



Policy & Program Overview

- Policy focused on broader topic of soil conservation
- Program elements focused on specific technologies or practices
- **Economic policy** parameters: indirect, international influence
- **Environmental policy** parameters: direct, domestic influence
- Programs by definition are direct and domestic
- In summary: environmental / domestic / Federal / Prairies



Conservation Policy – 1930-40s

- Government promoted settlement resulting in a moral responsibility for land conservation
- *Prairie Farm Rehabilitation Act* given Royal Assent on April 17, 1935 — extended legislation in 1937; added land utilization and resettlement
- PFRA focused on community cooperative action – a programme of demonstration activities
- 1938: first ever Canadian study of the economics of farming practices on various soil types

Early Policy Outcomes

- PFRA enhanced soil survey in prairie provinces and concluded that:
 - tillage and cropping practices on one type of soil cannot be projected to a different soil type without modification and adaptation
- By 1942 — PFRA had direct contact with farmers through 47 sub-stations of the Dominion Experimental Farms and 228 Agricultural Improvement Associations
- By 1944 — minimum spring tillage, effective to kill weeds, was probably the most desirable
- In 1946 — ‘cultural program’ of PFRA was transferred to the Dominion Experimental Farms

PFRA Policy 1946 -1970s

- PFRA's mandate redefined — primary focus on water development and community pastures
- Significant policy July 12, 1968 — PFRA transferred from Department of Agriculture to Department of Regional Economic Expansion
- PFRA broadened programs from drought and soil drifting to “greater economic security”
- H.M. Hill stated in the 1977-78 Annual Report:

“consequences of severe drought, which have occurred at random throughout the region, are not understood in terms of our present-day society.”

Policy Drivers in the 1970s

- Soil science research of the 1970's (e.g. McGill and Rennie)
 - Identified 30 to 50% loss of soil organic matter since cultivation began
 - Summerfallow and tillage are main causes
- Energy crisis of 1970's (73 & 79)
 - Farmers look at ways to reduce fuel costs
 - Rising farm input costs
 - Increased environmental awareness

Development and release of *Roundup*[®]

- Broad spectrum herbicide that could be substituted for tillage
- High initial cost (~\$40/acre) reduced Roundup use in conservation systems
- Price drop in 1990's made Roundup economical for wide scale use



Impacts of farm size, specialization & CWB quota system

- Larger farm size and movement to specialization
 - Farmers moved away from mixed farming
 - Farm size increased
 - Labour shortage required reduced field operations
 - Demand for larger, better seeding equipment led to development and manufacturer of equipment
- CWB delivery quota system
 - Influence of summerfallow acreage eligibility (1953, LIFT, Other cultivated at 33%, etc.)
 - Constant drop in fallow acreage since 1971
 - Influence of CWB on allocation of system capacity

Conservation Policy in 1980s

- PFRA established a Soil and Water Conservation Branch in 1980
- PFRA moved back to Department of Agriculture; published ***Land Degradation and Soil Conservation Issues on the Canadian Prairies (1983)***, which raised concerns about:
 - Wind & water erosion
 - Declining organic mater
 - Salinity
 - Economic costs to prairie farmers of \$239 M/year
- **Report Recommendation**
 - Most effective practices – minimum or zero tillage and reduction of summerfallow

A New Era in Soil Conservation

- 1984 Sparrow report — ***Soil at Risk - Canada's Eroding Future:***
 - Soil degradation issue for all Canadians
 - Recommended a comprehensive federal soil and water policy be developed and adopted
 - Technical and financial assistance needed to defray the costs of conservation practices
- PFRA re-established model of working with provinces, universities, and groups of farmers to address soil degradation (under ERDA)
- PFRA, in 1987, developed the National Soil Conservation Program (NSCP)
- PFRA led negotiations for **soil and water accords** with all provinces in Canada

Programs: 1980 - Present

Program	Years
Economic and Regional Development Agreement (ERDA)	1984 - 1988
National Soil Conservation Program (NSCP)	1989 - 1992
Green Plan	1993 - 1998
National Soil and Water Conservation Program (NSWCP)	1998 - 1999
Agriculture Policy Framework: National Farm Stewardship Program (NFSP)	2004 - 2008

Notes:

- Programs initially focused on soil conservation, but gradually broadened to address other agri-environmental issues.
- Between 1999 and 2003, a number of additional programs existed at the provincial level with federal support (eg. Agri-Food Innovation Fund in Saskatchewan)

Program	Alberta (\$M)	Saskatchewan (\$M)	Manitoba (\$M)
ERDA	-	3.66	2.23
NSCP	4.66	8.83	4.42
Green Plan	8.84	10.17	8.10
NFSP ¹	30.18	42.24	40.19

¹ Note: Includes outstanding commitments

Milestones for PFRA in Support for Conservation Tillage


- 1984: Soil Conservationists hired & ERDA incentive funds
- 1985: Initial focus on conservation fallow
- 1990: Provincial soil conservation groups and SCCC funded
- 1990: Demonstration of first air delivery no till seeders
- 1993: Green Plan - benefits of conservation tillage
- 1997-2002: Saskatchewan seeding survey: tillage system and crop sequence trends and erosion impacts
- 2000: Inner Mongolia (China) project to provide demonstration and extension of conservation tillage
- 2004: Environmental Farm Planning; development of BMPs
- 2005: National producer consultations to identify issues, constraints, and solutions to maintain no till systems
- 2006: Draft no till protocol for GHG carbon credits

No Till Seeded Cropland

Ecozone / Ecoregion	1991 (%)	1996 (%)	2001 (%)	2006 (%)
Mixed Wood Plains	3.5	15.2	21.4	26.3
Boreal Plains (Gray Soil Zone)	1.5	7.1	20.3	40.1
Black Soil Zone	4.5	12.6	26.8	45.1
Dark Brown Soil Zone	12.7	26.2	43.5	61.0
Brown Soil Zone	14.0	23.0	39.1	60.7

Source: Statistics Canada, Census of Agriculture

- Significant adoption in all zones / regions, but greater adoption as one moves to drier climates
- Greater no till challenges associated with excess soil moisture and excess crop residue



Percent of Cropland in Fallow and Percent of Fallow Land in Chemfallow

- Fallow reduction significant in all zones / regions, closely related to chemfallow and no till seeding in the dark brown and brown soil zones
- No till seeding enabled farmers to reduce fallow due to increased moisture conservation

Soil Zone		1971	1976	1981	1986	1991	1996	2001	2006
Gray	% fallow ¹	25.9	24.7	18.4	16.0	10.9	9.4	7.5	6.2
	% chemfallow ²					1.8	6.5	11.1	13.4
Black	% fallow	28.7	27.6	20.7	15.8	13.7	10.9	8.0	5.7
	% chemfallow					2.7	6.4	10.5	23.5
Dark Brown	% fallow	37.6	40.1	37.5	31.5	32.8	23.2	16.2	13.2
	% chemfallow					4.1	7.8	14.5	41.2
Brown	% fallow	41.4	43.6	42.8	38.8	40.0	35.2	27.9	22.4
	% chemfallow					4.6	10.5	24.6	51.7

Source: Statistics Canada, Census of Agriculture

Notes:

- 1 Fallow as percentage of cropland area, where cropland includes all annual and perennial crops harvested for grain, hay, silage, or green feed
- 2 Chemfallow as percentage of total fallow area, where chemfallow means using only herbicides for weed control

Factors Contributing to Conservation Tillage Adoption

- Policy and Programs
 - Technological Development: equipment, crop varieties, agronomy, etc.
 - Market Development
 - Experience and Knowledge
- All of the above accelerated in the mid 1980's, resulting in increased adoption starting about six years later in 1991.



Current & Future Challenges

- Wide spread adoption occurred, but constraints still exist in some regions and with some cropping systems:
 - Moisture, crop residue, herbicide dependence, phosphorus
- Policy/program flexibility required for producers to manage conservation tillage systems in a changing environment
- Shift from soil conservation to carbon sequestration:
 - Carbon offset market development
 - Protocols and verification systems
- EG&S policy/program influences
- Institutional adjustments, international influences (global market situation) and international project commitments



Thank you!