Engaging Local Knowledge: Farmers and Community Involvement in Watershed Management

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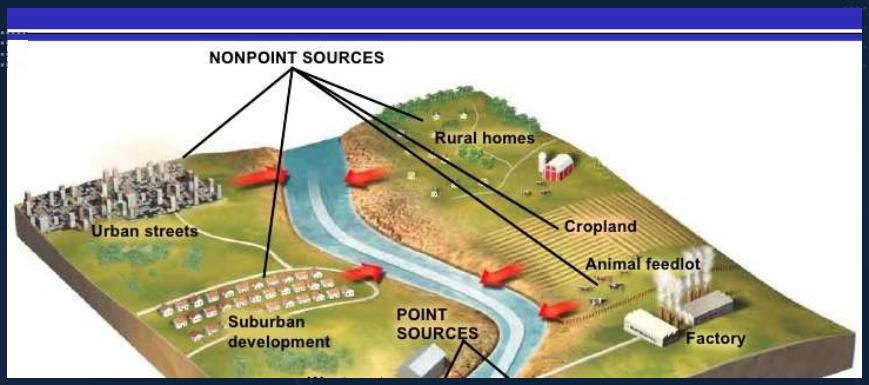
New NRCS Data on Ag Conservation

- Farmers increasingly adopted advanced technology, including enhanced-efficiency fertilizers and variable rate fertilization to improve efficiency, assist agricultural economies and benefit the environment.
- More efficient conservation tillage systems, particularly no-till, became the dominant form of tillage, improving soil health and reducing fuel use.
- Use of structural practices increased, largely in combination with conservation tillage as farmers increasingly integrated conservation treatments to gain efficiencies. Structural practices include terraces, filter and buffer strips, grassed waterways and field borders.
- Irrigation expanded in more humid areas, and as irrigators shifted to more efficient systems and improved water management strategies, per-acre water application rates decreased by 19% and withdrawals by 7 million-acre-feet.
- Nearly 70% of cultivated cropland had conservation crop rotations, and 28% had high-biomass conservation crop rotations.

The challenges and opportunities of conservation agriculture

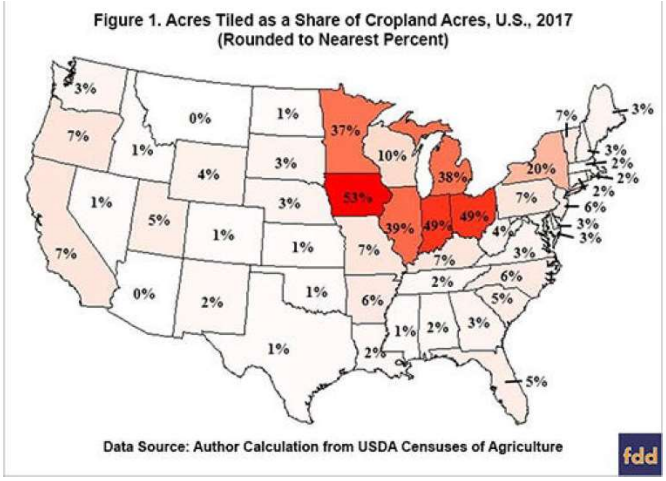
- Since 2013, algae blooms have continued to be a concern
- Agriculture – and the runoff of phosphorus and nitrogen -- is one of the culprits
- Conservation is about context – land, incentives
- But changes to the kind of agriculture that holds conserves soils might have other benefits



Move from Point to Nonpoint Sources

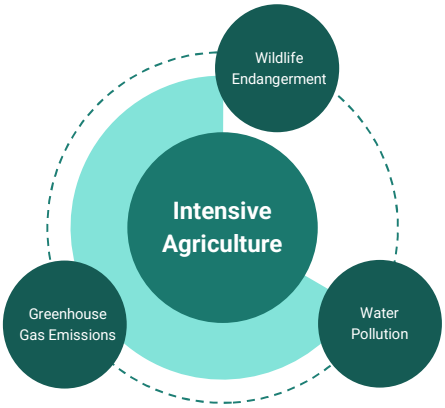
- NEPA and CWA first targeted point sources in the 1970s and 1980s.
- By the 1990s, recognition of NPS as an issue → watershed approaches
- 1985 conservation provisions → CRP; CREP; EQIP
- CRP - incentivize farmers to take the most erodible land out of production
- CREP and EQIP – BMPs to make production more sustainable…

The Context of Conservation



Background

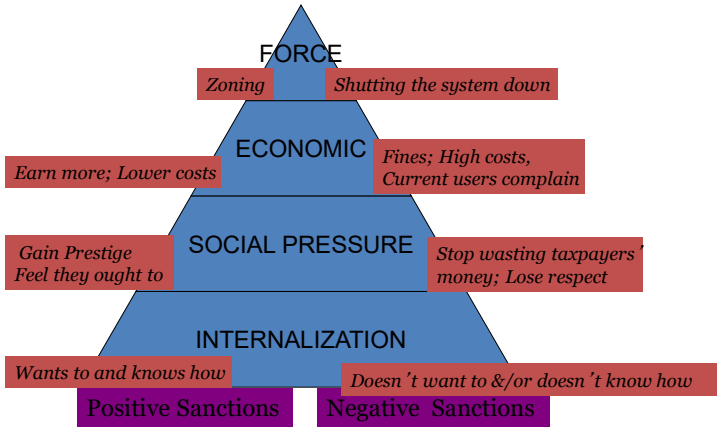
- Sustainability program participation remains variable
- Research on farmers' reasons for adoption or rejecting:
  - Conservation programs
  - Agricultural best management practices (BMPs)
  - Agricultural innovations



[1] Barbercheck et al. 2012, [2] Baumgart-Getz et al. 2012, [3] Knowler & Bradshaw 2007, [4] Lambert et al. 2007, [5] Prokopy et al. 2008, [6] Prokopy et al. 2019, [7] Reimer et al. 2012, [8] Stuart et al 2014

The Preferred and Problematic Policies Relate to the Pyramid of Actions

Why do people and institutions act for the "public good"?



Flora 2004; Morton 2008

Regulating Water Quality

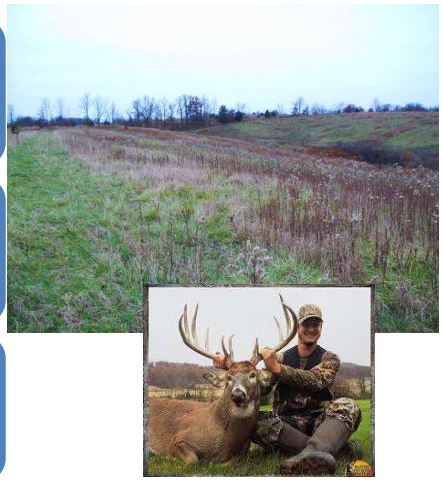
- Useful for violations of code of statute.
- May be an approach of last resort – witness Des Moines, Iowa
- May also serve as a threat to spur local action
- But threats of force can derail collaboration

Farm Payments

Conservation payments incentives to take erodible land out of production

Possibly plant alternatives

Works if alternative to production creates a new income stream



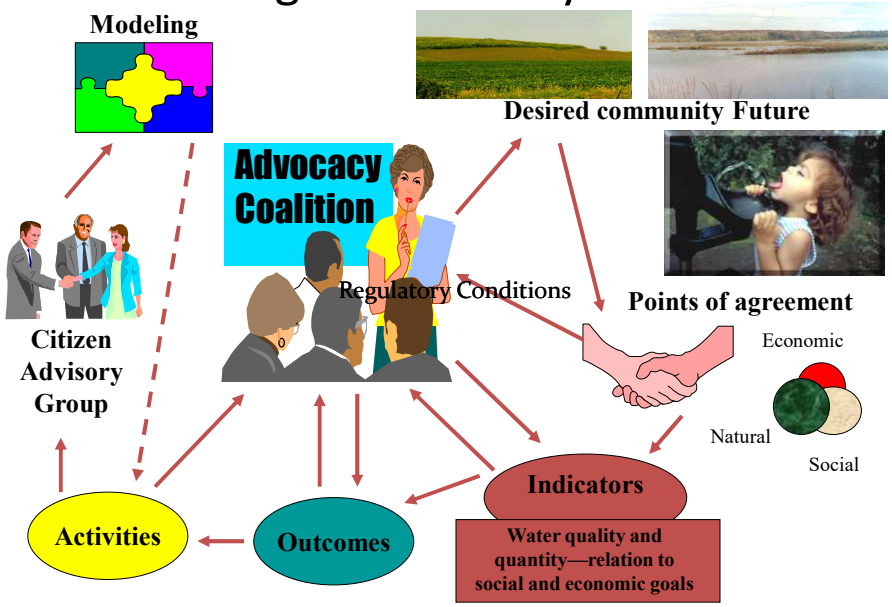
Social Pressure

- Creates social incentives to implement practices that enhance water quality
- Probably breaks down negative perception around certain kinds of practices
- Social pressure is linked to interaction with non-farm actors

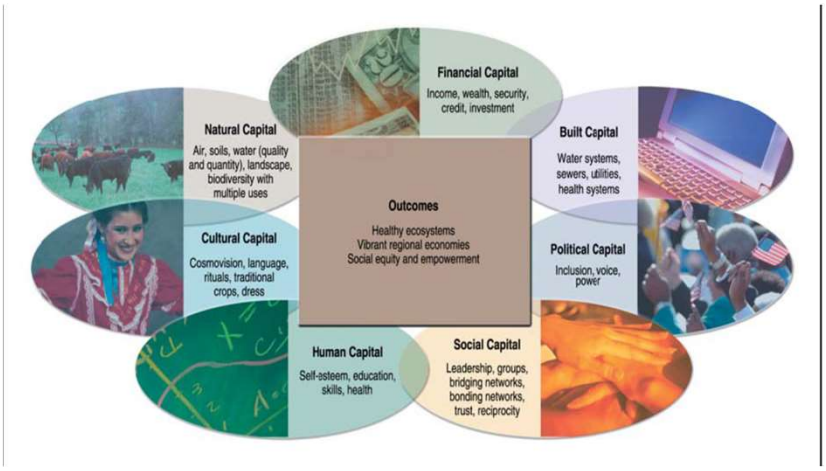
Internalization

- In some ways the ideal
- When individuals take for granted actions and behaviors
- Think littering…
- More difficult when actions are not uniform

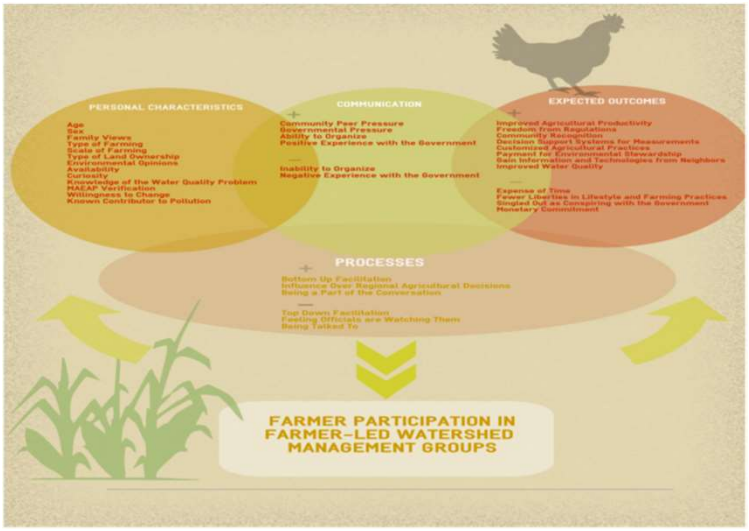
Building an Advocacy Coalition



Community Capitals and Farmer Led Conservation



Modeling Farmer-Led Action



What is Farmer Led

- "To work toward improved water quality, community-led groups have been formed as a way for farmers to engage with each other on pertinent issues" (Petit 2016)

Farmer Led Conservation

- Key ingredients:
  - Trust (Social Capital)
  - Resources (Financial; Built)
  - Culture (Self Efficacy)
  - Leadership
    - "an energetic passionate local citizen and/or agency staff or university personnel that have a vision for changing land use practices in the watershed

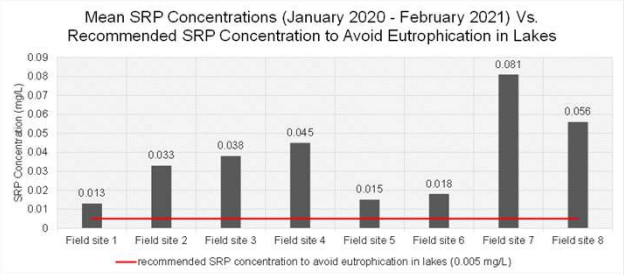
Farmer, Conservation, and Agribusiness Motivations

- Petit finds that farmers are interested in
  - Interaction with other farmers
  - More knowledge about conservation system
  - Not as interested in specific technologies
  - Being recognized as expert/knowledgeable
  - Work with farmers to grow the movement

How do we engage

- Participatory tile drain monitoring –
  - Alaina Nunn (IWR) – River Raisin Watershed
  - System to implement tile drain monitoring
  - Worked with farmers to show evidence of nutrients
  - Led to changes in practice
  - Conservation competition among farmers

Participatory Tile Drain Monitoring



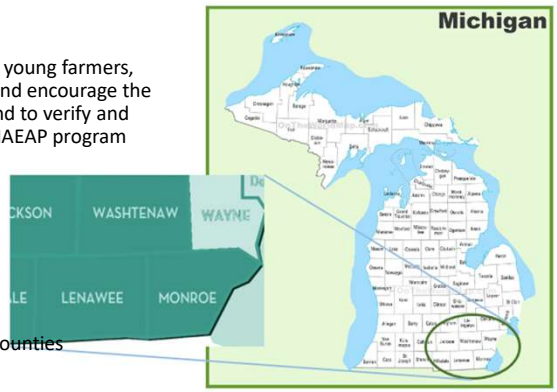
Participatory Tile Drain Monitoring

- "Without data like this we have no idea how much is going out of that tile. When you look at the water it just looks like clear water. You can't tell just by looking at it, or even by how your crops responded. You don't know how much went out of the tile drain. So, without studies or data or monitoring we have no way to know."
- "if I can really tell when I do add quite a bit of fertilizer like I did this year on part of my field...if I can see if any of that's really running off...a big change or whatever... then I'd be willing to change farm practices."

MACD Partnership --

Study Goal:

To better understand what motivates young farmers, women farmers, and CCAs to adopt and encourage the adoption of conservation practices and to verify and encourage verification through the MAEAP program



Study Location:

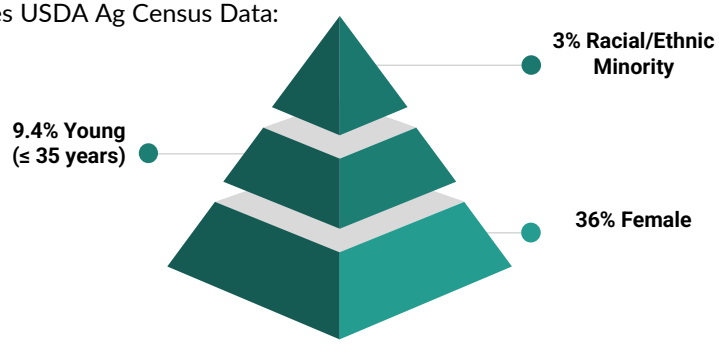
Monroe, Washtenaw, and Lenawee Counties

Moving Beyond the Usual Suspects

- Young farmers are more conservation minded:
  - "Conservation is embedded in the very way young farmers do business." (youngfarmers.org)
  - Cover crops are associated with "being younger, more educated and more conservation minded" (Wilson, 2020)

How do we get beyond

- Research participants = male, middle-aged or older, white
- Matches USDA Ag Census Data:



Gaps In Lit (cont.)/Needed Research

- Women Farmers
  - More environmentally oriented [2]
  - Non-conventional approaches - sustainable practices, organic farming, community-supported agriculture [3,7,9,10,12]
- Young Farmers
  - More committed to conservation practices [1,2,4,5,6,8,11]
- Both difficult to reach
  - Family and off-farm work responsibilities
  - Less likely to attend traditional farm outreach events or field days [9,12]

[1] Brodt et al. 2006, [2] Burton 2014, [3] Jarosz 2011, [4] Knowler & Bradshaw 2007, [5] Mathijs 2003, [6] Meskerem et al. 2020, [7] Pilgeram & Amos 2015, [8] Prokopy et al. 2019, [9] Sachs et al. 2016, [10] Trauger 2004, [11] Vanslembrouck et al. 2002, [12] Wright & Annes 2016

Attitudes about the MAEAP Program

- Less research on program effectiveness
- Vollmer-Sanders (2006) found
  - positive environment benefits among livestock producers in P load reduction
- Stuart et al. 2014
  - Found Positive attitudes towards MAEAP
  - Value articulated in ability to "avoid law enforcement"
  - "minor financial benefits through insurance discounts"
  - BUT – - Self-selects for environmentally-minded farmers
  - Had little economic value benefit beyond insurance
  - Less beneficial than direct payments for conservation

Methods

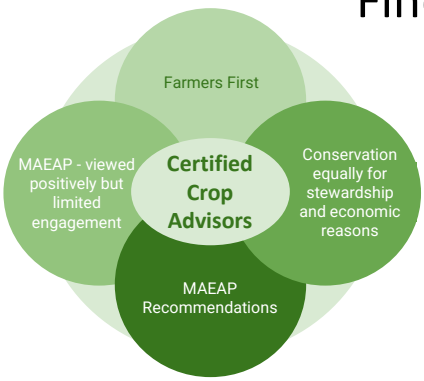
24 Participants: 9 women, 8 young farmers, 7 CCAs

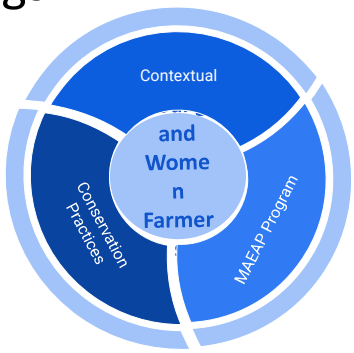
Timeline: Phone interviews between November 2020 and June 2021

Questions:

- Contextual, about the farm or CCA's business
- Farmer conservation practices
- Thoughts on and engagement with the MAEAP program

Findings





Farmer Demographics

	Young Farmers (n = 8)	Female Farmers (n = 9)
Farm Family	8 multi-generational	7 multi-generational - Other 2 married into
Farm size	Range = 130 - 800 acres Half = 350 - 500 acres	Range = 140 - 2100 acres Even split - - ≤ 600 acres v. 1100 - 2100 acres
Farm type	8 row/cash crops 5 also cow/calf operation - 2 beef; 1 dairy; 2 unspecified	8 row/cash crops - 3 also cow/calf (2 beef; 1 unspecified) - Additional: greenhouses, lavender, agritourism, and small animals 1 dairy farm
Land ownership	4 mixed (rent/own) 1 owned 3 unspecified	4 mixed (rent/own) 5 unspecified

Findings - Young and Women Farmers

Contextual →
- Barriers to entry (YF)
- Lack of respect (both)
- Strong relationship with Farm Bureau (both)

Conservation Practices

MAEAP Program

Barriers to Entry (YF)

High start-up costs, equipment, lack of knowledge

"You see it time and time again. So basically if you're fighting family farms it comes down to capital knowledge that you acquire that allows the next generation to succeed"

YF Washtenaw 6/1/21

"...it costs a lot of money to start farming and with rent being sky high for property"

YF Lenawee 3/24/21

Lack of Respect (WF) / Trust (YF)

"My favorite line is 'where's your dad?' or 'where's your husband?' And so usually I just say 'well, if you want to speak to someone you can talk to me, but there's nobody else here so it's me or nothing.' Just that kind of stuff, like not being taken seriously, is a… an issue"

WF Washtenaw County 6/2/21

"I would say that trust in the young people is kind of another challenge. Sometimes I find that or I get the picture that the older [guys don't listen to] me because I haven't been around long enough to know what's going on or how things go and feels like sometimes I have good ideas but they get shut down because that's not the way they've been done before, you know."

YF Lenawee County 3/26/21

Information Sources - Farm Bureau (Both)

Young Farmer groups (YF)

"Personally myself, I'm part of the young farmers group through the Farm Bureau. That's really the only main group that I'm a part of that discusses topics like conservation and financials on the farm and all that kind of stuff."

YF Lenawee County 3/26/21

"So through Farm Bureau [where WF gets information on farming issues], we are very active with our Farm Bureau agency here in Lenawee County."

WF Lenawee County 4/14/21

Information on new farm techniques (WF)

Findings - Young and Women Farmers

Contextual

Conservation Practices →

- Commonly used practices (Both)
- Stewardship (WF)
- Economic benefits and financial constraints (YF)
- Lack of Time (Both)

MAEAP Program

Table 1

Reasons For Conservation Practice Adoption, by Farmer Type

Common Practices: no till, crop & till rotation, buffer strips, variable rate or manure fertilizer

Reasoning for implementing conservation measures	Young Farmers (#)	Women Farmers (#)
For the farm/next generation	0	4
For the environment (including wildlife)/stewardship	3	5
Financial Benefits (cost, yield, time)	5	3
Liability Concerns, Views of General Public	2	0
Influence of family (history) and friends	2	2
Influence of the conservation district (MAEAP)	1	1

Note: Some farmers listed more than one reason as to why they implement conservation measures

Environmental Stewardship (WF)

"To be conscious of the environment. We want to make sure that we are able to keep farming, in order to do that we need to take care of the land… we have to be conscious of the fact that every action has a reaction, and we want to be able to have positive reactions."

WF Washtenaw 6/2/21

Financing Conservation Practices (YF)

Economic Benefits

"If we can till and reduce our trips across the field and kind of keeping our soil in place, try not to terribly disturb it too much if we don't have to. You know and that in turn saves time and fuel."

YF Lenawee County 3/24/21

"I would say the big challenge is the financial challenge. Everything costs so much like you can't just magically put a building up. "

YF Lenawee County 3/26/21

Financial and Space Constraints

Lack of Time (Both)

"Well I guess life with the COVID time I thought I would have more time and then I ended up going back to work so I started it when I was home and could meet with her [MAEAP technician] and then I don't know, I just got overwhelmed with other things. Like, It's on my list to do, it just wasn't on the top…"

WF Monroe 11/20/20

Lack of Time Subfinding: Part-Time Farmers (Both)

"I work full time off the farm also and my parents generally worked off farm jobs too since we're a fairly small operation. But in a lot of ways my goal is to make it a little bit more where I don't have to work off the farm and I can get a little more financial security for the farm so that's you know, part of the organic venture here."

YF Lenawee County 3/24/21

Of course farmers are nowadays – probably farming is not always their only source of income. So you always have timing restraints, you know, is this going, can I handle another thing put on my plate."

WF Washtenaw County 11/23/20

Findings - Young and Women Farmers

Contextual

Conservation Practices

MAEAP Program →

- General opinions (positive or neutral)
- Importance for neighbors and the agriculture industry
- Positive for direct-to-consumer relations
- Verification and conservation district relationship

Table 2

Views of the MAEAP Program

View	Participating Farmers (#)	Other Farmers (#)
Generally Positive View	4	5
Common sense/A good accomplishment	2	0
Good for the Environment	2	4
Good for the Industry	3	1
Good for Public Perception	2	1
Impressed with the Program Generally/A Particular Technician	2	1
Neutral View	2	0
Worried About How Strict it Is/Failing the Program	0	1
Dislike of Government Intervention	1	1
Age - Too Late In Career	0	3
Haven't talked to other farmers much about MAEAP	--	5

Note: Some farmers listed more than one opinion on the MAEAP program

General Thoughts

Participants view MAEAP positively

"We are very impressed with the MAEAP program. It's good for the environment, it's good for agriculture. Like I said earlier, to educate the public on what practices we use here on the farm..."

WF Lenawee County 4/14/21

General farmer community more neutral

"Some of the farmers are getting old around us and they just feel like they don't want to feel like they have a whole list to do or whatever and at this point I just don't really care anymore...they've been farming for 60-70 years so they're not going to change for 5-6 years just to get that sign out there."

YF Washtenaw County 3/24/21

"...it just seems like a mountain of something to get done when you're already trying to push through a big enough hill as it is."

WF Washtenaw County 6/2/21

Relationships

Neighbors

"We're close to Ann Arbor and we call them tree huggers. You've got people that are constantly wanting to know what you're doing and why you're doing it...So anything that you can do to show that you're trying to do a good job I think it educates people and makes them realize that okay they're not out there doing it to do it, they're doing it in the right manner."

WF Washtenaw County 12/04/21

Industry

"I think it's a good thing. I mean I personally feel like it's great for the industry, great for the state. It's a voluntary program that lets people know that farmers care about the land and it's a great program."

YF Washtenaw County 6/1/21

Direct-to-Consumer Relations

"...we became MAEAP verified. I think 2015 or 16, and the reason being is because of the amount of people we have here that come to visit and the amount of negativity that farmers get. It was very important for us to become verified so that we can talk about on our wagon rides on weekends and we have a speaker. Either my husband or my daughter talks about our farm and what we do and the practices that we use, to educate people, and MAEAP, you have to, you know, there are certain criteria that you have to meet."

WF Lenawee County 4/14/21

"The biggest thing we market all of our freezer beef directly to local customers and sell it right off of the farm, and being able to say that you're MAEAP verified just gives them a little additional assurance that we're doing everything on our part to protect our soils and our waters and raising our livestock the best that we can in the safest manner. It just gives some added reassurance to customers that we're being good stewards."

WF Lenawee County 5/21/21

Conservation Districts

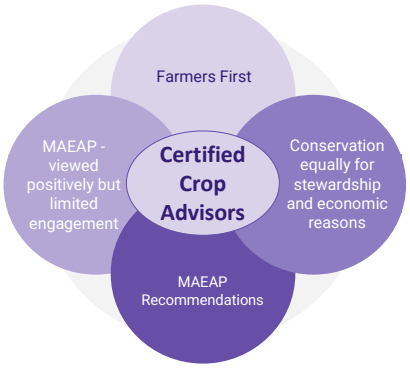
Farmers who view the MAEAP program positively also seemed to have more positive relationships with conservation district

"They [Conservation District] provide, I mean guidance in terms of these are good things you can be doing or good cover crops you can be planting, you know. They provide financial assistance at times by getting grant money from the state or federal level. And they do come out and you know take a look at how you're doing things and you know help make recommendations and you see, see what works well for your operation since everybody's operation is different there's no easy one size fits all."

YF Lenawee County 3/24/21

Certified Crop Advisors

- ***Demographics***
  - 6 Sales reps/agronomists for major agricultural retailers
  - 1 Self-employed agronomist
- ***Themes →***



Farmers First

I also farm myself… I can take that along to my customers and help them try to implement some of the practices that I have taken on"

CCA Lenawee 6/2/21

"First of all, first and foremost I'm a farmer… I guess I try to lead by example."

CCA Monroe 5/12/21

"Some of it too I'm just learning on my own. You know, farming some of my own acres with my family. To me, you have to learn by doing because if you see work on somebody else's farm it's like 'that's not me, my conditions are a little different.' So I will hear things from others, I'll test it out, I'll see it work and then the nice situation I'm in as well, is I can see those things work on growers' farms that I'm working with…"

CCA 6/3/21

Land Preservation and Economic Benefits

For conservation adoption, preserving land and economic benefits are equally important

"...myself included, farmers are proud of their land. They want to preserve their land"

CCA Lenawee 6/2/21

"I'm going to do everything in my power to make sure that you are set up for success, given the conditions that we are dealt with. Whether that be a dry year, whether that be a wet year. I want that grower to know we've done as much as, we've controlled as much as we can so that they are in a position to be successful."

CCA 6/3/21

MAEAP Program - Engagement

View MAEAP program positively, but only half share information with clients - lack of time, farmers don't ask about it

"...you know, you only have so much time usually with a client... usually you're concentrating on some other issue or some issue with his growing crop"

CCA Monroe 5/12/21

"If it's not important to the grower, if you get a guy that's only interested is raising bushels. Okay MAEAP probably isn't going to come up in conversation."

CCA 6/3/21

Recommendations for MAEAP Outreach

Types of information that CCAs would like to see in order to better advertise MAEAP to farmers

Types of information	Number of CCAs
More advertisement in general	1
Postcards/flyers	2
More background information on the program	1
Reaching out to CCAs and teaching them more about MAEAP so they can present the information to farmers	1
Having a financial incentive advertised	1
Presentation talking about MAEAP	1

Note: Some CCAs listed more than one way that they would like to see more information presented to farmers

"I think having that one-on-one conversation is better than any [company name] flyer or online promotion or anything like that"

CCA 5/21/21

"I honestly think a little postcard, a publication of what all the details are. Some of the things that they might, you know, why they should do it I guess"

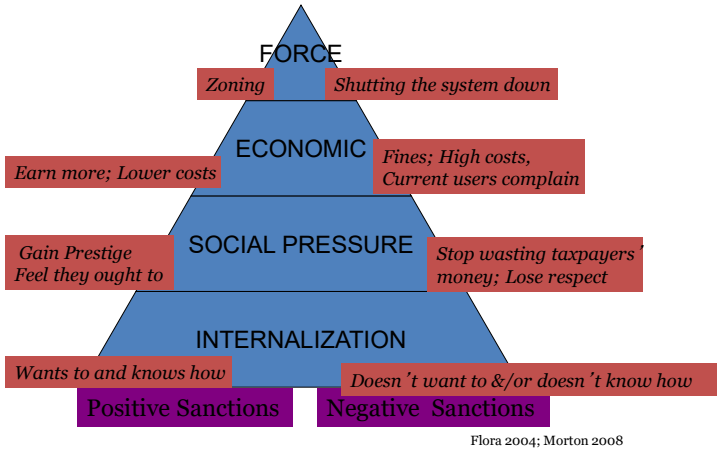
CCA Washtenaw County 5/12/21

Take Aways

- Context matters
  - Constraints may be different
  - Land – access to land – Type of operation
  - Financing – Conservation motivator
  - Operation – and social capital (important for MAEAP)
  - What kind of information is useful for whom
- What are the incentive structures
- What are the sources of information
- Through which kinds of institutions

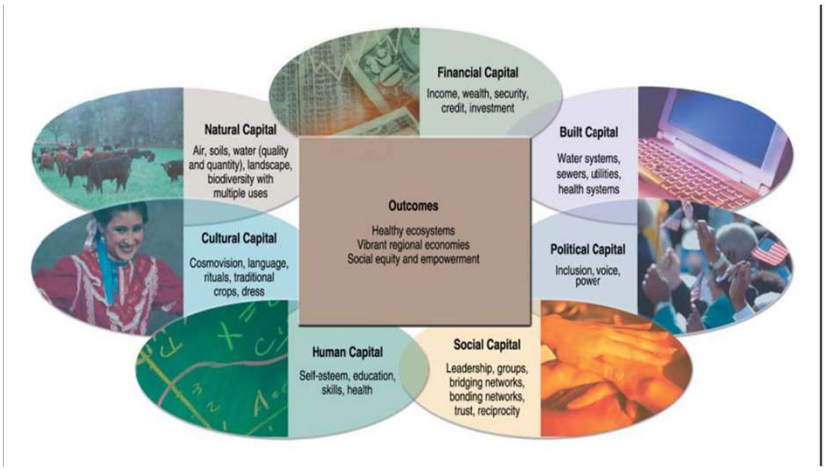
The Preferred and Problematic Policies Relate to the Pyramid of Actions

Why do people and institutions act for the "public good"?



Flora 2004; Morton 2008

Conclusion

- Important to recognize farmer led action as critical to achieving conservation goals
- Must recognize the knowledge of farmers in the process – they are expert about what is happening on their land
- Must recognize challenges of facilitation – but also be willing to let farmers lead

Community Capitals and Farmer Led Conservation