture]	b. PERCENT OF TOTAL ACRES
Example: Timothy hay	

6.7 Do you use grower contracts? For example, an agreement to produce corn to sell to a dairy at a pre-determined price, or hops production under a contract with a hops processor.

- (1) ___ Yes, always or nearly always
- (2) ___ Yes, occasionally or with some crops I produce
- (3) ___ No

6.8 What is your gender?

- (1) ___ Male
- (2) ___ Female

6.9 What is your age?

- (1) ___ 18-29
- (2) ___ 30-39
- (3) ___ 40-49
- (4) ___ 50-59
- (5) ___ 60-69
- (6) ___ 70-79
- (7) ___ >80
- (8) ___ Prefer not to say

6.10 What is the highest level of education you have completed?

- (1) ___ Some high school
- (2) ___ High school diploma or GED
- (3) ___ Some college
- (4) ___ Associates degree
- (5) ___ Bachelor's degree
- (6) ___ Masters, professional or doctorate
- 95 ___ prefer not to say

6.11 Which category best describes your total household income from all sources?

- (1) ___ Less than \$30,000
- (2) ___ \$30,000 to 39,999
- (3) ___ \$40,000 to 49,999
- (4) ___ \$50,000 to 59,999
- (5) ___ \$60,000 to 69,999
- (6) ___ \$70,000 to 79,999
- (7) ___ \$80,000 to 89,999
- (8) ___ \$90,000 to 99,999
- (9) ___ \$100,000 to 129,999
- (10) ___ \$130,000 to 149,999
- (11) ___ \$150,000 to 199,999
- (11) ___ Greater than \$200,000
- (-99) ___ Prefer not to say

6.12 Does your household have sources of income besides the money you make from farming?

- (1) ___ Yes
- (2) ___ No

6.13 (If you are over age 55): Do you have family members who are interested in farming this land?

(1) ___ Yes

(2) ___ No

6.14 How comfortable are you with using computers?

(1) ___ Very comfortable

(2) ___ Somewhat comfortable

(3) ___ Not comfortable at all

6.15 Do you own a smartphone?

(1) ___ Yes

(2) ___ No (skip next question)

6.16 How comfortable are you with using smartphones, for example to receive forecasts of weather or water availability?

(1) ___ Very comfortable

(2) ___ Somewhat comfortable

(3) ___ Not comfortable at all

6.17 Please provide any additional comments on our research, or on water management in your Basin, in the space below.

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As we mentioned earlier, we will prepare a short report at the conclusion of the survey (summer 2021) and send it to all of you who participated and would like a copy. We will also share the report with local community leaders and water managers in your area.

Would you like to receive a copy?

(1) Yes -----> please email me a copy at _____

OR mail me a printed copy to _____

(2) No

As part of this project, we hope to survey you again within the next two years. When we contact you again, you will be asked to complete a new consent form. You can of course decline to participate. If you know that you would prefer not to be sent another survey in four years, please let us know by contacting us by email, phone or mail at the contact address given on the consent form.

In the interim, we also plan to conduct more research activities with stakeholders. These might involve answering more questions online or joining in-person discussions and activities in your local community. If we contacted you to participate, you would be given more detail about the activities to help you to decide whether to participate, but we would compensate you for your time in participating in these activities. If you would prefer not to be contacted for these other research activities, check the box below.

No, please do **not** contact me about other research activities for this project.

THANK YOU FOR YOUR PARTICIPATION IN THE SURVEY!