



“As we fine-tune irrigation the quality of the grapes will be improved, which translates to wine quality, which translates to a more sustainable product and industry.” -Severine Pinte, Le Vieux Pin and LAstella

You might think water is cheap. Your annual water allotment is likely a very small line item on your operational expenses. But if you think about all of the vineyard management investments affected by excessive irrigation - system maintenance, canopy management for excessive vigour, tractor runs for hedging or spraying for powdery mildew, botrytis, and other diseases, floor vegetation management, machinery wear and tear - the full cost of water is actually significant.

While the water demand of wine grapes is low relative to many agricultural commodities, efficient, targeted irrigation has a cascade of benefits both for your bottom line and the quality of the fruit on the vine. Ensuring that vines get the right amount of water at the right time will:

1. Maximize grape quality;
2. Optimize grape yields;
3. Minimize operational costs and improve labour efficiency;
4. Reduce disease and pest risks to your crop.

Given the short growing season and increasing year-to-year weather variation with climate change, Okanagan growers must be particularly attuned to the varying water needs of grape varieties planted in different soil types and vineyard microclimates. Most Okanagan growers farm less than 10 acres, and their small-scale means they can't afford to take chances with excessive irrigation. As the prestige of the Okanagan winegrowing region continues to grow, identifying the desirable level of water application to optimize vineyard performance and maximize grape quality will be a key strategy in the growth of the industry.

Tracking Irrigation Water Use

The annual cost of your water allocation may not provide the motivation to track your water use. However, as you think about the full cost of water, knowing how much water you are using for irrigation throughout the season has a real value.

Step 1

Establish a standard procedure for tracking timing and length of irrigation sets. This will allow for valuable comparisons between years, particularly years with similar growing seasons. It also enables you to track and verify your own water use. This doesn't have to be a time-consuming task. Visit SWBC's website (<http://sustainablewinegrowingbc.ca/>) to download an easy to use water tracking tool. If the vineyard manager has an iPad or similar device they can quickly input this information, or even save it in notes on their phone.

Step 2

Most purveyors and water districts have now installed flow meters. While this water use data is not yet consistently reported to growers it is quick and easy to read the meter weekly or monthly, and record the reading in a pad or on a phone. The Regional District of North Okanagan provides some simple guidelines for [reading an Ag Water Meter](#).¹

¹ Regional District of North Okanagan, Greater Vernon Water (RDNO-GVW). How to Read an Ag Water Meter. Available at: <http://www.rdno.ca/docs/read-ag-water-meter.pdf>

Traditional Cost Considerations:

1. Annual cost of water allocation
2. Pump electricity costs

Machinery Considerations

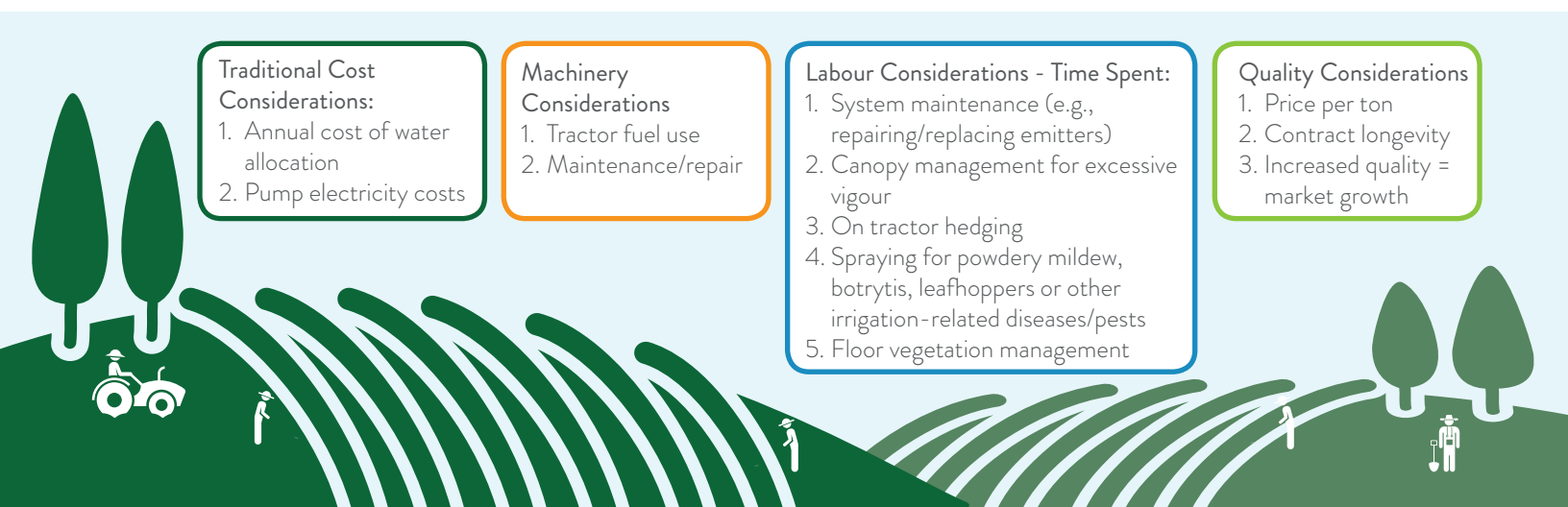
1. Tractor fuel use
2. Maintenance/repair

Labour Considerations - Time Spent:

1. System maintenance (e.g., repairing/replacing emitters)
2. Canopy management for excessive vigour
3. On tractor hedging
4. Spraying for powdery mildew, botrytis, leafhoppers or other irrigation-related diseases/pests
5. Floor vegetation management

Quality Considerations

1. Price per ton
2. Contract longevity
3. Increased quality = market growth



ADVANCED DATA COLLECTION

Optimizing Water Use, Reducing Labour, and Increasing Quality at Le Vieux Pin

Severine Pinte, winemaker/viticulturist and managing partner of Le Vieux Pin and L'Asella wineries, has 42 planted acres across five vineyards. She received a grant through the BC Farm Adaptation Innovator Program to do detailed vineyard mapping and explore water savings, increased labour efficiency, and ultimately fruit quality improvement. She hired a Chilean company, Agroprecision, who measured electroconductivity of the soils at 75 and 150 cm in depth, helping create maps showing water retention capacity. The maps identified 29 different soil areas in the vineyards. They then dug 29 pits in these different areas and took 76 soil samples, getting data on physical structure, organic matter, chemical and micronutrient components. Pinte and her crew found that these soil analyses validated what they had already observed in the vineyards.

Based on this feedback Pinte's vineyard team began to modify and zone the irrigation system (moving from maxijet and overhead sprinkler to drip) to give vines only as much water as they need in each microclimate. They found that some vines don't need water at all. Once the vines have 2-3 years to adapt to the changed water source Pinte will compare fruit quality measurements (pH, acid, polyphenols, brix) before and after the conversion.

Some results are already in. Simply by dialing in and automating irrigation Pinte has already realized a 50% irrigation labour cost savings, enabling her vineyard managers to spend more time on other critical aspects of vineyard management.



THE VALUE OF FEEDBACK

Purveyors Help Growers Keep an Eye on Water Use

The South-East Kelowna Irrigation District (SEKID, which is merging with the City of Kelowna) provides water to 9,000 acres of farmland. The District relies on a reservoir that is replenished annually by snowpack. It wasn't an easy sell at first, but back in the mid-1990s SEKID began establishing annual allocation limits based on projected water availability. SEKID reports usage to growers at regular intervals during the growing season, and applies penalties if allocations are exceeded. In drought years growers exceeding their allocation can have their water turned off. Allotments are based on past water rights and do not discriminate based on crop type. This feedback system has proven highly effective in managing demand, particularly during years of water stress like 2003, 2009, and 2015. Toby Pike, General Manager with SEKID, points out, *"The water we don't use stays in the upland reservoir. Initially metering was seen as a restriction but after a few droughts farmers saw that water use tracking eliminated the law of the commons - people overusing water to try to maximize their own benefit. This tool actually protects the farmers' water interests."*

The Regional District of North Okanagan—Greater Vernon Water (RDNO—GVW) has developed their own water use feedback system - the online [AgConnect Tool](#)². Growers simply enter a confidential User ID and have immediate access to their water allocation and monthly water use for both past and current years. RDNO-GVW has implemented a tiered water pricing system where the cost per cubic metre of water increases if a grower exceeds their allocation.

These systems provide growers with straightforward tools to understand and track water use. These demand management systems could also be a benefit in demonstrating to urban and domestic users that the winegrowing industry is focused on irrigation efficiency.

² RDNO-GVW. Agricultural Water Connect (AgConnect). Available at: <http://www.rdno.ca/index.php/services/engineering/water/greater-vernon-water/agricultural-customers/agricultural-water-connect>

