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Irrigation...

A Western Canada Perspective

Phil Adkins, P. Eng.

A/Director, Ag Water Directorate, PFRA
Agriculture and Agri-Food Canada



Outline...

- ◆ **National Context of Irrigation in Canada**

- ◆ **Role of PFRA in Irrigation in Western Canada**

- ◆ **AAFC Water and Irrigation Strategies**

- ◆ **Challenges for Irrigation in Western Canada**

- ◆ **Opportunities**



Context...

- ◆ Irrigation recognized as key to stabilizing & diversifying crop production
- ◆ Globally: 270 million hectares (18%) of arable land is irrigated...
...40% of world's agriculture production
- ◆ All provinces have irrigation: 1 million ha nationally
-Mainly in arid regions of southern prairies and BC interior
- ◆ Alberta: 20% of production from the 5% of land that is irrigated

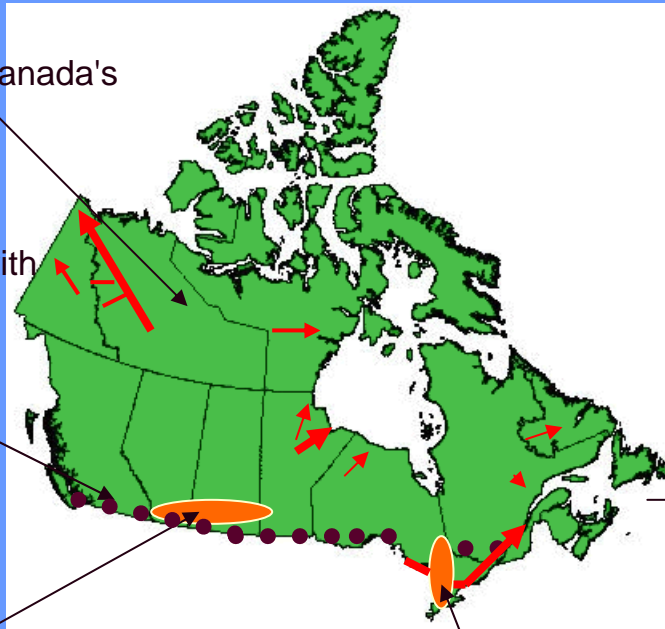


Some important facts about Canada's freshwater...

Approximately 60% of Canada's
fresh water drains north

85% of the population lives
along the southern border with
the United States

Some areas are
arid or semi-arid



• Canada has about 25%
of the world's wetlands

• Almost 9 million, or
30.3% of all Canadians,
rely on groundwater for
domestic use

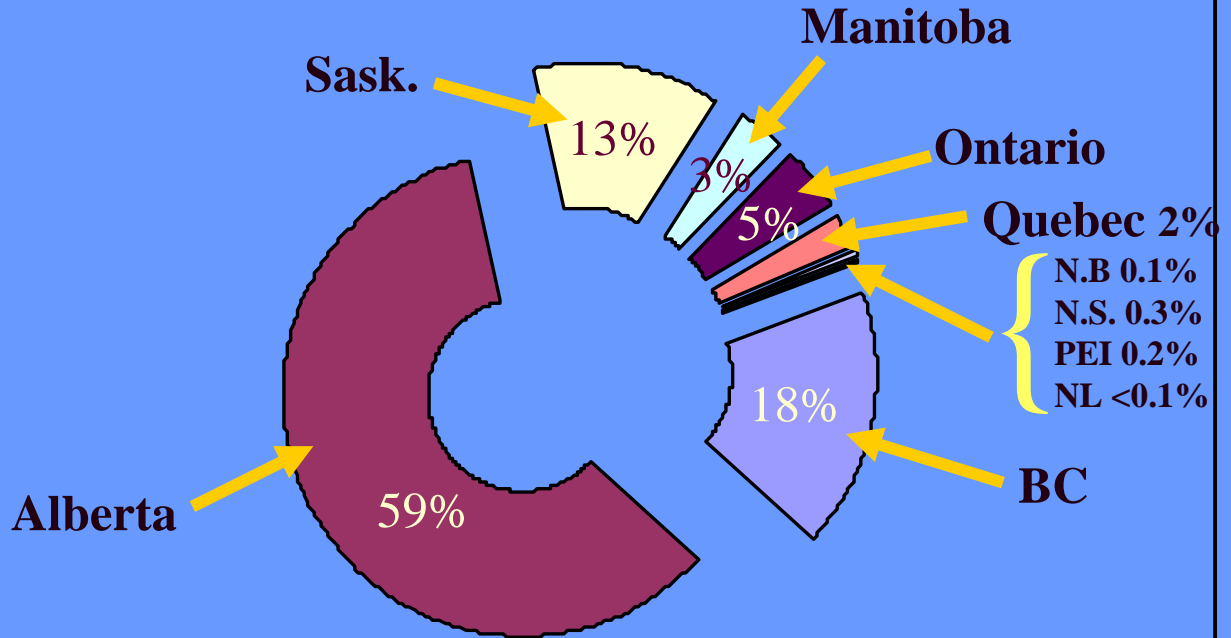
Rivers discharge
7% of the world's
renewable water supply

Great Lakes basin:

- \$180B in Canada-US trade
- 45% of industry
- 25% of agriculture and fisheries



Irrigated Area in Canada





National Water Supply Expansion Program (NWSEP) A new and broad approach to water supply challenges

- **Drought and other climate variability events**
 - **Water at the right place at the right time**
- **Agriculture Growth**
 - **Sufficient supply of good quality water**
- **Knowledge**
 - **Information to support decision making**
 - **Technology for efficient use of available supplies**

Constraint	BC	AB	SK	MB	ON	PQ	NB	NS	PEI	N/L
Allocated supplies	X	X			X					
Limited supply	X	X	X	X						
Information on groundwater	X	X	X	X		X				
Information on supply/demand	X	X	X	X	X	X	X	X	X	X
Seasonal shortages	X				X	X	X	X	X	
Regulatory	X				X		X	X	X	
Poor quality			X	X		X				X
Infrastructure	X	X	X	X						
Conservation	X	X	X		X	X	X	X	X	
Local capacity	X	X	X	X	X					
Competition	X	X			X					
Technical assistance	X					X	X		X	

Eastern and Atlantic Canada

- ✦ A need for supplemental irrigation, soil moisture conservation and drainage
- ✦ Variable rainfall: Irrigation essential for stable production of high value crops
- ✦ PEI, NB, NS: Industry demands irrigation for potato french fry contracts
- ✦ Newfoundland: Drainage of peat soils
- ✦ Ontario & Quebec: Supplemental irrigation for high value crop production



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Western Canadian Perspective

MCDC





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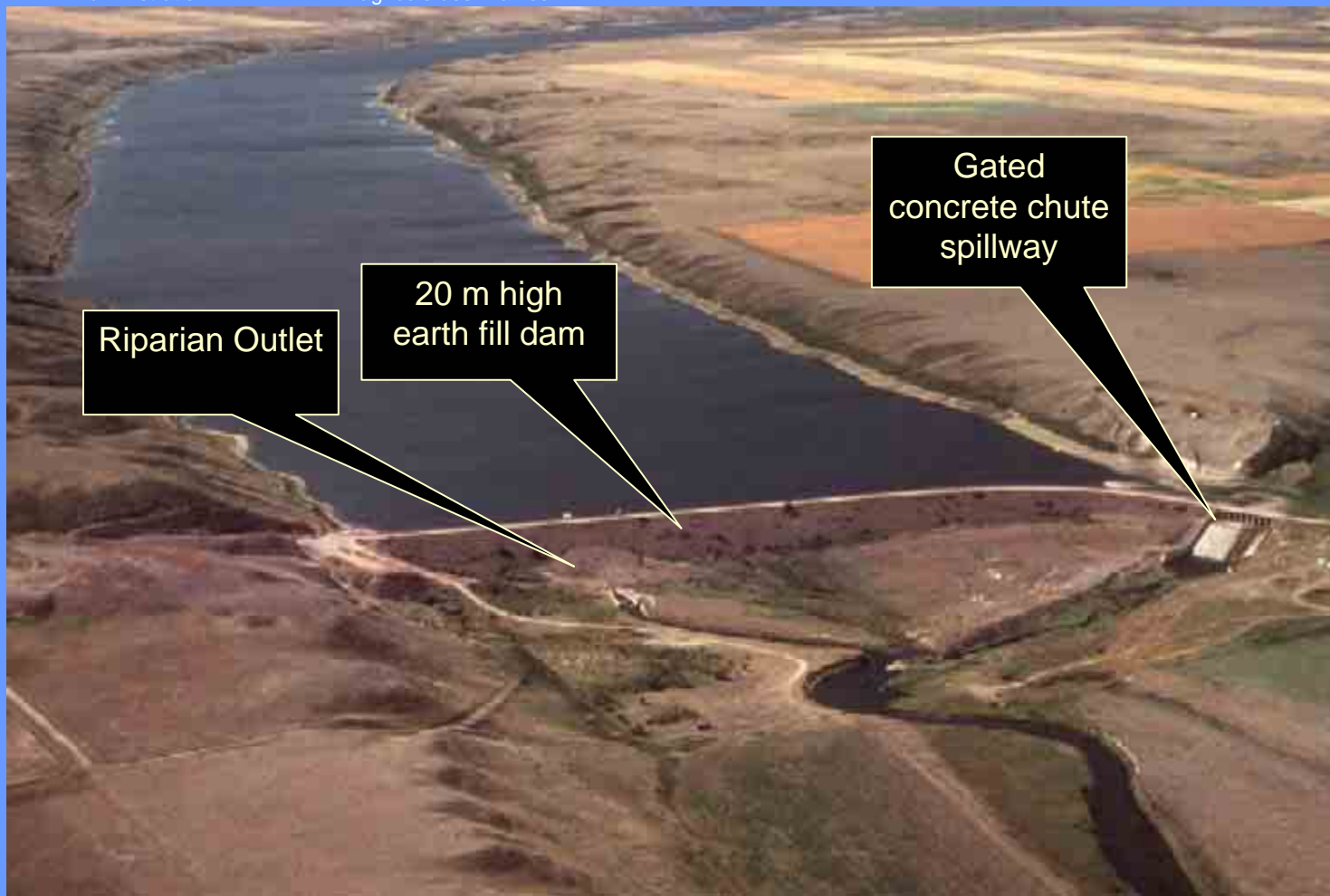
- ✦ Created by an act of parliament in 1935 in response to an extreme climate event

To "... secure the **rehabilitation of the drought and soil drifting areas in the Provinces of Manitoba, Saskatchewan and Alberta, and to develop and promote within those areas, systems of farm practice, tree culture, **water supply**, land utilization and land settlement that will afford **greater economic security...**"**

- ✦ Active in early irrigation development – technical and management expertise supplied in partnership with provinces to develop irrigation projects
- ✦ >100 major dams, reservoirs, and irrigation works



- Currently 33 dams owned by Canada in Saskatchewan
- 23 storage reservoirs in SW Sask. of 305,000 ac-ft capacity
- Dams in other river systems – 5 small dams in Qu'Appelle R. System
- Multi-use reservoirs allow municipal supply, irrigation, recreation, fishing, habitat
- Water management from southern reservoirs ensures the trans-border flow requirements (50%) are met



Riparian Outlet

20 m high
earth fill dam

Gated
concrete chute
spillway



AAFC-PFRA Irrigation Projects in Saskatchewan

- 5 flood projects - Fed. Infrastructure, privately owned land
- 5 other flood irrigation projects served
- Significant sprinkler irrigation from reservoirs and releases
- Total of 18,000 ha (44,000 ac) served



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AAFC Mandate (APF)

- ◆ To provide information, research and technology, and policies and programs that achieve **security** of the food system, health of the **environment**, and **innovation** for growth

PFRA Mission

- ◆ To provide expertise and services to producers and stakeholders for the **sustainable use of land and water** by agriculture



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Lines of Business for PFRA

- ◆ Develop **Knowledge**
- ◆ Extend **Information**
- ◆ Encourage **Action**

For

- ◆ **Stewardship** of Land and Water Resources
- ◆ **Adaptation** for Ag. Development
- ◆ **Innovation** for Rural Growth



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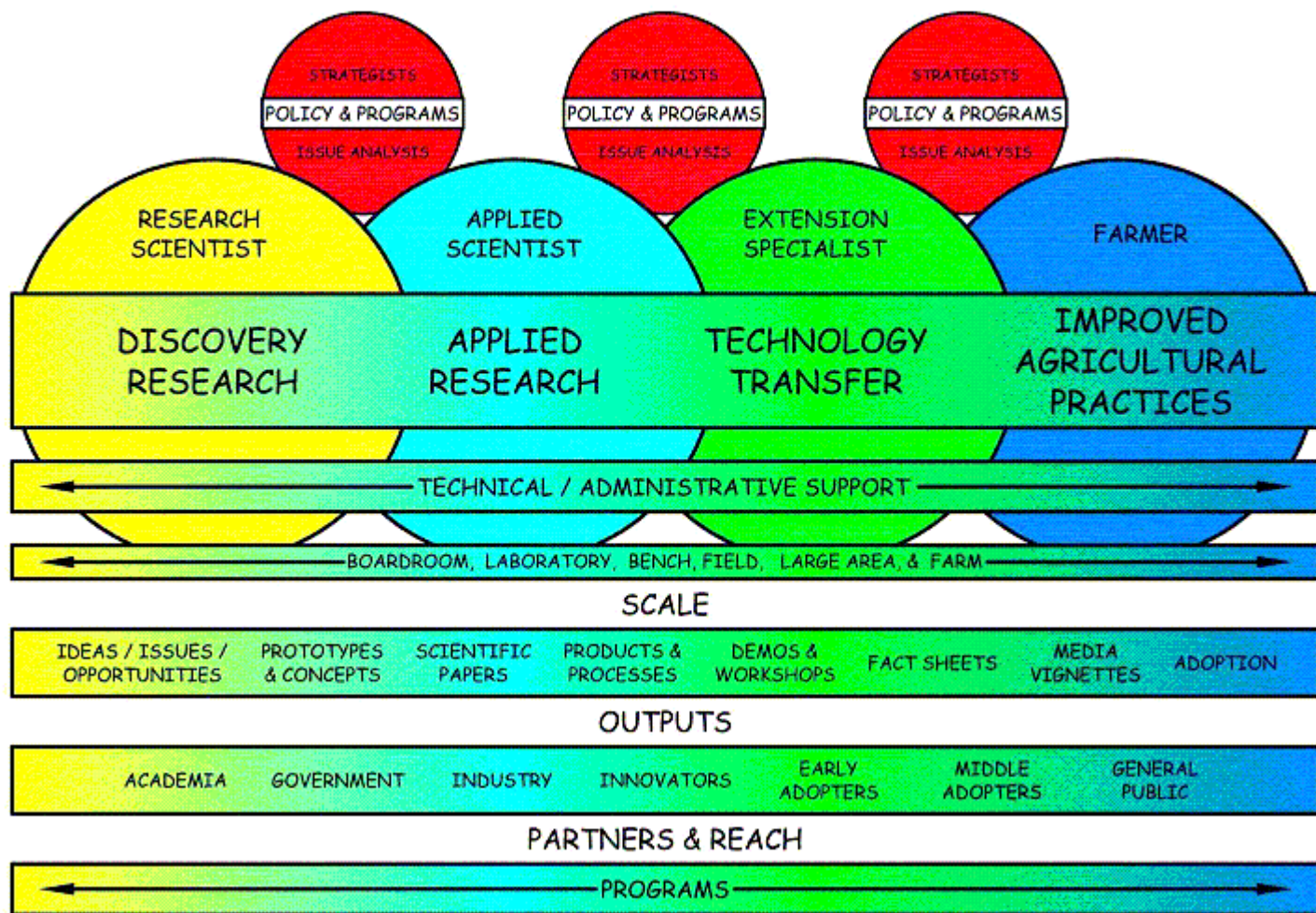
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AAFC-PFRA supports sustainable irrigation at
CSIDC, CMCDC, and in building CACDI, through
Fed / Prov / Industry Partnerships...

...strong fit with agency directions

ENVIRONMENT TEAM KNOWLEDGE CONTINUUM





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PFRA Continuing Role in Water...

◆ To support the conservation, development, and protection of safe and secure rural water supplies for agriculture, **including irrigation...**

**...working closely with the Provinces who
have the water mandate**



PFRA Ag Water Directorate

- ◆ Provides leadership, information, and technology to address agricultural water issues and to advance competitiveness
 - ◆ focus is on irrigation and drainage, rural water supplies, and water quality on farms and in watersheds
- ◆ Partners with provinces, farmers, educators, researchers, municipalities and agencies, NGOs



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Ag Water Directorate Priorities for 2006/07

- ◆ Supplemental irrigation and drainage
- ◆ Irrigation and diversification applied research
- ◆ Regional water supply studies
- ◆ Working in watersheds (IWRM)
- ◆ Water quality applied research
- ◆ Strengthening water in APF Programs
- ◆ AAFC water strategy



AAFC Water Strategy...

Policy context (under development)

- APF Goal: Reduce agricultural risks and provide benefits to the health and supply of water
- Progress in this goal is linked to other APF pillars
 - business risk management, food safety and quality, international trade and markets, science and innovation
- Linkages with other AAFC initiatives
 - Drought, Irrigation, and Land Use Strategies
 - Climate change



Purpose of Water Strategy

- Establish AAFC's water-related priorities
- Focus to expand knowledge base related to water
- Facilitate AAFC's participation in initiatives within federal government
- Help direct work with our key partners – Provinces –
-assist in supporting provincial water initiatives
- Help to make an effective contribution to broader national and international initiatives in water
- Build confidence in the sector
- Create a platform for further discussion with other stakeholders



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AAFC Irrigation Strategy

...working with the Provinces...

Vision:

To stimulate and strengthen the agricultural economy through intensive, efficient, and sustainable land and water resource use to provide increased wealth, income stability, and better employment opportunities



Why AAFC is working on an Irrigation Strategy?

✦ Ag. Sector Benefits:

✦ Economic

- ✦ Opportunity to intensify and diversify
to meet
- ✦ Increased ag. product demand
which leads to
- ✦ Spin-offs from the processing industry

✦ **Adaptation** to climate change

✦ **Drought** management

✦ **Stewardship** of water resources



Irrigation Strategy Objectives...

- To identify and analyze issues constraining sustainable irrigation,
- To identify those issues that can be supported by AAFC, and
- To develop a framework to guide national policy



Three Phased Approach...

✦ Phase I: **Conduct National Scans**

- ✦ Review existing work to date
- ✦ Consultations to identify issues
- ✦ Analyze and report findings
- ✦ *Completed*

Phase I: Results...

Constraints on Sustainable Irrigation in Canada

- ✦ Economics, markets & diversification
- ✦ Water supply infrastructure
- ✦ Environment and risk management
- ✦ Applied research & technology transfer
- ✦ Public perception



Phase II: **Consultation**

- ✦ Provinces, Industry, NGOs, Academia
- ✦ Confirm and prioritize issues
- ✦ Potential roles for AAFC/PFRA
- ✦ *in progress*

Phase III: **Develop the Strategy**

- ✦ Address issues and opportunities for irrigation in Canada
- ✦ *to follow phase II*



Challenges to western irrigation-

Irrigation is the largest “consumer” of water ...

- Agriculture is far removed from the average Canadian
- Lack of widespread support for public funding
- Agriculture may not be the “best value for money” use of water, based on experience elsewhere
- Perceptions of environmental impacts
- Must manage irrigation demands effectively



Challenges (cont'd)...

- As a large consumer – a target for competing uses / allocation issues-
 - In-stream Flow Needs (habitat, species diversity)
 - Recreation
 - Power generation
 - Municipal and Industrial
 - Aesthetics
- Need to manage water requirements effectively (conservation)
- Ensure sustainability of irrigation “systems”
 - Long term soil / water compatibility



Challenges (cont'd)...

- Reduce the costs of delivering / draining water
- Build the broader case for risk management
- Address climate variability/change impacts on supply...
 - Evapo-transpiration?
 - Snow pack reservoir?
 - Wet and dry extremes?
- Address other CV / CC impacts...
 - Crop disease
 - Drainage for extreme wet events



Opportunities...

- Expand / plan for multi-purpose use of water supply systems (reservoirs)
 - What's in it for the urbanite!
- Production of high value crops...
 - Trade in “goods” not water!
 - Import replacement
- Risk management
 - Processor requirements
 - Drought
- New crop options with climate change
 - More heat units
- Environmental protection with reservoirs



In Closing...

- ◆ Sustainable irrigation has been, and will remain a priority for PFRA
- ◆ PFRA will continue to work with provincial and industry partners in western Canada
- ◆ Completing the AAFC Irrigation Strategy is key to our future direction
- ◆ Many challenges lie ahead for irrigation; also opportunities...