



**Farmer to Farmer
Soil Best Management Practice**

**Ground Covers for Soil Health
Garry Fetherston**



Project Objective:

Slow and redirect runoff from the steeper parts of the patch with earthworks to prevent gullies forming and establish 100% groundcover to avoid or minimize topsoil erosion.



**Our farm philosophy
by Garry Fetherston**

We aim to increase the soil life and biodiversity as we move from a chemical system dependent on artificial inputs and herbicide spraying to a system that uses natural nutrient cycling and ground covers. We will use cross slope mulch inter-rows consisting of banana trash and chipped branch wood and leaves to slow water runoff and sequester carbon into the soil. Gradually as the soil carbon increases the consequential increasing soil biology will manage the soil system with natural nutrient cycling and erosion control.

Each year should require less inputs and ultimately we hope to create a system that manages itself apart from periodic carbon and possibly nitrogen and potassium addition. A major component of our plan is to have 100% ground cover with no exposed topsoil.

Photo left: Garry Fetherston

Groundcover trial steps:

1. Inject the existing bananas with herbicide.
2. Clear and shape the site with a 13 ton backhoe including swale and access path construction and lining flow lines with on site rocks.
3. Add aglime and soft rock phosphate as calcium and available phosphorous are the main deficiencies.
4. Immediately sow the site with mustard for biological control of Panama disease and annual grasses to stabilize the soil and low growing legumes to add nitrogen and diversity to the ground cover.
5. Replant the site in October with lady fingers in three row strips with access paths every fourth interrow.
6. Cover any exposed soil with woodchip for extra carbon and erosion control.
7. Careful use of fertilizers including regular fertigation of nitrogen to kick start the biological process in the first few years.
8. Plant two rows of native shrubs to attract fauna including birds and predatory insects for biological control of flower thrips and other pests.

Proposed benefits:

- ✓ Minimise or stop soil erosion
- ✓ Insulate the soil from sun exposure and overheating
- ✓ Redirect excess runoff water across the slope
- ✓ Increase water infiltration
- ✓ Limit raindrop impact with groundcover
- ✓ Increase soil biology and biodiversity
- ✓ Natural disease suppression
- ✓ Natural nutrient cycling
- ✓ Low maintenance – reduced mowing etc.
- ✓ Easy access to all areas
- ✓ Reduced or no chemical use
- ✓ No monoculture
- ✓ Improved wholistic landscape health
- ✓ No harm to the catchment
- ✓ The farm integrated into local ecosystem



Native Comelina, a great cover crop.

Budget

Earthworks: \$2000 (approximately)
Seeds: \$700
Fertiliser: \$600
Labour: \$1000 (approximately)

Additional information

The patch chosen is ten percent of the plantation in area. We plan to experiment with groundcovers and water flows in this area and the observations can be considered when doing similar works in other areas. Most of the plantation is degraded due to years of poor landscape and soil management so this initial work is important for future planning.

As bananas require by law all ground cover to be kept to under 30cm we are limited to a few grasses and legumes to experiment with. The focus is on pinto peanut, clovers, shade loving exotic grasses like smother grass and fescues and natives such as Commelina, Basket Grass and Dichondra.

The patch was recently affected by Panama disease, a type of Fusarium wilt that targets Lady Finger bananas. It can spread rapidly and destroy large areas once it is present and there is no proven cure. Part of the plan is to attempt to treat the disease with a natural fungicide (mustard) and monitor future effects. It is hoped the additional soil biodiversity and beneficial fungi will keep the disease under control. The site is irrigated so dry weather shouldn't be an issue for establishing cover crops etc.



Soil erosion damage resulting from ground cover spraying



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