Water: Quantity & Quality
Issues Growers Need to Know

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Crop Water Requirements & Avg Monthly Precipitation at Clearbrook WA

Exhibit 2-8 Crop Water Requirements and Avg. Monthly Precipitation at Clearbrook, WA

Source: Bertrand Comprehensive Irrigation District Management Plan
Balancing Competing Water Uses
Enter The Legal System – Water Rights

- Water Supply (*homes, businesses, agriculture, hatcheries*)
- Recreation
- Habitat (*fish/salmon, wildlife, plants…*)
- Shellfish/marine
- Transportation
- Scenic
- Cultural
Chinook Salmon Recovery Goals

*Maximum sustainable yield.*
Legal Availability –
Extensive Water Right Closures

- Difficult to obtain new permits
- Many unpermitted and/or out-of-compliance users
- Possible over-allocation
- Federal/Tribal rights uncertain
- Large application backlog
For More Information ...

http://www.whatcomwin.org/WSS2013Presentations.html
Nutrient Management – The Opportunity

Areal distribution of median nitrate/nitrite values, 1990-2000

- 3,831 wells
- 9,842 measurements

http://wria1project.whatcomcounty.org/
USGS – Trends 1988 - 2010

Source: Scientific Investigations Report 2012-5049
## Nitrate Entering Groundwater

### Inorganic Sources:

- Studies show large variability in leaching
- Multiple Factors Influencing
- Typical range 25 – 50%
- 25% used here

Source: USGS Report 98-4195
Potential Opportunities?

• Irrigation efficiencies and incorporation of irrigation water as potential fertilizer source

\[
\text{Nutrient Applied (lb/acre)} = A \times B \times C \times 0.227
\]

• \(A\) = irrigation water (inches/acre)
• \(B\) = nutrient concentration in water (ppm)
• \(C\) = decimal fraction of applied water retained in field (for sprinkler or drip \(C = 1\))
• 0.227 = factor to convert ppm to lb/acre-inch of water

Example:

\[
20 \text{ in water} \times 10 \text{ ppm} \times 1 \times 0.227 = 45 \text{ lb/acre}
\]