Western Canadian Producer Associations: Check-offs and Matching Grants

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Producer-Funded R&D

- Increased producer involvement in agricultural R&D has become a priority issue:
  - Declining growth rates in productivity
  - Declining share of R&D surplus accruing to producers due to innovation shift from public to private sector
  - Emerging bio-fuel and specialty food sectors, which opens up many new innovation opportunities

- Policy makers must make informed choices when designing agricultural R&D policy, including the system of matching grants for producer-funded R&D
Purpose of this Talk

- Discuss some general reasons why producers are expected to under-invest in agricultural R&D
- Provide a broad overview of select agricultural producer associations, which operate in western Canada
- Briefly describe the results of my theoretical research, which examines the efficiency properties of matching grants for producer-funded R&D
Producer Returns from R&D Investment

- Agricultural R&D may have a high social rate of return, but producers’ share of surplus may be low.
- Reasons:
  - Monopoly & Monopsony pricing in the supply chain
  - R&D Spillovers
  - Weak IPRs
  - Technology-induced price reductions for agricultural commodities
  - Agency problems and transaction costs in the R&D contracting process
Evidence of High Returns for Producers

- Despite a potentially low share of R&D surplus, it appears that R&D investment is profitable for many producers (Gray and Scott 2003)
- G&S estimated that Saskatchewan Pulse growers historically received an average industry return of $31.1 million for every $1 million of R&D investment
- In the long-term, pulse growers receive $15.60 back for every $1.00 of their R&D costs
Producer Underinvestment in R&D

- High industry returns → producer under-investment in R&D
- Producer-funded R&D is mostly financed through producer association check-off schemes
- Raising the check-off levy is the obvious way to increase producer-funded R&D
- Raising the check-off levy is not easy for association managers because a consensus of producers must agree and regulatory agencies must approve
- Producers may be reluctant due to lack of information, lack of trust and free-riding incentives
Innovation that results from R&D is a classic public good.

Voluntary individual investment in public goods largely fails because of the free-rider problem (Olson 1982).

Reducing the free-rider problem is costly for an organization due to producer heterogeneity, the horizon problem, transaction costs, enforcement and dissemination of information.

Gov’t policy that results in stronger producer associations and less free-riding has high social value.
Matching Grants

- National and provincial governments make extensive use of matching R&D grants for producer-funded R&D.
- The level of matching varies, but it is often in the 40% - 50% range.
- Matching grants are widely believed to be a highly effective tool for increasing producer contributions to R&D.
- Matching grant programs designed to increase R&D for bio-fuels are rapidly emerging (e.g., Biofuels Opportunities for Producers Initiative).
Theoretical Research Questions

- How effective are matching grants as a tool for increasing producer-funded R&D? Do matching grants “crowd out” private R&D investment?
- Should stronger producer associations optimally receive larger or smaller matching grants?
- Do matching grants help in the formation of strong producer associations with low free-riding problems?
- Is gov’t policy for matching grants time consistent, or is there a temptation to revise matching grant policy after association by-laws are passed?
Overview of Select Producer Associations in BC and Saskatchewan

- Institutional Structure
- Saskatchewan Data (1999-2004)
  - Unit Levies
  - Levy Revenue
  - Levy Revenue spent on Research
  - Rates of Levy Refunds
- Levy as a % of Unit Production Costs (BC)
Institutional Structure of Producer Associations

- Producer associations are typically organized under provincial law
- Significant differences across provinces
- Umbrella agencies often provide regulatory consistency across associations
- Check-offs are a mix of mandatory, voluntary and refundable
- Producer majority is generally needed to form an association and to implement key decisions
BC Producer Associations: Regulated

- Commodity boards are regulated by the BC Farm Industry Review Board
- These include supply-managed marketing boards and commissions for regulated industries
- Commissions include:
  - BC Cranberry Marketing Commission
  - BC Hog Marketing Commission
  - BC Vegetable Marketing Commission
- Participation and check-off payments are mandatory
BC, Regulated, Cont’n

- BC Vegetable Marketing Commission
  - BC Greenhouse Growers Association
  - BC Potato and Vegetable Growers Association
  - Fraser Valley Strawberry Growers Association
  - Others
- BCVMC collects fees for associations
- Associations request funds from BCVMC and (typically) matching funds from the Investment Agriculture Fund to finance R&D
BC Producer Associations: non-Regulated

- Development councils have capacity to collect refundable levies for funding R&D
  - BC Blueberry Council
  - BC Raspberry Industry Development Fund
- BC Fruit Growers Association
  - Formerly a commission; now collects voluntary levies for funding R&D
- BC Wine Grape Council
  - Mandatory check-off for wine grape producers to fund R&D
- BC Grain Producers Association (Peace River)
Saskatchewan Producer Associations

- Operate under Saskatchewan Agri-Food Council
- Development commissions and Development boards
  - Typically initiated by producers with 60% support (commission) or 80% support (board)
  - Promotion and development activities to support production and marketing
- Marketing boards
  - Have the additional role of facilitating regulated marketing
Activities supported by producer check-offs
  - Refundable for development commission
  - Non-refundable for development board and marketing board

Regulations specify operating structure, and orders specify the details (e.g., size of levy)

An increase in the levy requires producer support and Agri-food Council approval
Sask. Development Commissions

- Saskatchewan Alfalfa Seed Producers Development Commission
- Canaryseed Development Commission of Saskatchewan
- Saskatchewan Canola Development Commission
- Saskatchewan Flax Development Commission
- Saskatchewan Forage Seed Development Commission
- Saskatchewan Mustard Development Commission
- Saskatchewan Oat Development Commission
- Saskatchewan Winter Cereals Development Commission
Sask. Development Boards

- Sask Pork
- Saskatchewan Pulse Growers
- Saskatchewan Sheep Development Board
Western Grains Research Council

- Built on a $9 million 1981 endowment
  - Generated $17.5 million in R&D funding since its inception
- Wheat and barley check-off added in 1994
- Comprised of 18 diverse western Canadian producer associations
- Check-offs are $.30/tonne for wheat and $.50/tonne for barely
- Annual research funding is $4-5 million plus matching grants
Is Producer-Funded R&D Trending Up in Saskatchewan?

- The unit levy in Sask. was flat between 1999 and 2004 for most associations
- Only for the Saskatchewan Pulse Board did the unit levy increase
- Levy revenue is highly variable for some organizations (canola)
- Levy revenue is growing strongly for the Saskatchewan Pulse Board, but flat for others
Select Crop Levies in Saskatchewan (current)

- Alfalfa: 0.75 cents/pound
- Canola: $0.75/tonne
- Flax: $1.18/tonne (seed) and $0.50/tonne (straw)
- Pulse: 1% of sales
Unit Check-off Levies (Saskatchewan)
Levy Revenue (Saskatchewan)
R&D Expenditures as a % of Levy Revenue
Refund Requests (%)
# Levy Expense as a Fraction of Unit Production Cost

## British Columbia

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Unit</th>
<th>Expense</th>
<th>Levy</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>BC Hothouse Cukes</td>
<td>Sq Meter</td>
<td>$37.53</td>
<td>$0.400</td>
<td>1.07%</td>
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<tr>
<td>BC Field Brocolli</td>
<td>Ton</td>
<td>$560.00</td>
<td>$3.500</td>
<td>0.63%</td>
</tr>
<tr>
<td>BC Rasberries</td>
<td>Pound</td>
<td>$0.66</td>
<td>$0.005</td>
<td>0.76%</td>
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</tbody>
</table>

- Levy/Cost Ratios are similar for Saskatchewan commodities
Matching Grants

- Advancing Canadian Agriculture and Agri-Food (ACAAF) (Ag. and Agri-Food Canada) matches producer R&D funding at national and regional level
- Regional funds administered by BC’s Investment Agriculture Foundation (IAF) and Saskatchewan Council for Community Development (SCCD)
- Additional matching funds are available through BC’s IAF and Agri-Food Futures Fund
- Collaborative R&D opportunities are available for Saskatchewan Associations through the Ag. Development Fund
Matching Grant Policy

- Matching grants are growing in importance as an R&D policy tool
- Independent public research projects benefit producers, but they tend to “crowd out” industry investment
- Matching grants have strong incentive properties, but they also may cause some “crowding out” of industry R&D
Theoretical Queries

- To what extent do matching grants crowd out private R&D investment?
- Should stronger associations receive a higher level of matching grant?
- Do higher matching grants induce the creation of stronger associations?
- Are matching grants time consistent? That is, do policy makers revise grants after producer associations make key organizational decisions?
Incentive and Crowding Out Effects

Crowding Out

Incentive Effect

Marginal Cost

$VMI_{\beta>0}$

$VMI_{\beta=0}$

R&D Investment

$I^0$, $I^*$, $\beta I^0$, $\beta I^*$

Crowding Out
Stronger Organizations: Larger or Smaller Matching Grants?

- Matching grant: marginal social gain equal to the marginal reduction in DWL due to free-riding
- Marginal DWL is decreasing with higher grant and is small (large) for a strong (weak) association
- Hence, optimal grant should be smaller for a stronger association
Does Higher Matching Grant Result in Stronger Organizations?

- Producer associations should spend resources on reducing DWL due to free-riding.
- Continue to reduce until marginal reduction in DWL is equal to marginal organizational cost.
- The gain from reducing DWL is larger with larger matching grant.
- Hence, association will expend more resources to reduce free-riding the larger the matching grant.
Is Matching Grant Time Consistent?

- Matching grant is not time consistent
- Planner will raise $\beta$ by an additional amount to induce stronger producer associations
- Once organizational rules are set, planner has an incentive to lower $\beta$ (commitment is difficult)
- Hence, the planner’s choice of $\beta$ is time inconsistent
- Association will anticipate a subsequent reduction in $\beta$ and will thus build a relatively weak organization
- Outcome is inefficient due to time inconsistency
- These results are formally derived in a 3-stage game
Conclusions

- Producer-funded R&D is highly diverse and exists within a rather complex regulatory framework
- Increasing producer-funded R&D is a appropriate policy goal for policy makers
- Matching grants are effective R&D boosters, but are still subject to crowding out losses
- Matching grants have the added benefit of inducing associations to strengthen
- Matching grants may not be time consistent; credible R&D policies must be established