Laser Levelling Program

Delta Farmland & Wildlife Trust

Partners in Stewardship

Supporting farmers in contouring fields to improve drainage and soil health

Why is laser levelling important?

Inadequate drainage can impact production by causing soil compaction, soil erosion, and salt accumulation. In severe cases, this can lead to crop failure.

Field topography can affect drainage, and uneven topography will prevent water from running off a field, trapping it in large ponds of standing water. Laser levelling can be used to improve drainage on fields. Using laser emitters, global positioning systems (GPS) and ploughs, contractors can precisely contour the topography of agricultural fields, grading them to facilitate surface water runoff, reducing the occurrence of standing water.

What is the Laser Levelling Program?

The Laser Levelling Program provides cost-share funding for Delta farmers and farmland owners who have fields that would benefit from improved drainage.

Why consider this practice?

Laser levelling can precisely contour the topography of agricultural fields, grading them for better surface water runoff and drainage and reducing ponding.

Standing water causes the soil to compact, making it more difficult to plough and till and for plant roots to penetrate the soil or access oxygen. In Delta's unique landscape, when standing water evaporates, it can draw salts from deep in the soil to the surface, resulting in poor growing conditions. Ultimately, standing water can lead to crop failure, especially in over-wintering crops like perennial forage and cover crops.

Excess water associated with ponding can waterlog soils and inundate the root zones of overwintering crops. This in turn reduces the amount of oxygen available to the roots and can cause the build-up of toxic compounds. Under these conditions, plants become weakened and are more susceptible to disease. Eventually, standing water can result in crop failure, especially in over-wintering crops like perennial forage and cover crops. Poor drainage can delay access to fields in spring. Soils take longer to dry when standing water is present, and wet soils tend to clump together when ploughed or tilled, creating an unfavourable soil structure that requires additional tillage before planting. Wetter soils are also more prone to compaction by farm equipment. Soils must be allowed to dry adequately before spring work begins, but waiting for poorly drained fields to dry can cause delays that continue throughout the growing season. A delay in planting means harvest is delayed, increasing the risk that fall rain will prevent harvest or that the yield will be reduced. The risk of leaving crops unharvested is compounded by poorly drained fields becoming unworkable earlier in the fall compared to better-drained ones. Delayed harvests can also reduce the opportunity to plant winter cover crops, which improve soil fertility, reduce soil erosion and provide foraging habitat for migratory waterfowl.

Am I eligible?

Cost-share funding is available for farmers or landowners with farmland in Delta.

Contouring options for laser levelling

Laser levelled fields can be contoured in 3 different ways; sloped, crowned or dead levelled. The effectiveness of each method depends on individual field conditions. Farmers should evaluate their fields to decide which method will optimize drainage. Sloped fields are levelled to be high at one edge of the field, and the soil surface is sloped towards a ditch to allow for directional runoff. The low end of the field is usually adjacent to a drainage ditch that collects and removes the runoff water. Crowned fields are similar, but the field's highest point is located in the middle, allowing water to runoff both sides into drainage ditches. While both sloping and crowning increase surface water runoff, fine soil particles can be washed away by the runoff, contributing to soil erosion. Dead levelled fields have no or negligible slope, which minimizes soil erosion and allows water to infiltrate into the soil evenly. Each of these contouring methods can be combined with subsoil drainage tiles to increase the drainage of water that infiltrates the soil. Since water infiltrates the soil on dead levelled fields and does not runoff, serious consideration should be given to installing subsoil drainage tiles.

Comprehensive drainage plans are important

When deciding how to address drainage problems, consider all the factors that may influence drainage. Laser levelling can be an effective tool for improving surface runoff, but it does not address all drainage problems. Water may still infiltrate the soil on laser levelled fields, causing water logging. Subsoil drainage tiles can improve the drainage of water that has infiltrated the soil and speed the drainage of standing water. Additionally, subsoil drainage can help remove soil salts by dissolving and flushing them away as the water drains through the tiles. Although it can provide good drainage, installing subsoil drainage is a costly management practice. It can also become ineffective if the ditches that the tiles drain into fill with water or the drain tiles become filled with sediments.

What funding is available?

Farmers in Delta can participate in the DFWT Laser Levelling program by completing the program application available through our website. Cooperators in the program will be reimbursed 50% of the cost of laser levelling, up to a maximum of $175/acre. A maximum of 100 acres per producer is eligible for cost sharing.

A levelling contractor may complete the work. Producers who complete the levelling themselves must include an estimate from a third-party laser levelling contractor with their application. Laser levelling must be completed by October 31.

The laser levelling program may not be used to spread and level material foreign to the field(s).

What's the application process?

Applications must arrive at the DFWT office by November 1, 2025. A copy of the contractor's estimate/invoice must be submitted before applications will be approved.

There are three ways you can initiate your application:

- email programs@dfwt.ca to discuss your project,
- complete the online application form at: https://www.deltafarmland.ca/our-programs/stewardship-program-applications/
- visit deltafarmland.ca to find PDF versions of our Laser Levelling agreement and email a completed copy to programs@dfwt.ca.

Cost-share payments will be made through automatic funds transfer in the fall of 2025.

Who is Delta Farmland and Wildlife Trust?

DFWT is a grassroots organization that promotes the preservation of farmland and wildlife habitat in the Fraser River estuary by providing funding to support stewardship projects. Soil health and on-farm habitat are our two critical priorities. We work with farmers to enhance production systems through science-based approaches. Our Field Technicians survey projects to understand their impact on wildlife and soil health.

DFWT has been delivering cost-share programs for farmers in Delta for 30 years. These partnerships have led to transformative change and support for wildlife on farms in this region. Our farmer-focused approach ensures participants receive the funding they need to get projects in the ground without a complex time burden. Our organization is led by farmers and conservationists working together to support collaborative and practical efforts on farms.

Questions about the program? Get in touch with us:

604-940-3392

programs@dfwt.ca

www.deltafarmland.ca

Story from a farmer who uses laser levelling

Kevin and Joanne Husband and family operate Emma Lea Farms on Westham Island, in Ladner, BC. They are a 5th generation farm and grow a wide variety of berry and vegetable crops in addition to raising beef cattle and free-range layers.

Like many farms in this region, they experienced water ponding on their fields during the spring and fall. This limited their access to the fields when they needed to till in the spring and meant they couldn't always get onto their fields when they needed to for harvest in the fall.

After starting to laser level their fields 45 years ago, the Husbands have noticed major improvements.

"We now have earlier access to our fields in the spring allowing us to plant earlier and resulting in an earlier harvest" says Kevin. The cost-share program with DFWT was worthwhile for Emma Lea, "laser levelling is the most effective and economical improvement you can make to your fields" notes Kevin. They also recommend Big O drainage and good ditches.

Having had success with this program, Kevin says they would absolutely recommend it to other farmers. "All of the fields we farm have been laser levelled. We feel it is a very important part of our farming process", says Kevin.

Information contained within this document is accurate at the time of printing (January 2024) and may be subject to change.