

NUTRIENT BALANCE AND THE FUTURE OF LAND

The dollar value of agricultural land in the North American Corn Belt has reached prices few ever thought possible. High commodity prices and favorable interest rates are cited as major factors behind the increases. At the same time we see trends in nutrient balances in this region that if unchecked will erode the fertility and productivity of those same land parcels that are today so highly valued.

I spoke recently at an investors meeting on “The Future of Land” where I emphasized three points: 1) land faces challenges in every country, 2) land plays a critical role in the most significant issues of the coming decades, and 3) the future of land will reflect the success of land managers in meeting stakeholder goals (a 4R concept). It has become very clear that the marketplace today also sees land playing a critical role in the future. For example, the value of farm land in the state of Iowa in 2012 increased 24% from 2011 to an average of \$8,296/A. Cropland value for the US as a whole increased 14.5% in 2012 to an average of \$3,550/A and other sources indicate that this trend is not unique to North America. The value of Brazilian cropland is estimated to have increased 18% last year on top of a decade with average annual increases of 14%. In Great Britain, arable farmland increased 5% in value in 2012 and much of Central Europe has been experiencing huge increases in land value.



At the same time, a popular topic at recent meetings has been nutrient balance (nutrients being applied vs. nutrients removed in crop harvest) and IPNI’s new and planned tools dealing with nutrient balance such as NuGIS, our new nutrient removal web portal (<http://info.ipni.net/nutrientremoval>), and mobile phone apps. These tools show us that P and K balance in much of the U.S. Corn Belt has become decidedly negative and our soil test summaries have demonstrated that these negative budgets are frequently drawing down soil fertility to less than optimal levels. Such mass balance problems cannot be corrected with biological additives. At the other extreme, are situations with highly positive nutrient balances where soil fertility is already above optimal levels and continued increases may in extreme cases negatively impact future land value.

Marc Vanacht and I heard a speaker at a recent Soil and Water Conservation Society meeting refer to a “restorative economy”. Both of us immediately moved that concept into our own world as a “restorative agronomy”. Shortly after the meeting, Marc expanded the concept into three terms: 1) an **extractive agronomy** that leaves the soil and the resource base worse off, 2) an **exploitive agronomy** that maintains the status quo but leaves the resource base vulnerable to extreme situations, and 3) a **restorative agronomy** that rebuilds the resource base to make it more resilient to extreme situations. As the dollar value of land increases, these terms should be front and center in our minds and plans made to assure that what we practice is indeed a restorative agronomy.

Good tools are available from IPNI and other sources to draw attention to these conflicting trends of increasing land values and inappropriate nutrient balances ... tools that can help farmers, their advisers and input suppliers make appropriate adjustments to create a restorative agronomy within 4R Nutrient Stewardship programs. Such adjustments are necessary if highly valued land is to remain highly productive land.

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