# *Dealing with Drought in BC*

*Ministry of Agriculture and Lands*

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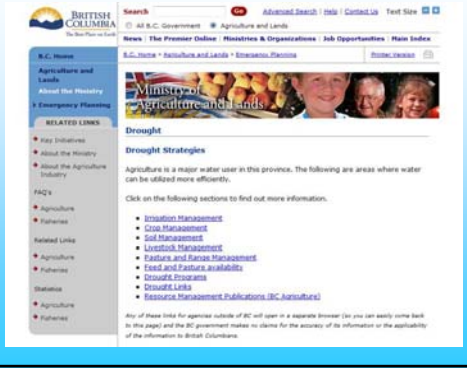
## Water Sources for Agricultural Irrigation in BC

| | Water Use |
|---|---|
| **Surface Water:** | |
| Self Pumped | 65% |
| Supplied by a purveyor | 23% |
| **Groundwater** | |
| Self Pumped | 7% |
| Supplied by a purveyor | 5% |
| **Dams and Storage** | 2500 |

## Agriculture Drought Planning

- Integrated with Ministry of Environment drought strategy
- Web site contains information on drought planning for agriculture
- Agricultural Water Demand Initiative
- Irrigation design and management information
- Irrigation Scheduling Calculator
- Environment Farm Planning – conversion to more efficient systems

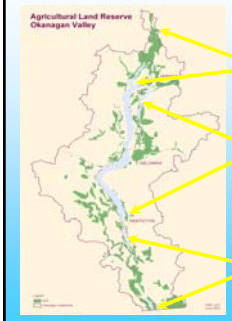
## Drought Web Site




## Drought Management Factsheets

- Managing Irrigated Forage Crops During Drought – An Introduction
- Key Drought Management Tips
- Forage Crops and Irrigation Management in Drought Conditions
- Irrigation Decisions with Limited Water
- Irrigated Alfalfa Management under Drought Conditions
- Alternate Forage Crops When Irrigation Water is Limited
- Drought Impacts on Soil Fertility
- Tillage, Residue Management and Their Effect on Soil Moisture

## Okanagan Water Management



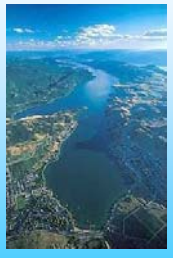

**Northern Basin**
- Peak flow rates 4.5 – 5 gpm/acre
- Annual requirement 16 – 26 inches
  400 – 650 mm

**Center Basin**
- Peak flow rates 6 – 7.5 gpm/acre
- Annual requirement 20 – 30 inches
  625 – 750 mm

**South Basin**
- Peak flow rates 8 - 9 gpm/acre
- Annual requirement 30 – 40 inches
  750 – 1000 mm

## Agriculture Water Demand Model

**Objective:**
Develop a model that calculates agriculture's water needs by purveyor, municipality, district and sub-watershed.



**Methodology:**
Determine Property-by-Property water use

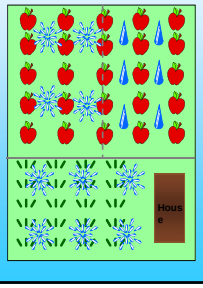
**Result:**
Planning Tools that secure water for current and future agricultural needs

## Land Use Inventory

Collect and link information on crop type and irrigation system type

**Crop Type:**
- Apple
- Pasture

**Irrigation System Type:**
- Sprinkler
- Drip

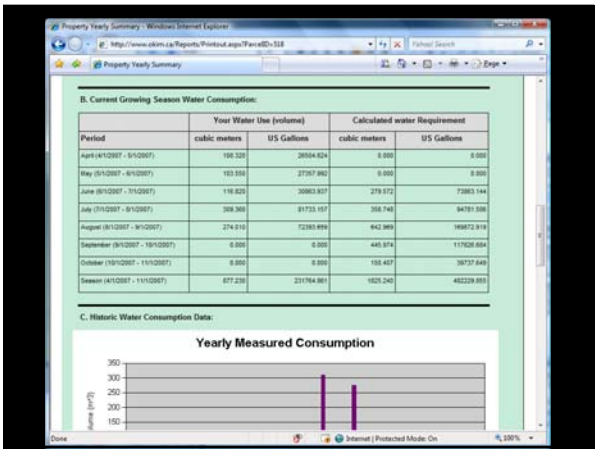



## Agricultural Metering

- Metering allows for:
  - Monitoring of actual use
  - Allows targeting of high water users
  - Can be used to allocate water during a drought
  - Develop an equitable pricing structure – increasing block rate

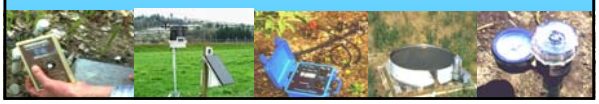
## Okanagan Irrigation Management Program

Model developed for purveyors that will link:
- Land use / irrigation system / calculated water use
- Meter / water use

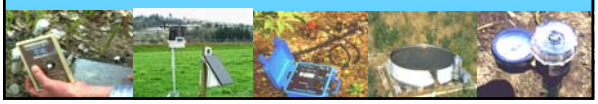
## Irrigation System Performance

1. **Efficiency:** Select the most efficient type of irrigation system possible
2. **Uniformity:** Design the system to obtain the best uniformity
3. **Scheduling:** Schedule irrigation timing according to local site, soil moisture and climate data



## Irrigation Management

1. **Irrigate early in the season**
2. **Irrigate later in season**



## Irrigation Demand Model

| Crop Group | Irrigated Area (ha) | Irrigation Demand (mm) |
|---|---|---|
| Apple | 2,282 | 803 |
| Berry | 62 | 633 |
| Cherry | 1,121 | 733 |
| Forage | 8,520 | 755 |
| Fruit | 898 | 793 |
| Golf | 1,048 | 992 |
| Grape | 2,704 | 913 |
| Landscape Turf | 126 | 1,009 |
| Nursery | 385 | 909 |
| Turf Farm | 120 | 959 |
| Vegetables | 531 | 692 |
| Total = | 20,033 | 704 |

## Results

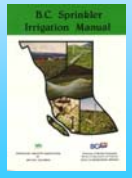
**By Irrigation System**

| Irrigation System | Irrigated Area (ha) | Irrigation Demand (mm) |
|---|---|---|
| Drip | 1,490 | 415 |
| Golfsprinkler | 1,045 | 992 |
| Gun | 308 | 1,118 |
| Handline | 1,390 | 792 |
| Landscape Sprinkler | 383 | 674 |
| Microspray | 466 | 661 |
| Microsprinkler | 1,548 | 674 |
| Overtree Drip | 220 | 447 |
| Overtree Microsprinkler | 16 | 737 |
| Pivot | 555 | 536 |
| Pivot – Low Pressure | 20 | 543 |
| SDI | 42 | 548 |
| Sprinkler | 3,602 | 739 |
| Solid Set Gun | 12 | 772 |
| Solid Set Over tree | 3,073 | 604 |
| Solid Set Sprinkler | 134 | 709 |
| Solid Set Undertree | 1,790 | 791 |
| Travelling gun | 2,079 | 751 |
| Wheeline | 1,661 | 751 |
| Total = | 20,033 | 704 |

## Irrigation Design Guides


**Trickle**

**Sprinkler**




## Certified Irrigation *Designer* (CID)


**Certification is available in:**

1. Ag Sprinkler
2. Ag Drip
3. Turf Residential
4. Turf Commercial

**Requirements:**

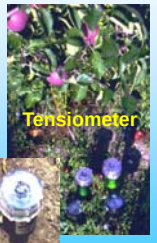
1. Pass a written exam

## Irrigation Scheduling Techniques

1. Soil Moisture Monitoring
2. Climate Monitoring

## Soil Moisture Monitoring

Electrical Resistance Block
Watermark



Tensiometer

TDR

## Climate Monitoring

Climate Station

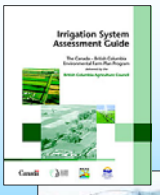
## Irrigation Scheduling Calculator

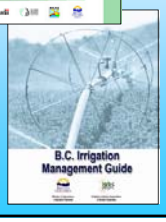

## Environmental Farm Planning


Irrigation Management Plan:

- Assesses system performance
- Evaluates crop and soil
- Determines when to irrigate
- How much to irrigate
- Energy Use
- Fertigation

## Agriculture Irrigation System Assessment




Environmental Farm Planning Process

Sprinkler and Trickle/Drip Systems:

- Agricultural irrigation management
- System assessment
- Operation
- Scheduling
- Energy efficiency