

An open letter to Food Alliance and Shepherd's Grain supporters concerning wind, water, and tillage erosion on sustainable food production systems in the Northwest.

At Shepherd's Grain, we frequently get questions from consumers about our choice of production system. Questions like "Why did the producers of Shepherd's Grain products choose direct seed technology?", and, "Why support direct seed rather than organic as a production system?"

The topography of Pacific Northwest (PNW) agricultural land goes from rolling hills to some of the steepest sloped ground farmed anywhere in the world. This distinguishes the PNW from the Midwest, which has been described as a tabletop in some areas. The soil types range from light sandy loam to much heavier clay dominant soils. Combined with moderate to steep slopes, these soils are very prone to moderately prone to erosion every year. Contributing to the erosion are weather events that happen once every 10 to 20 years, and more significant events that happen once in a lifetime. The erosion that occurs every year is significant, but by itself is not visibly threatening to the life of the soil. The more catastrophic events are those that can alter the soil quality for generations and are visible to the untrained eye.

There are three major types of erosion.

- Wind erosion is quite common in a conventional, tillage-based system. Methods to leave more crop residue and less invasive tillage have protected us from reliving the Dust Bowl era, but anyone who has visited the inland Northwest during the summer months has seen or driven through a dust storm. It is nearly impossible to not have exposed soil at some point in a tillage-based production system, during which wind can carry topsoil and slowly alter the landscape. Soil particles start to roll across the soil, they become airborne and affect everyone in their path. This soil is lost forever but in single small events is not noticed. But every few years in isolated areas, there are events that are much more dramatic and soil quality is altered beyond repair.
- Tillage erosion is much less studied or recognized. All types of tillage allow gravity to move soil down a slope. One of the first methods attempted for reducing tillage erosion was to plow up hill. You rolled the soil over and forced it up the slope rather than down. This was a temporary attempt that eventually failed since plowing could not stand the test of acceptable soil loss over an acceptable period of time. Even running a rod under the top two to three inches of soil to uproot weeds can allow soil to move down the slope. After some number of passes the soil eventually reaches the field border or an area where water runoff moves the soil off the field. The result is a reduction in the productive capacity of the soil.
- Water erosion can be more devastating than the other two types of erosion in a shorter period of time. Water can wash away tons of productive topsoil in a matter of minutes. Water erosion cuts deep into the soil and takes the soil's natural nutrients along with the synthetic or organic nutrients added to the soil. There has been much research and development of structures, contour strips and reduced tillage to reduce the impact of water erosion. These are only temporary solutions in a tillage-based system. One rain event on the productive lands of the Northwest can render all that effort meaningless as water has unbelievable force and can overcome man's best intentions.

All of these erosion types are costly to the soil quality and thus the farm's future production capacity. All these erosion events are costly to society as well. Wind erosion can cause injury and death on highways, or cause respiratory problems which require costly medical attention. Water erosion costs local county road departments large sums of money cleaning up roads and ditch lines. Our inland waterway system in the Northwest is greatly impacted by the soil lost down our waterways and rivers. Aquatic life is impacted, water quality is affected, and finally dredging to allow for ships to come upriver from the ocean is a huge societal cost. And there are numerous other, less dramatic costs to farms, farmers, and society, which need to be further analyzed.

Understanding these effects of tillage sets the stage for a broader discussion of the merits of direct seeding versus organic production. While under current technologies, direct seeding does rely on synthetic fertilizers and pesticides, organic production still relies on tillage. The key point is that with the topography of the Northwest the soils are most vulnerable to erosion and in my opinion that must be the focus of any sustainable production system adoption. While I have great respect for benefits of organic production systems, I strongly believe that long-term, ecologically and economically successful food production in the inland Northwest demands a production system that squarely addresses the need to tackle soil loss and erosion. And currently, only direct-seeding production systems do that most effectively.

Recent rain events in my area underscored the need for this discussion. This May, the farm I once managed received the single largest rain event in my 33-year farm management history. The erosion that occurred in some neighboring tillage based production areas was one that altered the soil quality for generations. This cannot be ignored and is the primary reason I give when asked "Why not organic". Soil erosion must be controlled or we will not have productive land for the next generation. Our direct seed farm lost no soil and in fact, soil quality made a huge advance since microbial life is enhanced in wet and warm soils. The largest limiting factor to microbial population advancement and the resulting improved soil quality is our winter rainfed system. We get the majority of our water in the winter when the soils are cold and the least water when the soils are warm. This factor simply lengthens the time to transition from a tillage-based system to a direct seed system.

Globally, the Northwest is a very unique production region.. We produce on slopes like none other in the world and the vast majority of topography in the region has slopes tending towards erosion. Sustainable local safe food supply, from this region, for this region, aims one towards the direct seed system to accomplish this goal. The farms, farm families, and the consumers benefit when direct seeding is practiced. The economic and environmental sustainability of the direct seed technology now, next year and generationally is insured when the consumer purchases products raised from that production practice.

This is one reason why Shepherd's Grain farmers chose direct seeding as their production system. This is one reason Food Alliance supports direct seed technology and those certified farms practicing direct seeding.