

Save Money and Improve Soil Health

The Situation

Over 90% of the fields across North Dakota are unproductive due to high salt and sodium levels. Affected areas are within cropped fields and along road-side and in-field ditches. This is due to shallow groundwater levels and resulting upward movement of capillary soil water. These areas either yield poorly or don't support any plant growth. Depending upon the landscape, resulting effects and soil types, these areas can make up for 0.02% to 0.05% of a farm.

Average cost of planting (tillage, seed and fertilizer) is about \$100/acre for all crops. Based on 0.02% of a 2000-acre farm, there could potentially be a loss of \$4000 (0.02% x 2000 acres = 40 acres x \$100) every year. Planting buffer strips of perennial water-use efficient cover crops like alfalfa and salt-tolerant grasses will prevent financial losses and the expansion of unproductive areas. These areas may also generate revenues through forage sales. Most importantly, these practices will result in healthy soils.

Extension Response

The Langdon Research Extension Center has similar unproductive areas which were planted with crops every year. Yields were either economically unsustainable or fields remained barren due to poor germination. In 2014, REC staff met and made a detailed map of problem areas around the center. Buffer strips of alfalfa were planted along road-side ditches on about 10 acres. In areas where soil salt and sodium levels didn't support alfalfa, another 30 acres were planted under a mix of five salt-tolerant grasses. Average one-time seeding cost was about \$40/acre. Overall, 40 acres of unproductive land was planted utilizing these conservation practices to save planting costs and to improve soil health.

Impacts

By 2015, 10 acres of alfalfa and 15 acres of grasses were successfully established and were ready to be hayed. Out of the two cuttings, twenty alfalfa and thirty grass mix hay bales were harvested. Each bale was around 1000 pounds. Each alfalfa bale was worth about \$30, whereas, each grass mix bale was worth \$15. These areas on an average were losing \$2500 every year. In addition, each year affected areas were expanding. After one year of planting alfalfa and salt-tolerant grasses, a revenue of \$1050 was generated

versus an expense of \$1000 for seed. Most importantly, soils had a vegetative cover with growing roots instead of being barren. That meant less blowing of top soil, efficient use of excess water, a thriving and diversified microbial community and improved organic matter levels.

As an acknowledgement for these soil conservation practices, the Langdon REC received the "Cavalier County Soil Conservation 2016 Award".

Feedback

"Why should I plant crops like soybeans on ground that doesn't support it? By planting alfalfa and salt-tolerant grasses, I not only improve soil health but make some money"!

Public Value Statement

Planting perennial water-use efficient cover crops and salt-tolerant grasses as buffer strips along ditches and on unproductive areas could save money and improve soil health.

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Image/Info Graphic



Resource Links

<https://www.ag.ndsu.edu/langdonrec/soil-health>