



**Gower Flax CIC**  
**RDP Funded Pilot Project Report July 2022**  
**Fibre and Natural Colour Techniques/Development**

*A project planned as trial designed to test a given approach for a limited group of beneficiaries over a limited period; intended to attract future activity in the field/discipline or sector.*

Growing fibre flax (*Linum usitatissimum*) at scale – 2 acres in 2021 & 1 acre in 2022  
Following regenerative agricultural practices  
Growing dye plants for natural colour  
Delivering natural fibre and colour workshops  
Process fibre flax with hand tools

• **New approaches**

We have attempted to create a model for growing fibre flax at scale, following regenerative agricultural practices, creating a new approach for a sustainable local fibre for Swansea. We intended on sharing this process with volunteers and the community through hands on workdays at the field, workshops at the field and at local schools, colleges, and Universities – in person and digital and creative retreats utilising the farm bunkhouse.

The first major challenge was during 2021 harvest of the fibre flax.

The flax was ready for harvest sooner than anticipated. We had hoped we would have had more volunteers during the summer of 2021 to harvest all the flax from the field, however, we did not. We spent the whole of August at the field hand pulling flax. We stored the flax inside the polytunnel on our hanging system and we arranged with a local farmer to rent extra storage in their barn once the polytunnel was at capacity.

We could see early during harvest that it would not be possible to harvest the whole 2 acres with the numbers of volunteers. We researched other means of getting the crop off the field.

We spoke with local farmers, who came to the field to see the flax growing, they brought their agricultural cutting machinery and tried to cut the flax. Flax does not like to be cut when green. Each machine that attempted cutting very quickly failed – the flax wrapped itself around the cutting mechanisms.

Initially we tried a topper, barrel cutter, strimmer, hedge cutter and scythe. Each failing to cut the flax a) in a way that enabled the flax to be collected for fibre b) without needing to untangle to flax from the mechanisms frequently.

We spoke with a UK hemp grower, in the hope that they could suggest machines that may cut the flax. They didn't have a machine that we could borrow – they were still in the process of designing something. They suggested a finger bar mower, a Reaper Binder or a Straw Walker.

We researched this and could not find a local farmer who had any of these. We spoke with UK hire companies in the hope of finding a suitable machine and failed. We spoke with Gerald Miles – a farmer in Pembrokeshire, who put us in touch with Alan Jones who came to try cutting the flax with a Reaper Binder, which also failed at cutting the flax without tangling. Gerald Miles then kindly lent us a machine to try. We collected the machine at the end of August 2021 and brought it back to the field.

It was a Barford, self-propelled, push along machine with a finger bar mower attachment. Fortunately, one of our volunteers helped with getting the machine started and we attempted cutting the flax. It would cut the flax for a very short time and then the flax would wrap

around the side of the machine. One of the farmers' contacts kindly offered to help with engineering a 'shield' - a sheet of metal attached to the machine, which we hoped would guide the flax and keep it upright long enough for the cutting. The flax continued to wrap itself around the finger bar mower.

We continued to hand pull the flax at the field until early October 2021, when the flax was breaking as we pulled it. The fibre was now breaking down inside the stems. Fibre flax harvest was over.

The farmer attempted to cut the flax again with the topper, but it was not dry and crisp enough to do this successfully.

By November 2021 the remaining standing flax had dried enough, and the farmer successfully cut the flax with the topper. During this process, the flax was cut close to the ground, and it shredded, covering the ground. It was left on the soil, acting as a mulch.

We had planned on sowing a cover crop over winter, which would have fixed some of the nitrogen in the soil and sequestered carbon. However due to not getting the crop out of the ground early enough, November was too late to sow this seed. The soil was covered, which we were happy with given the circumstances. We continued to monitor this over the winter. Grass started growing through the flax mulch.

Our intention prior to sowing 2022 fibre flax seed was to graze sheep on the winter cover crop and drill seed directly into the tightly grazed field. Due to having not sowed a cover crop, there was nothing for sheep to graze. So, 2022 management plan changed.

The area for 2022 fibre flax was ploughed in April, direct drill seeded in May and a Clover/Yellow trefoil mix was broadcast in the hope of covering the soil while the flax grew. The yellow trefoil did not germinate at all, and the clover only germinated around the edges of the flax area.

The flax germinated very well. There was one area that was seeded at a higher density and this flax grew very thin and short compared to the rest of the flax. The overall density was very good at 50kg per acre.

The 2022 weather conditions were very different to 2021. A lot less rain and higher temperatures meant no lodging (the permanent displacement of aboveground parts) at all, compared to a large area of the field lodging in 2021. The crop was slightly shorter compared to 2021.

2021 average height – 103cm

2022 average height – 90cm

2021 crop had very little in the way of weeds growing through the crop. There was the expected dock that was present prior to any work on the field taking place, but it did not get worse.

2022 weed situation has been very different. Docks are present, but there has been a huge amount of Fat Hen growing throughout the flax. It grew taller than the flax. It hasn't impacted on the flax growth; however, harvest was impacted due to needing to pull out the Fat Hen while simultaneously harvesting the flax.

Our second biggest challenge was our Project Manager being ill with COVID, Pneumonia and complications of Long COVID. This delayed research, planning and match funding application by several months. The result of which was no match funding in place for the purchase of equipment to run the workshops and creative retreats. As a result of this, the

project was scaled back. This meant that workshops, education programme and creative retreats have not gone ahead as planned and 2021 fibre flax has not been processed. We are looking into ways of running the workshops in 2023.

Increased biodiversity at the field:

A huge number of linnets at the field feeding on the flax seed

Dragon flies and butterflies at the field.

Birds of prey also seen flying over the field and swooping in close to the polytunnel and the flax.

- **New products**

Raw product - harvested flax

Dye seed – organic Woad, organic Hopi Black Dye Sunflower, organic Calendula, organic Weld, organic Rudbekia

Linen fibre – not yet processed

Linen cloth - not yet processed

Wool/linen blend yarn - not yet processed

- **New processes**

Growing flax at scale

We continue to explore possibilities for processing fibre flax/linen at scale.

It is not possible to process acres of fibre flax by hand unless we have more employees.

Our options going forward are:

1. To employ more people to process fibre flax to linen by hand - this is very labour intensive and time consuming. Without appropriate machinery, this is not a likely option.
2. To secure funding to send a percentage of the fibre flax to Mallon Linen in Northern Ireland. They have quoted to carry out the retting and scutching of the flax, sending back the long line fibre and short tow fibre.
3. To secure a large amount of funding to purchase machinery for rippling (removing the seeds), breaking, scutching and hackling flax (removing the fibre from the straw and woody stem). Currently, machinery is not available to purchase in the UK. There is this small-scale machinery produced in Canada:

<http://tapindustries.ca/wp-content/uploads/2018/02/Taproot-Fibre-Machine-Book.pdf>

This would still be a Labour-intensive option for large scale growing of fibre flax, but for small scale, it will be a more viable option compared to processing with hand tools.

4. To secure funding for machinery from Europe for large scale processing of fibre flax - Mill set-up.

- **New services**

Limited new services, due to scaled back project

Growing flax at scale.

Sharing the processes with the community through volunteer days at the field and through events such as the Flax Rippling and the teacher CPD events at the Gower Heritage Centre.

If we had processing machines, we could offer processing services to other flax growers.

