

ROY BARDOLE'S WRITTEN STATEMENT TO  
THE U.S. COMMISSION ON OCEAN POLICY

Thank you for this opportunity to address you. I applaud and encourage your analysis and understanding of an entire environment, not just one part; like only water or ocean or lake, or river, or land.

I live west of the small town of Rippey, Iowa, which is located in the southern part of the prairie pothole region of the United States. Glacial advances formed this area. I farm in the Raccoon River basin with water draining to the Raccoon River and to Snake Creek, a tributary of the Raccoon. I also rent river-bottom land 1/2 mile down stream from where Buttrick Creek empties into the Raccoon. I mention Buttrick Creek and the Raccoon because of their national notorious reputation for high nitrate levels. 77% of the Raccoon River basin is under row crop cultivation and 95% of Buttrick Creek basin is under row crop cultivation. The accepted cropping pattern is 1/2 corn and 1/2 soybeans. Soybeans, a legume, produce more nitrogen than they need. Corn on the other hand needs 1 1/4 of nitrogen for each bushel of corn produced. The nitrogen is applied as anhydrous ammonia, liquid nitrogen, urea, or as animal waste. This nitrogen attaches to soil particles or organic matter until soil microbial activity breaks the nitrogen down to the nitrate form. This form of nitrogen is water soluble and available for plants to use.

Nitrate has been identified as a contributing factor to the Hypoxia Zone in the Gulf of Mexico, with where I live, being identified as a major contributor of that nitrate. Nitrate comes from many sources; industry, agriculture, background, urban areas, and septic systems. Is agriculture a contributor to the nitrate? Absolutely!

The 1400 acres I farm is under laid with several miles of drainage tile to remove the extra water from our soil and make it farmable. Without this drainage tile my tillable acres would decrease between 40% and 60% depending on the wetness of the season. The nitrate in tile water of an agronomically optimum managed field runs between 20 & 30 ppm significantly above the health advisory level for drinking water. Logic would say if I reduced nitrogen fertilizer, the amount of nitrate in the tile water that enters the Raccoon River would decrease and the nitrogen level in the Raccoon would go down. Yet in the last 10 years the amount of nitrogen used in the Raccoon River watershed has decreased, the amount of crop removed has increased, but the levels of nitrate in the Raccoon River have also increased.

Non-point source pollution in an Ag-Eco system is complex and is not always straightforward or logical. The top 6 inches of soil on every acre I farm has 3000 pounds of nitrogen tied up in organic matter. As this organic matter decomposes, nitrogen is released to the soil and carbon dioxide to the atmosphere.

Nitrogen is not the only pollutant that affects waters. Phosphorus, herbicides, insecticides, and soil itself are also pollutants. In fact soil is the most common cause of water being classified as impaired in Iowa. I believe we must look to history and nature itself for solutions. When my farm was prairie, vegetation grew and removed nutrients from late March

through hard freeze, sometime in October or November. The only time bare soil was exposed to the elements and therefore exposed to erosion was in buffalo trails or buffalo wallows. Today crop is actively using nutrients from perhaps mid-May through early to mid-September, with exposed soils both spring and fall. The more we can make agriculture practices mirror “mother nature”, the better we do.

Agriculture has been moving toward less tillage for 15 years. We still have a long ways to go. I believe anything that can be done to encourage this move will help. Research is just beginning to think about cover crops for most of agriculture. A cover crop works best where good or excess spring moisture exists and is much easier and potentially less damaging to the yield of the intended crop. Cover crop species and management need intense research and then technical transfer.

Nutrient management is another part of solution. Agriculture has followed university recommendations for nutrients historically. Because university research dollars have been squeezed, research with current high yield hybrids has not been readily transferred to agriculture. Because of economic pressure in agriculture, we have experimented with both higher and lower rates of fertilization. This research must be done and effectively communicated with production agriculture.

Site-specific fertilization is being touted as the answer to nutrient loss. The variability in soils, with sampling, and testing error make this only another clue not a total solution. In 2000, I was working with Monsanto on a tillage demonstration site at one end of a ½ mile long field, and I.S.U. on a deep placement of nutrients on the other end of the field. A local fertilizer retailer sampled one end the field and I.S.U. the other. When the results came back, the values at the west end were low to very low, calling for high phosphorous and potassium application rates and at the east end, high to very high, calling for maintenance or no fertilizer. The actual fertility of the field probably lies somewhere in the middle.

One of the greatest impediments to change is an elderly, and/or absentee landlord. Most of these landlords want income from their investment, the land. A change of practice is uncertain and annual expenditures in cover crop or soil testing are not part of their plans. Many times even financial encouragement doesn't reach these landlords. They grew up on the farm and perhaps operated it all of their lives. Example: We are no-till farmers. We were asked to bring a farm out of the CRP program and back into row crop agriculture. We farmed the ground that first year and produced the best soybean yield the farm had ever grown. Yet the following year the land was taken from us and given to a farmer that farms with the same practices used in 1950!! The landlord said she couldn't get used to how no-till looks. So HEL ground went back to tillage that maximizes erosion. There is a solution to the landlord problem but I don't know what it is.

Agriculture deals with extreme diversity in soils and weather. In Iowa there are 5 major soil regions; the loess hills (extremely erodable), prairie pothole (heavy tight soils), Carst (limestone under laid with sink holes), southern Iowa (hilly with light soils), and southeast Iowa (flat with some sandy soils). Within each of these areas the soil variability is extreme as well. Example, my soils are heavy clay soils that pond badly in heavy rains. Four miles east of

me, there are almost NO ponds and the soils tend to be sandier and much more erodable. This happens only in Iowa. As you go east to west and north to south in the United States, the variability only becomes greater. Weather is a similar variable. Generally speaking as you travel from the Missouri River to the Mississippi River, rain becomes heavier and more certain. The point is, solution to non-point source pollution from agriculture must be very site specific. Many times a blanket regulation will penalize one producer, sometimes for doing good things, and not address a bad actor in another region. I believe the solution is written whole farm plans. These plans must be based on Best Management Practices that work for the soils and weather conditions expected where he farms.

I have not said anything about animal agriculture. In today's large confinement operations, much of their problems are point source. However after manure is spread on fields it becomes non-point source. As long as manure is applied at appropriate agronomic rates, the nutrients are the same as commercial fertilizer and exposed to the same potential loss. The problem is large confinements being placed too close together and therefore having more crop nutrients than can be economically spread. Confinement slurry is very wet and expensive to haul. The cost of hauling four miles is greater than the value of the nutrient.

Future problems are easier to deal with than current. A confinement facility should not be allowed to be built without a reliable plan for the use of the nutrients. Current facilities that are too close together must truck or pump the slurry to fields that can use the nutrients.

Many non-point source control practices are permanent structures, such as terraces, buffer strips, waterways and constructed wetlands. All of these are capital intensive. The federal government through CRP, WRP, and EQIP is providing large sources of money to install and maintain these practices. This is very positive and I would not change these programs.

The federal government must adequately fund the USDA so the Farm Service Agency and Natural Resources & Conservation Service can have the staff they need to implement these programs and enforce conservation compliance.

And last: Economics: Agriculture is driven very much by economics and responds to economic signals. Much of southern Iowa is hilly enough it should be in permanent pasture and be grazing cattle, but a man can't make a living consistently doing that. I know spring applied nitrogen is more efficient and potentially less polluting, but economically and agronomically it is advantageous for me to apply in the fall.

Yes, agriculture uses valuable natural resources, land and water, and we are obligated to be good stewards. I farm because I love it, and I want to make a living for my family. Yet last year all of the profit and about 10% of my production costs came from federal government payments. As long as this is the economic climate I operate in, I must be careful of the financial risks I take.