Soil Conservation, Productivity and Environmental Quality

Remarks by
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2013 Agricultural Outlook Forum
Topics I will cover…

❖ What is “marginal” land…

❖ What do we know about soil erosion and soil degradation…

❖ Combination of markets, weather and policy is expanding the universe of “marginal” land…

❖ A few policy implications…
What is “marginal” land…

Land that cannot be planted to annually-tilled crops unless aggressive conservation measures are taken to improve soil health and the environment.

THIS IS HOW I THINK ABOUT MARGINAL LAND...

SOIL QUALITY OR HEALTH – FUNDAMENTAL FIRST STEP TO ADDRESS BOTH PRODUCTIVITY AND THE ENVIRONMENT...

BUT ADDRESSING ENVIRONMENTAL CONCERNS REQUIRES MORE THAN SOIL QUALITY...

NEED TO EXPLICITLY FOCUS ON IMPROVING SOIL QUALITY AND THE ENVIRONMENT...SUSTAINING THE STATUS QUO IS NOT GOOD ENOUGH.
JUST TO REVIEW WHY WE SHOULD BE SO CONCERNED ABOUT SOIL HEALTH...

SOIL HEALTH IS SLOWLY EMERGING AS A DRIVING NATURAL RESOURCE AND ENVIRONMENTAL CONCERN...

SOIL HEALTH IS MOST IMPORTANT WHEN THE WEATHER IS BAD – AND THE WEATHER WILL BE INCREASINGLY BAD, STRESSING CROP PRODUCTION AND THE ENVIRONMENT.

MANY CONCERNS ABOUT SOIL HEALTH – ORGANIC MATTER, COMPACTION, CHEMICAL CONTAMINATION

PRIMARY POLICY FOCUS HAS BEEN ON SOIL EROSION – FOR GOOD REASON

UPSHOT IS THAT SOIL EROSION IS WHAT IS TRACKED – WE KNOW LITTLE ABOUT OTHER FORMS OF SOIL DEGRADATION.
“Soil erosion, in turn, starts a chain reaction that exacerbates all aspects of environmental degradation.”

WHAT IS THE NRI TELLING US ABOUT SOIL EROSION...


BUT IN KEY REGIONS NRI TELLS US THAT – ON AVERAGE -- SOIL EROSION IS GETTING WORSE...NORTHERN PLAINS – SOUTHERN PLAINS – MOUNTAIN AS WELL AS SOME STATES IN THE CORN BELT.

BUT “AVERAGE” EROSION CAN BE QUITE MISLEADING

EROSION IS AN EPISODIC EVENT – DRIVEN BY UNIQUE STORM EVENTS.

ISU DAILY EROSION PROJECT ESTIMATES EROSION AFTER EACH STORM THAT PASSES OVER IOWA.

AVERAGE EROSION RANGED BETWEEN 5 AND 50 TONS PER ACRE IN THE STORM AREA.

MAXIMUM EROSION – MOST VULNERABLE AND POORLY PROTECT LAND – RANGED FROM 5 TO OVER 100 TONS PER ACRE.

AVERAGES ARE LARGELY MEANINGLESS – WHAT IS SUSTAINABLE IS WHAT CAN STAND UP AGAINST THESE KIND OF EVENTS.
POORLY PROTECTED FIELDS COUPLED WITH MORE INTENSE RAINSTORMS ARE PRODUCING AN EPIDEMIC OF EPHEMERAL GULLY EROSION.

A PARTICULARLY DAMAGING FORM OF EROSION THAT CREATES A DIRECT PIPELINE FOR POLLUTED RUNOFF FROM FIELDS TO STREAMS.

A FORM OF EROSION THAT IS NOT ACCOUNTED FOR IN NATIONAL ESTIMATES OF EROSION.

ESTIMATES OF EROSION WOULD BE FAR HIGHER IF GULLY EROSION WAS INCLUDED.

NEXT SLIDE
OFFSITE EFFECTS LOOM LARGE – WHERE POLICY IS INCREASINGLY FOCUSED NOW.

IOWA DNR MAINTAINS A WATER QUALITY INDEX – 98 MONITORING SITES, WHICH WE RECENTLY ANALYZED AS PART OF OUR “MURKY WATERS” REPORT.

80 PERCENT OF MONITORED STREAMS IN POOR OR VERY POOR CONDITION IN SUMMER – 60 PERCENT YEAR ROUND.

MOSTLY BECAUSE RUNOFF FROM FARM FIELDS.

FROM AN “OFF-SITE” PERSPECTIVE, WE ARE STARTING FROM AN ALREADY UNSUSTAINABLE BASELINE IN IOWA – PROBABLY SIMILARLY ACROSS THE CORN BELT.

NEXT SLIDE
PRESSURE MOUNTING ON THE AGRICULTURAL LANDSCAPE...

SOARING CROP PRICES...

COMPETITION FOR LAND...

PUSHING CONVERSION OF GRASSLAND – PASTURE – CRP TO ROW CROPS

RESULTS RECENTLY CONFIRMED BY A SDSU STUDY PUBLISHED IN PNAS THAT WAS BEEN CIRCULATING THIS WEEK.
WE TOOK A CLOSER LOOK AT THIS CONVERSION IN IOWA AND FOUND THAT A LARGE PROPORTION OF THE CONVERTED LAND IS CONSIDERED HIGHLY ERODIBLE.
ON TOP OF THESE PRESSURES THE INCREASING FREQUENCY OF SEVERE STORMS IS INTENSIFYING CONCERNS ABOUT EROSION AND POLLUTED RUNOFF

DRIVING CONCENTRATED FLOW AND EPHEMERAL GULLY EROSION

DRIVING STREAM BANK EROSION, WHICH IS NOW A PRIMARY SOURCE OF SEDIMENT AND PHOSPHORUS IN MANY AGRICULTURAL WATERSHEDS.
WHAT WE HAVE TRADITIONALLY CONSIDERED A SUSTAINABLE LEVEL OF CONSERVATION IS NO LONGER ADEQUATE.

IOWA STATE UNIVERSITY “STRIPS’ PROJECT DOCUMENTING SUBSTANTIAL LOSSES OF SEDIMENT FROM CONTINUOUS NO-TILL FIELDS.

UPSHOT – WE MUST REDEFINE WHAT IS SUSTAINABLE – WHAT IS SUSTAINABLE IS WHAT CAN RESIST AND RECOVER FROM EXTREME EVENTS.

WHAT IS SUSTAINABLE UNDER AVERAGE CONDITIONS IS NO LONGER GOOD ENOUGH.
Upshot…

✧ We are starting from an unsustainable and unacceptable level of soil and environmental quality.

✧ The area of “marginal” land is growing – much if not most of cropland acres will need aggressive conservation measures to protect soil quality and the environment.

✧ “Retiring” “marginal” land will be an important component of conservation going forward – urgent need to intensify conservation on land that stays in production.

✧ Conservation policy going forward must focus on:
  ✧ Durability
  ✧ Accountability
SLIDE ON YOUR LEFT SHOWS THE NUMBER OF CRP ACRES WERE NOT RE-ENROLLED WHEN THEY EXPIRED EACH YEAR IN MINNESOTA.

FAILURE TO RE-ENROLL MEANS 10-YEARS OF TAXPAYER INVESTMENT – MAYBE 20 YEARS OR MORE OF INVESTMENT – WERE LOST AS THOSE LANDS WENT BACK UNDER THE PLOW.

MEANWHILE – ON THE RIGHT – RIM ACRES CONTINUED TO GROW, IF SLOWLY, OVER THE SAME TIME PERIOD.

SHOULDN’T THIS TELL US SOMETHING ABOUT HOW TO RUN OUR PROGRAMS DESIGNED TO CHANGE LAND USE OR RESTORE ECOSYSTEMS?

NEW SLIDE
AND A LAST EXAMPLE.

WE ARE EXPERIMENTING WITH HIGH RESOLUTION COLOR INFRARED PHOTOGRAPHY TO SEE IF WE CAN TELL – IN REAL TIME – WHAT IS HAPPENING ON THE AGRICULTURAL LANDSCAPE.

WHAT YOU SEE HERE IS A SMALL PIECE OF MARSHALL COUNTY IOWA IN 1980 – ALL HIGHLY ERODIBLE CROPLAND, BY THE WAY.

THE RED IS GRASS – OR SOMETHING ELSE THAT IS GREEN IN THIS SPRING PHOTOGRAPHY.

PAY PARTICULAR ATTENTION TO...

NEW SLIDE
HERE ARE THE SAME FIELDS IN 2009.

NOTE...

NEW SLIDE

GREEN COLOR HIGHLIGHTS AREAS THAT HAVE BEEN IN GRASS SINCE 1980

BLUE COLOR HIGHLIGHTS AREAS THAT ARE IN GRASS NOW, BUT WEREN’T IN 1980

RED COLOR HIGHLIGHTS THE AREAS THAT USED TO BE IN GRASS BUT ARE GONE NOW.

GAINED A RIPARIAN BUFFER, BUT LOST CONTOUR GRASS STRIPS AND GRASSED WATERWAYS.

NEW SLIDE
SO WHAT TO DO?

HERE IS A QUICK SUMMARY OF WHAT WE ARE THINKING NEEDS TO BE DONE. I WILL TOUCH ON ALL FOUR BUT SPEND MORE TIME ON THE FIRST BECAUSE I THINK IT MUST BE THE FOUNDATION OF CONSERVATION GOING FORWARD.

NEW SLIDE
IT IS TIME TO FACE FACTS – A PURELY VOLUNTARY APPROACH HAS FAILED TO PRODUCE DURABLE CONSERVATION TO DATE – AND WILL BE EVEN MORE CHALLENGED GIVEN THE NEW PRESSURE ON OUR LAND, WATER AND WILDLIFE.

WE NEED TO DEFINE A BASIC STANDARD OF CARE THAT GOES HAND IN HAND WITH THE RIGHTS OF LAND OWNERSHIP

WE THINK THAT BASIC STANDARD OF CARE SHOULD FOCUS ON SIMPLE, OFTEN VERY CONVENTIONAL PRACTICES, THAT TAKE CARE OF PROBLEMS THAT ARE DISPROPORTIONALLY DAMAGING TO SOIL, WATER AND AQUATIC HABITAT.

TAILORED TO THE LANDSCAPE AND FARMING SYSTEMS.

WE DON’T WANT EVERY FARMER TO HAVE A PERMIT FROM THE MPCA

WHAT WE DO WANT IS TO RESTRICT THE RISK AND HIGHLY DAMAGING PRACTICES THAT MANY, IF NOT MOST FARMERS WOULD AGREE ARE JUST BAD BUSINESS PRACTICE AND BAD FOR AGRICULTURE’S BRAND.

NEW SLIDE
Focus on permanence

Flexible easements to restore critical landscape and ecological components.
- Range from purchase of selected land use rights.
- To full restoration and no economic uses.
Support transition to sustainable farming systems.
- Subsidize practices that are most likely to stay in place once the subsidies end.
- Level the playing field for diversified farming operations.

ON TOP OF THAT BASIC STANDARD OF CARE, WE ARE GOING TO NEED A SUITE OF CONSERVATION PROGRAMS THAT SEEK MORE PERMANENT CHANGE:

1) FLEXIBLE AND WELL FUNDED EASEMENT AND LAND ACQUISITION PROGRAMS – RANGE FROM PURCHASE OF SELECTED CROPING RIGHTS TO FEE PURCHASE OF LAND – AGAIN, MINNESOTA WELL AHEAD OF THE PACK.

2) FOCUS COST SHARE AND INCENTIVES ON PRACTICES THAT ARE MOST LIKELY TO STAY IN PLACE AND THAT SUPPORT A TRANSITION TO MORE SUSTAINABLE FARMING SYSTEMS.

NEW SLIDE
Thank you...