

BIMBADEEN CARBON NEWS



Carbon Trials at Bimbadeen

BY BOB DAVIE

A paddock was selected (M16) and with the cooperation of Westernport Water, a pilot trial for use of Class B Recycled Water and the Bimbadeen Carbon Sequestration initiative began. Baseline 61.3 t.toc.p.ha. Aug 2014. 82.6 tonnes. In a 1st Environmental Improvement Plan (EIP) Ver.1.0 Bimbadeen is EMS ISO14001 Compliant.

Bimbadeen has selected a paddock (M16) on Pyramid Rock Road for this carbon trial.



October 2018

The initial pea (fertiliser) and following carbon crop will be irrigated with Class B Recycled Water.

Yeoman deep ripped to 100 cm = Slot in ground minimal soil disturbance opening soil at depth.

Light power harrow at minimal depth.

Sow 75 kg p ha of Wharton Field Peas to fertilise paddock for carbon crop Total cost \$270.

Apply booster dose of 32 - 10 fertiliser for germination and growth of seed. \$725.45

Set seed to germinate by testing Irrigation system of Class B recycled water.

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Seed has all set and is now growing as a crop.

This crop will remove CO₂ from the atmosphere and place Nitrogen back to the soil to produce Carbon. Crop will be mulched back, creating nutrients for next Carbon Crop.

Update: November 2018

Birds in large numbers on crop. At least 500 in total comprising Cape Barren Geese, Crows, Ibis, Magpies and Seagulls. Installed bird scarer and rifle shots 3 to 4 times daily to scare birds off to other paddocks so crop can establish some growth. Have trained a Wedge tail Eagle that lives on Hurricane Hill at Bimbadeen to hover over M16 keeping birds away. NO rabbits, hares or birds on M16 now!

Had meeting with Joel from Bass Coast Landcare re offer of assistance in all aspects of carbon crop.

An information Field Day will be held at Bimbadeen later in the trial.

14/11/2018.

Plan is to mulch in peas in March 2019 to provide fertiliser for next carbon crop. We will sow Graza Radish to obtain maximum foliage and roots to a depth of over 1 metre. 45% of all dry matter will convert to carbon. Cost of seed is \$15 per kg. Sowing rate 6 kg per h/a = \$90 per h/a = \$180 M16 2 h/a.

18/11/2018. Monitoring daily. No more irrigation water available till agreement is ready to sign from WPW

First mistake was not using spray to kill off existing growth in paddock. Owing to publicity and trying to do the right thing spray was not used. Minimum till also removes the ability of both removing previous growth and a fine seed bed. The growth of rye grass now appears to be crowding out the peas. I will observe over the next few weeks and make a decision as to maybe mulch back earlier and sow carbon crop. Few cape barren geese coming to eat peas but scaring off with rifle shots. Otherwise NO crop.



Update November 30th 2018

The first flower from the peas has emerged and photo taken.

Met early this morning with WPW to try and finalise our agreement for the pilot trial irrigation project. Meeting with Joel Geoghegan, BCLN, Peter Ronalds WPLN and Nick Dudley WGMCA to go over details of carbon sequestration in M16. Bimbadeen has been offered assistance in all aspects of running the carbon trial and we would like to thank the Landcare Groups for their continued support. Following on we all went on site where Pete Ronalds with very capable assistance took samples from various sections of M16. The carbon will be tested from 0-10, 10-30, 30-45 and 45-100cm. Separate samples were taken by Joel to 10 cm for a normal soil test.



All testing was repeated in M14, which will be a control paddock also irrigated to compare results from grazing, photosynthesis. Another paddock M4 was selected as a no irrigation control paddock to compare the differences again. All paddocks are 2 hectares. By this time Joel went on a hunger strike and was reinforced with rations to continue (Thanks Anne) This project is a big challenge as the target is 300 tonnes per hectare of Total Organic Carbon (TOC). Previous trial paddock H8 improved from 160 tonnes to 228 tonnes p h/a. The test results when back in about 3 weeks will give us a complete picture of where we stand. Photos of the various stages of the trial will be available on the BCLN website. An exciting new technology may be available for the next testing where we are able to drone film and moisture test the soil in given paddocks. As the more carbon you have the more moisture is available, we will be able to monitor and record moisture content to carbon levels. Meeting Monday 3rd at Bimbadeen with carbon groups from TRPI.

Update 2nd January 2019

This will be an exciting year with Carbon hitting the news headlines. Our first soil carbon offset was done last year with Dineamic Food Services. Bimbadeen guaranteed to offset 150 tonnes of CO₂e solely from carbon sequestered in our soil programs. We are excited that Landcare is helping us with the costs of carbon testing and the program of sequestration of carbon in soils. The pea crop is ready for mulching, having matured over the last few days. Mark Roberts from Basix is coming over to inspect this week and we will discuss the next move in the program to sow Graza Radish for carbon. We have had success with this before as Mark had suggested it be sown on H8 where we reached 228 tonne TOC per hectare. I hope to have the next stage on M16 all completed by Sunday 6th January 2019. We are able to irrigate this and other paddocks under our Recycled Water Pilot Trial with Westernport Water. Bimbadeen is offsetting all the GHG emissions from irrigation pumping with carbon sequestered from M16. The soil and carbon test results taken before Christmas have not arrived back as yet.

Change of plans. Afternoon of 2/1/19 Army worms decided they liked the peas and assembled in their thousands to create havoc. Counter attack was to prepare a spray to make them more palatable for the army. This was done on 3/1 and consisted of per hectare, 3 litres whole cream milk, 1 teaspoon baking soda and 5 gram Dipel powder. This was mixed and left for 10 hours then added to water in spray unit. Dad's army then applied the mixture under cover of darkness and lo and behold the little critters came out and lapped it up. Next move. Wait 2 or 3 days, mulch whole crop back then sow Graza Radish, which we have trialled before to build carbon. Note this mix creates a bacteria that attacks the caterpillars.

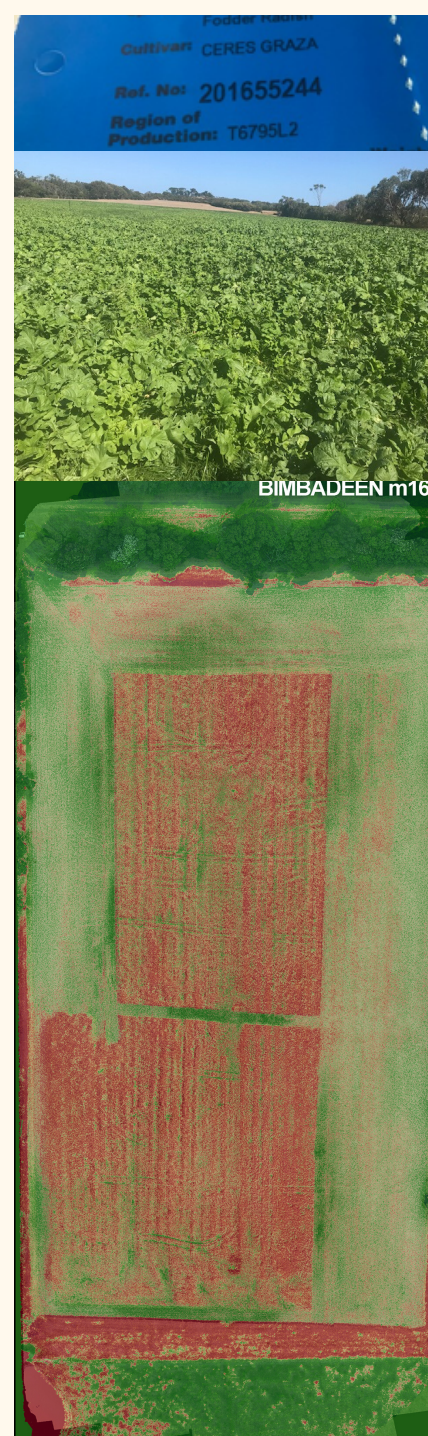


January 20th 2019

In the last 18 days there has been plenty of action to establish the Carbon crop. First activity was to mulch the peas, army worms and residue back to the soil with the power harrow. We left this for 5 days then sowed Graza Radish at 6kg per hectare on the 2 ha paddock.

I would have liked to have just dropped the seed but due to the amount of residue still on the top of the soil decided to power harrow and drop seed in one pass. This had the desired effect of placing all residue into the soil whilst sowing. We then irrigated the whole paddock with 6 to 7 ml recycled water. 4 days later the radish are visible and appears some peas as well.

Watering will continue to keep the paddock moist for growth. As a result of Bass Coast Landcare and Western Port Catchment Landcare network supporting the trial. New technology has now taken place with Drift Media flying a drone with Infrared and high resolution cameras over the carbon and control paddocks. This shows much prospect in the variation in moisture levels and I hope that in the future it will show a correlation between higher moisture levels in a higher carbon content paddock. Bimbadeen will also have a drone infrared test on their previous trial paddock which had reached 228 tonnes TOC per hectare for another comparison to all our trials.



4th February 2019

Graza Radish is still appearing slowly with the exception of the outsides and ends of the paddock. The only logical reason for this is that the seed was buried too deep or the irrigation sprinkler did not reach the outer edges of the paddock. I have ordered more seed and will sow these areas by hand when it arrives. Our soil and carbon tests have arrived back but unfortunately are missing some information as far as the chemical analysis for growth such as Moly. The carbon content of the 3 paddocks is as follows. M16 Trial paddock with irrigation. M14 Control Irrigation, M4 Control Non irrigation. NB Carbon was tested at 0-10, 10-30, 30-45 and 45-100 cm. Separate readings for each depth. Total Organic Carbon per hectare for each paddock was M16. 158.48 tonnes. M14 . 167.62 tonnes and M4. 221.36 tonnes. All readings at the 4 depths are available. Please note that these tests are up to 100cm. Unfortunately the humid weather and water has brought out the army worms again and I have had to spray again at night time as per the previous notification. Monitoring is ongoing and decisions made. 14/02/19. More seed has been purchased and I have hand spread with buckets of sand as filler to all bare patches and the outer edges of the paddock. We had 9.5 ml rain so I rolled the outer areas to set the seed into moist soil. Hopefully this will germinate quickly. Photos are being taken at all stages of this project. The main area of the paddock is looking healthy and starting to grow.

4th March 2019. Today we are applying Dolomite Lime @ 1 tonne h/a Cost 2 h/a = \$312.40 and 350 kg ha of 32-10 fertiliser @ \$895.40 per tonne GST & Spread = 2 h/a Total \$626.78. Total \$939.18. This must add 13 tonne carbon to break even, If you do not take into consideration improvement to the paddock.



Dolomite Lime is a Natural Blend of Calcium & Magnesium Carbonate. Refer Beltec/Basix attachment for recommendation to grow carbon. Nitrogen is necessary to turn dry matter to carbon. 45% of DM will return as carbon including fine roots to a metre in depth with Graza Radish. Remember that we have proven this on our previous trial on H8 which increased from 160 tonnes to 228 tonnes per hectare in 2 years = 34 tonnes per annum. H8 has just been carbon tested again by Pete Ronalds from WPCLN. Having ended the trial it will be interesting to see if there is a loss of carbon with the dry weather. If the result is lower we will increase the carbon to 228 tonnes, then resume grazing. Also please note that the spray used on the army worms is an organic mix of whole milk, bicarbonate soda and dipel to form a bacteria. Unfortunately wallabies find the Graza Radish to their liking.

H8 (previous trial paddock) carbon test arrived and is 211.4 tonnes of TOC per hectare. This is a very good result as we have not been grazing and therefore less photosynthesis is taking place. As well the weather has been hot, dry and only 45 ml rain for the first 3 months of 2019. We will return H8 to our normal rotational grazing system and test at a later date.

Friday 5th April we had a bus load from USA visit Gippsland Natural at Fish Creek and Bimbadeen. They were fascinated by the carbon concept and there may be an Insetting opportunity in the US. Yesterday Sunday 7th we had a delegation from China re beef into their top restaurants. Following a farm tour and talk they wish to start a mutual understanding on Insetting into China. The Graza Radish is coasting along at its own pace and is possibly about 2/3rds of what I would like it to be. I will continue monitoring and make decisions when required. Off now to a Carbon meeting with TRPI at Linda.s.



July Update

Back in May we mulched, above root level the crop back to the soil. Bimbadeen rainfall has been Jan. 2ml, Feb. 20.9, March. 22.2, April. 27.2, May. 90.8, June 106.6, July to 69.3 Total to date 389 ml.

Graza Radish with a deep root can absorb large amounts of water. The weather turned very cold and growth stopped. This was the same as other crops and grasses that had been sown by neighbours.

The 90.8ml in May may have attributed to this as well. I am disappointed in the crop as in other years we have had far better results. H8 was a perfect example when carbon testing increased from 160 tonnes to 228 tonnes in a little over 2 years.

June the crop has been stagnant and grass has come away smothering some of the weakened Radish. I decided to put some cattle in as it has dried a little and we have placed 58 steers on for a while.



August

The paddock will continue to be monitored and when dry enough will be either completely sown again or depending on the condition and growth the grass areas may be sown again just because it is a Trial paddock.

In my opinion there must be a greater amount of dry matter to turn into carbon. I am not to disappointed as we have carbon tested another 6 paddocks with 3 being over 200 tonne of Total Organic Carbon per hectare and a high of 235 tonne

We have just had a visit from 13 people from Nestle for a farm tour and talk on Carbon & Insetting. On the 17th August a Beefcheque Group are coming from Warragul mainly for the Carbon information.

October

M16 has been grazed by cows and calves and now has 14 yearling heifers grazing on the remaining Graza Radish bulbs.



I would like to take a little time to tell those who have not heard the great news about what has happened in Bass Coast in August and September. This is all part of Carbon News as CO₂ needs to be pulled out of the atmosphere and placed back in the soils and vegetation, to assist in Climate Change. At the 3 day National Carbon Farmers of Australia Conference in Albury in August members of Bass Coast Landcare, Phillip Island Landcare, Totally Renewable Phillip Island and Bass Coast Shire were represented. Bass Coast Shire won the National Carbon Farmers of Australia Inaugural 1st place award for the Best achievement by a Regional Council in Australia to encourage carbon farming and emissions reduction or related low emissions industries. Bimbadeen was placed in 3 finalist lists. Outstanding performance in Leadership. Outstanding achievement in carbon sequestration and Winner of the Outstanding Performance in Carbon Trading Innovation. Dr Moragh Mackay (TRPI) and Bhavani Rooks (PILC) accepted the awards on behalf of the recipients.



October

Bass Coast has been declared a Climate Emergency Shire. Bass Coast Landcare received the Victorian Landcare award at Government House for Best Landcare Network. These are great outcomes for people working together in Bass Coast Shire.

Following these events TRPI, PILC and Bimbadeen held a CO₂e auction in the Cowes Cultural Centre as part of the Open day with the EI Co-Op to showcase a year's planning for a Decade of Action. Electric vehicles, solar and power were all on show. The auction was a world first for a CO₂e Inset guaranteed to be grown, sequestered and held in the soils of Bimbadeen. 367 tonne of CO₂ had been donated to TRPI to fund further carbon farming on Phillip Island. The first 1 tonne package was as put by auctioneer Greg Price a historical parcel. Bidding was spirited and went from 6 bidders to the last 2 bidders and Lot 1 was knocked down for \$800. The Australian record for a Government ACCU under the ERF is \$100 per tonne CO₂e. Many other parcels such as an Inset for business, family, active lifestyle, singles, foodie, theatre, sports, health club, flights, gift and 1 tonne gift were bid on and averaged \$33 per tonne CO₂e Inset. The goals for TRPI by 2030 is certainly achievable. Back to our Pilot Trial on M16. M16 will continue to be grazed down and we will sow another mixed series crop for maximum growth to create carbon. The top foliage has been eaten down and the large bulbs are being nibbled at. The root depth enables eating without removing the bulb.

November

M16 has been rested since last grazing and recovered well. On 7th October 2019, 40 cows and 40 calves were placed in the paddock to graze completely out.



The idea is to get the bulk of the growth down and add fertiliser for the next crop sowing. I am having discussions with Mark Roberts from Basix on Thursday 7th October and will make a decision following the talks. My idea is a multiple species for maximum growth to grow more carbon. I expect to tickle the surface and sow and roll in 1 pass. On past experience I do not believe that this action releases carbon from the soil. At the end of November M16 had been grazed down, was sprayed out and a 12 mixed species was sown in 1 pass with shallow power harrow, sowing and crumble rolled. The soil was dry with a little moisture so we rolled the paddock with a rubber tyre roller behind the Toyota HiLux.



November/December

This had the desired effect by pressing the seed against the moisture and germination took place within 4 days. We have had 8.7 ml yesterday and 9 ml rain today (4th Dec 2019) so very good to keep germinating and growing. As you would be aware from past comments in this Carbon News I am not happy that we will have a great result after our next Carbon testing this Friday 6th December.

In view of this the species listed below were sown for maximum take up of moisture at various levels to grow a maximum amount of dry matter to turn to Carbon. 45% of the dry matter returns to the soil as carbon. Seed sown was as beneath for 2 hectares. It is a heavy sowing to get maximum results for carbon.

15 kg Forage Sorghum.

3.75 kg Aston Italian Ryegrass.

3.75 kg Emmerson Italian Ryegrass

4 kg Aber Niche Festol

55 kg Common Arrowleaf Clover

0.90 kg Edimax Hybrid Canola

0.25 Turbo Plus Persian Clover1.05

kg Common Berseem

Clover0.25 Paradana Balansa Clover.25 kg

Tucana Oats. 0.250 kg Common

Crimson Clover. 0.250 kg Margurita Pink

Serradella.

Total cost of seed \$239.42 including GST.

To cover this cost we need to increase TOC by 13 tonne per hectare or 26 tonne total. Thanks to Mark Roberts from Basix and Belinda from Beltec for advice and supply of seed. Also thanks to Bass Coast Landcare and Westernport Landcare Catchment Management for their continued support.

Our next Newsletter will have the minus or plus results of Carbon over the past 12 months. 6 Carbon core samples were taken by Pete Ronalds on the 6th December.

