



*Survey on*  
**WATER  
MANAGEMENT**  
*in Washington State*

**FOR REVIEW PURPOSES ONLY**  
To complete the survey, please  
contact [joe.cook@wsu.edu](mailto:joe.cook@wsu.edu)

**This version is for water rights  
holders. Growers operating  
within irrigation districts  
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 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

**1.2** 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

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 are your surface water rights? (**MARK ALL THAT APPLY**)

(1)  Walla Walla Basin

(2)  Okanogan/Methow Basin

(3)  Yakima Basin

**1.4** Where is your **largest** surface water right?

(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 surface water right.**

**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 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 2021 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.

<b>Metric (fill in below)</b>												
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 a 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 to 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 '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 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).

	<b>Col. A.</b> Familiar?	<b>Col. B.</b> Ever participated?	<b>Col. C.</b> Approx. # of transactions
a. Leases (full-season or split-season leases, including to environmental uses)	__Yes __No	__Yes __No	
b. Permanent transfers of water rights	__Yes __No	__Yes __No	
c. Mitigation Bank participation	__Yes __No	__Yes __No	
d. Legally changing the place of use of your right to move it to others fields you operate.	__Yes __No	__Yes __No	
e. Moving water to other fields you operate <i>without</i> legally changing place of use.	__Yes __No	__Yes __No	
Complete this section if you also operate within an irrigation district, company or association (a "stacked right") in the Basin			
f. Permanent transfers of an irrigation allotment	__Yes __No	__Yes __No	
g. Pooling (moving water to other fields you farm in a different part of the district)	__Yes __No	__Yes __No	
h. 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	
i. 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. Please describe: \_\_\_\_\_

**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 have 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 water right, 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, please specify: \_\_\_\_\_
- (7)\_\_\_ Don't know

Different people have different opinions about water markets and water transfers. Please evaluate the next two 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 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. Dept 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, who? _____	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 a water right in your area would be. By “fair” price, we mean a price that most buyers would expect to pay and most sellers would expect to receive. The transaction could be for a permanent sale or a temporary lease.

**4.12** How would you rate the difficulty in knowing what a “fair” price for a water right in your basin 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 to know what a fair price is
- (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 water in your local area?

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

In the state of Washington, a water lease or transfer must be approved by the State and the change of use information is public record. However, the sale or lease price is usually not disclosed. Transfers of water allotments within irrigation districts do not need State approval, and prices are also not typically disclosed.

Contrast this with the market for real estate. Both the record of the transaction and the transaction price are publicly-disclosed in many states, including Washington. Parties to a transaction lose privacy when transaction prices are disclosed, but disclosure provides useful information to other potential buyers and sellers (e.g. appraisers use the M.L.S. system).

**4.14** Overall, do you think a policy of requiring price disclosure in water markets would encourage or discourage you from participating in a market transaction?

- (1) \_\_\_ Encourages me - more likely to participate knowing prices are disclosed
- (2) \_\_\_ Neither encourages nor discourages me - not a factor
- (3) \_\_\_ Discourages me - less likely to participate knowing prices are disclosed

**4.15** Starting in 2016, Washington State required that water banks (sellers) disclose the price they charge for a “mitigation” water right (RCW 90.42.130). Did you know that the state required price disclosure for water banks used for mitigation water?

(1)\_\_\_Yes

(2)\_\_\_No

Now imagine the State was considering required price disclosure for **all** water transfers that involved a change in ownership.

This policy change, however, would apply to all water market transactions, not just those involving mitigation water banks. Suppose that the State wanted to put the policy change up for a referendum vote in the counties in your Basin. If more than 50% voted in favor of the policy, Ecology would require prices be disclosed for all water transactions, including leases, in the future. If 50% or less voted for the policy change, prices would continue to be private except for mitigation banks.

Even though this is a hypothetical question, please think carefully about how you would answer if this were a real, binding vote. Some people say they would vote in favor of the change because it would make it easier to get timely information about water prices in their basin and participate in markets. Some people say they would vote against the change because they value the privacy of the status quo.

**4.16** How would you vote in the referendum?

(1)\_\_\_\_\_ Yes, vote in favor of requiring price disclosure

(2)\_\_\_\_\_ No, vote against the proposal and keep the status quo of private prices

**4.17** Would you be more or less likely to buy, sell, or lease water if local, timely water market transaction price, volume, date, and watershed-level information were publicly available, but public disclosure of your water transaction price and volume data (but not identifiable buyer/seller information) were required?

(1)\_\_\_Much more likely

(2)\_\_\_More likely

(3)\_\_\_No change

(4)\_\_\_Less likely

(5)\_\_\_Much less likely

**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** Does the relinquishment rule affect your irrigation decisions?

- (1)\_\_\_ No, I don’t change my water use in response to relinquishment risk.
- (2)\_\_\_ Yes, I use more water than I would in order to help secure my right.
- (3)\_\_\_ Yes, I place some or all of my water right into the trust program to help secure my right.
- (4)\_\_\_ Yes, other (please explain:\_\_\_\_\_)

**5.4** Has your water right ever been reduced by Ecology, Court proceeding, or other regulatory action?

- (1)\_\_\_ No
- (2)\_\_\_ Yes, Ecology reduced my water right as part of a change authorization.
- (3)\_\_\_ Yes, Ecology reduced my water right as part of a permit extension, order, or other regulatory action.
- (4)\_\_\_ Yes, an Adjudication, or other Court proceeding reduced my right.

**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 water right).

**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%

**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!**