Food production must double by 2050 to meet demand from the world’s growing population...

Ag Tech – Share of total VC

Source: Chart constructed from PWC MoneyTree VC data series

October 2009

“Food production must double by 2050 to meet demand from world’s growing population...”

Source: UN General Assembly 2009

IPCC Report 2008

Climate Change and Water

“Changes in water quantity and quality due to climate change are expected to affect food availability, stability, access and utilisation.” (P. 3)
2014 Investment in Ag-Tech ($2.4B total – 90% US)

Top North Central States

- Illinois $207M
- Missouri $59M
- Minnesota $40M
- Michigan $28M
- Ohio $6M
- Nebraska $4M

*California top state $967M

Source: AgFunder AgTech Investing Report: Year in Review 2014
NCRCRD focus area:
*Innovation Diffusion for Rural Development*

**Other background**
- University technology transfer challenge, innovations slow to move off the shelf
- Need more CEOs/firms to match with faculty
- Maybe connect with US rural firms?

Agriculture Experiment Stations

Identify North Central faculty with Ag-tech

Connect to small rural/agricultural firms
Some caveats...

1. Ag-tech venture capital investment data

**2014:** PitchBook’s/PWC’s $340M/$148M (US) ≠ AgFunders $2.2B (US)

2. Tech transfer offices
   a. Primary focus - “billion-dollar winners”
   b. Limited marketing channels for Ag-tech
As a RRDC, state borders were not a limiting factor.

Solution in state “A”

Problem in state “B”

And, our network is different than TTOs’. Ours is small rural firms, many in agriculture.
“Discoveries” along the way

Rural innovators less likely to seek formal IP protection

– *OECD (2012); Renski & Wallace (2012)*

<table>
<thead>
<tr>
<th>Formal/Informal IP and R&amp;D</th>
<th>Urban</th>
<th>Rural</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patent</td>
<td>6.1%</td>
<td>4.6%</td>
<td>32.2%</td>
</tr>
<tr>
<td>Register trademark</td>
<td>11.7%</td>
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<td>63.2%</td>
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<tr>
<td>Licenses patents</td>
<td>6.7%</td>
<td>5.8%</td>
<td>15.4%</td>
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<tr>
<td>Conduct in-house R&amp;D</td>
<td>34.5%</td>
<td>31.1%</td>
<td>11.0%</td>
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<td>Purchase R&amp;D</td>
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<td>8.2%</td>
<td>36.2%</td>
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<tr>
<td>Use trade secrets</td>
<td>18.7%</td>
<td>16.1%</td>
<td>15.9%</td>
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<tr>
<td>First mover in market with innovation</td>
<td>30.4%</td>
<td>30.1%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Train staff to develop innovations</td>
<td>40.5%</td>
<td>38.0%</td>
<td>6.7%</td>
</tr>
</tbody>
</table>

*Source: Table produced from summary statistics of 2014 Rural Establishment Innovation Survey (REIS)*
Could new approaches of TTOs managing IP be helpful for small rural firms?

Our observations:

- Some faculty-entrepreneurs frustrated with TTOs – may need improved path for informal IP
- If innovation not patentable, faculty may get sent back to do more research

Martin Kenney at UC Davis:

“Should universities patent everything?”

https://www.canr.msu.edu/ncrcrd/webinars/
USDA NIFA
(1) Rural and Community Development
(2) Small and Mid-Sized Farms

Apply existing technology to solve problems in rural areas and for small/medium sized

Potential Opportunities
- Academic engagement – with rural firms
- Solution for “stalled” university tech
- Pipeline for innovative rural startups
- Bridge gap between rural firms and TTOs
- “Alternate” for faculty/rural firms
Example technologies in Food and Agriculture

- Solution for livestock antibiotic resistance
- New media marketing strategies for small producers
- Waste water treatment for swine operations
- UV light treatment for contaminated aquaculture water
- Weed management for organic producers
- Fermentation technology for spirits
Setting:
1. Baby boomer’s retiring from state and federal regulatory agencies.
2. Surge in small, processed-food launches.

Concern:
Loss of institutional knowledge on state and federal regulations may impede ability of new processed-food startups.

Solution:
Develop online/virtual training platform to fill in this knowledge/experience gaps.

Q: SBIR worthy?
University Tech, Faculty-Entrepreneurs → Small Rural/Agricultural Firms

SBIR

Rural Economic Development

University Tech & Small Rural/Agricultural Firm Pipeline
2017 Investment in Ag-Tech ($10.1B total – 45% US)

$ Millions

- eGrocer
- Restaurant Marketplaces
- Midstream Technologies
- In-Store Retail & Restaurant Tech
- Ag Biotechnology
- Novel Farming Systems
- Agribusiness Marketplaces
- Online Restaurants & Mealkits
- Farm Mgmt SW, Sensing & IoT
- Innovative Food
- Bioenergy & Biomaterials
- Robotics, Mechanization & Other ...
- Home & Cooking
- Miscellaneous

Deals

Top North Central States

- Illinois $69M
- Missouri $68M
- Minnesota $55M

*California top state $2,206M

Source: AgFunder AgriFood Tech Investing Report: Year in Review 2017
Why Does Rural Matter?

*Rural areas have important resources to help:*
  • Feed the growing global population
  • Potentially mitigate challenges from climate change/volatility

*Negative externality from the urban-rural innovation gap?*
  • Could the rural landscape change if we improved rural innovative startup opportunities?
Innovations in Agriculture

YouTube NCRCRD Innovations in Ag Channel

NCRCRD Website

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References


