June 07

Grassy Groundcover Gazette

News, updates and on ground action

Greening Australia

Paul's Piece

Greetings all!

Another autumn seems set to pass without an autumn break coming. This is something we have had to deal with in each of the four years the GGRP has been in progress. The lack of a break has all sorts of negative implications for the farming communities in which our sites are situated and so I really hope that some decent rain is not far off. It is interesting to note that despite the lack of autumn breaks (in which we moved our sowings to spring), results at most of our GGRP sowing sites have been extremely encouraging

Austrodanthonia *matrix established at Neville Oddies Chepstowe site*

However, I have still wanted to try an autumn sowing, because this is traditionally considered the most appropriate time to sow grassland species. Happily we have had that opportunity in the past month. I and a number of GAV staff, landholders and other fantastic helpers have recently sown nearly 6 ha of grassland at four sites (and boy, are we tired – 13 ha over 3 years, 6 ha in 2 weeks!). Two of these sowings were in Gippsland, at Goon Nure (near Bairnsdale) and at the Boisdale Quarry (Andrew presents a more detailed report of these sowings a little later on). The other two were at Jo Western and Paul Killeen's Ravenswood property (near Bendigo) and at

Neville Oddie's Chepstowe property (past Ballarat). Each of these 4 sowings pushed our GGRP techniques into new realms.

Firstly, they gave us an opportunity to look at autumn as opposed to spring sowings. We also had the opportunity at 3 of the sites to look at sowing areas of complex grass mix (without scraping before hand). Here, we will attempt to keep these areas free of broad-leaf weeds using selective herbicides. If this is successful, we can try and reintroduce forbs into this existing and established grass matrix. There are many implications for further GGRP works if this proves possible. We also sowed 2 ha of complex or species rich grassland between Goon Noor and Ravenswood on scraped areas

Scrape post-seeding at Stuart Ritchie's property

Scrape post-seeding at Jo and Paul's property

I am really looking forward to seeing the results of these sowings as in both instances we had fantastic mixes of forb seed to sow. This was a credit to the dedication of Andrew Wolstenholme and his Gippsland team (Brenda, Rod, Veronica and John) and to Kerrin Huxley who managed the Ravenswood SPA at Burnley. In particular, wild flower seed from Kerin's SPA was absolutely critical for the Ravenswood sowing as there was almost no seed harvestable from wild populations near that site last spring and summer.

Wild-flowers in boxes at Burnely SPA

Another exciting GGRP development has been our contribution to the huge '*Moolapio'* project at Point Henry near Geelong. At this Alcoa site GAV will, over a ten year period, aim to reconstruct 100-150 ha of Redgum-grassy woodland on agricultural land. There is also significant wetland management and revegetation works to be undertaken by GAV as part of this landscape management project. Rod White, the on-ground manager of works at this site has been working extremely hard to ensure we have our site ready for sowing in spring. Rod, Simon Heyes and myself have been busy in the field this past season collecting wild seed (with the assistance of a Ballarat Green Corps team). This was particularly successful for grass species.

Rod and I have some success at this field location harvesting a mix of Austrodanthonia *species, and the common forbs,* Chrysocephalum apiculatum *and* Calocephalus citreus.

However, for most other forb species that we want to sow, seed production facilities established between our Point Henry site and at Burnley have provided critical seed resources not available in sowable quantities from the field. Having recently processed this seed (well, Rod and Kerrin did and I ducked for cover) and we now aim to sow just under 3 ha this spring. We have also had the time to undertake a scrape at this site well in advance of the sowing

A large "scraper" starting works. In the past we have used bobcats and road graders

This has meant we have not had the problem of spring rain and unworkable soils impacting on our ability to get the site scraped and ready to sow. It also means that we have the winter to work on any weeds that come up on the sowing site prior to spring.

So in summary, many exciting GGRP things continue to happen. We are in the fantastic position of being able to monitor the development of our original 13 sites and conduct a series of field days later in the year thanks to ongoing support from the Corangamite, Glenelg-Hopkins and Wimmera CMAs. Further to this, we have and continue to expand the number of sites that GGRP techniques are being undertaken. For all this my thanks go to all associated with this project and there are many of you! I think we are really onto something here, and let's hope that in the future we continue to show it's possible to "put back" grassland and grassy understorey in regions where they are presently under threat.

Cheers, Paul GR

Germinating Hoary Sunray with smoke water treatment

I recently did a small 'experiment' germinating *Leucochrysum albicans*.

I made my own smoke water by soaking the residue from inside a wood fire flue in water for some time and straining the solids off to leave a clear smoky smelling liquid.

On 11/04/08 I prepared four trays of Hoary Sunray:

- 6gms spread over 2 trays and treated with diluted smoke water mixture
- 5gms spread over 2 trays untreated

All seed was from the same provenance collected at the same time.

The treated trays were given several subsequent treatments of smoke water

On 18/4/08	several germinations in treated trays
	2 germinations in untreated
By 26/04/08	100's germinated in treated trays
	Approx. 20 germinated in untreated.
On 8/05/08	treated trays 628 potted up from 1 tray, the other tray similar
	In the untreated trays, only 18 in one, 44 in the other tray

Hoary Sunray, treated (left) and untreated (right)

I found these results very interesting and will examine the effect of smoke water drench on other species in the future.

David Franklin

From little things big things grow …

I had the pleasure of first meeting Dr Paul Gibson-Roy at about the time he started his Honours Degree when I accompanied him to an ANPC conference near Wodonga nearly ten years ago. I was a member of the Burnley Horticultural College grounds staff at the time and worked in the indigenous garden planting many species of local ground flora.

Over that time Paul and I have come a long way, and while he has been working on his wonderful GGRP, I have been working in the Environmental Contracting and Native Grass Seed industries. I have been lucky enough to attend some of Paul's presentations and try and keep up with the project, and I even harvested a couple of sites for the project three years ago. Being associated with the industry that probably has the most to gain from Paul's work, I thought I would write to tell my experience of the influence he is making.

With offsets becoming a substantial funding source for future grassland work, our company has been encouraged to grow local seed crops for grassland restoration and establishment for the Basalt Plains around Melbourne. Larger amounts of clean local native grass seed will be needed by local and state government organisations for both offset and capital works programs in the future. One offset we are currently involved with is almost a carbon copy of the work done by Paul and the GGRP, and involves the direct seeding of a scraped and cultivated area with a broad range of indigenous grasses and forbs. This project was directly inspired by Paul's work and we are very happy to be part of it. Besides the GGRP style of grassland creation, we are sowing more areas of native grass each year, and the growing acceptance of direct seeding native grasses is partly due to Paul and his team's efforts to educate anyone interested enough to listen about the possibilities of using direct seeding as a viable method for the revegetation of grasslands. Nearly everyone I speak to that is involved with Western Plains Grassland has had some exposure to the GGRP and many have been infected with Paul's enthusiasm and optimism for the future of grassland restoration and creation.

I am sure there are many more stories that demonstrate the influence the GGRP has had, not only on the ground, but also in people's minds where it counts just as much. As the GGRP helps pave the way to convince people that direct seeding is the way of the future, I hope our business can help to drive the momentum created by the

GGRP by supplying some of the seed needed to carry on the establishment of new grasslands.

I would like to thank Paul and his team for the fantastic work they have all done, and John Delpratt who has inspired so many to undertake study and field work in one of our most precious plant communities.

Chris Findlay, Flora Victoria

www.floravictoria.com.au

Looking good! (two years down the track)

Restoration requires patience, seems to be the lesson with a number of our Grassy Groundcover trial sites.

Having recently completed another round of monitoring on the western sites, I'm again excited by the ever changing composition of the species on the sites. In sowing a diverse range of species and functional groups we allow the sites to adapt to change over time and take opportunities when they arise. We've replenished the seed bank - competition, natural dormancy, seasonal variation and disturbance determines the rest. In general, all of our scrape treatments have allowed enough initial germination for the sites to improve over time, with some fantastic results at a lot of the sites. Many of the cultivated (non-scrape) treatments have also been successful however some intervention has been necessary.

Moyston, cultivated treatment (left) and scrape on right

Paul and I have had to make some tough decisions at some of the sites. Our hearts sank after all the efforts of collecting and producing seed only to look at a sea of capeweed.

At the end of winter last year we sprayed the whole Moyston cultivated treatment with a broad leaf selective herbicide to target the capeweed, leaving a small section for monitoring purposes. Now it is harder to tell the difference between the two treatments with a healthy cover of danthonia over the whole site!

Moyston, the after shot.

I am confident, having had the privilege of monitoring closely these sites over the last three years, that with the balance between native and exotic grassland species back in favor of the natives these sites will improve over time.

Jess Gardner, Greening Australia

Seed Production Nurseries – regional resources

Over the 3 years of the GGRP we have helped to establish 7 seed production nurseries, without which the seed needs of the project would not have been met.

The amazing efforts of the people behind the groundcover SPA's have greatly increased knowledge of these plants, their growth needs and techniques to maximize seed production. These nurseries and the skill and knowledge of their managers are a major resource for each region, capable of supplying good quality seed of genetic integrity in volumes unheard of previously for many grassland species.

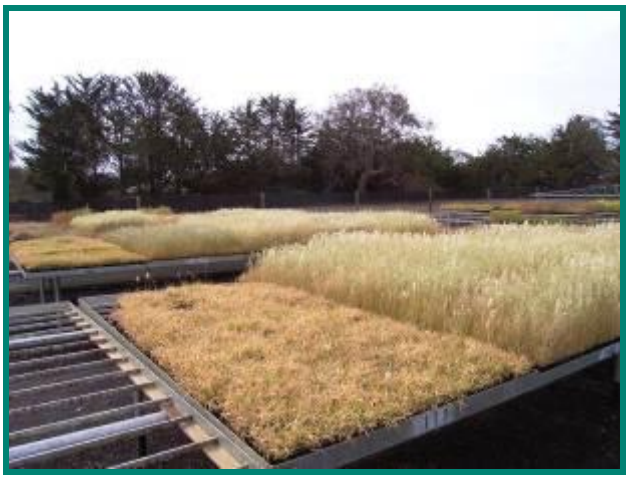
It is our hope that other projects will utilise the SPA's in their area.

David Franklin: PLANT NATIVE

03 53 505 518

Ron and Dave

David, based in Chatsworth within the Glenelg-Hopkins Catchment, produced native grass and forb seed for our Chatsworth trial site where we have established 2 hectares of native grassland. He is also very active in the conservation of the Chatsworth roadsides grassland reserves.



Native grass seed production

Rhonda and Steve LaBrocq: NARRI SEEDS

03 53 847 375

Steve and Rhonda are based near Dooen, Nth of Horsham within the Wimmera Catchment. They produced seed for 4 of our trial sites and grow over 70 different groundcover species at their indigenous plant nursery, which also offers revegetation advice and services.

Steve in situ

Marlene Schumann: GREENFINGERS NURSERY

0407 847 049

Marlene at Moyston

Marlene is based in Stawell in the upper Wimmera Catchment and from the nursery, co-managed by Intertwine services, produced seed for our Moyston site.

Liz Fenton: LARAPINTA NATIVE NURSERY

03 55 734 555

Liz and Min

Liz Fenton is based just outside of Hamilton, within the Glenelg Hopkins Catchment, and produced seed for our Hamilton DPI trial site. Liz is very passionate about biodiversity on farms and also offers plants from her nursery for wetland and grassland restoration projects

Grassy Groundcover enters Gippsland

The grassy ground cover concept made its entrance into Gippsland in grand style with two sites sown in early May of this year. One of these was a 1 hectare landcare site in Boisdale which was done in a fee for service arrangement (a first for grassy groundcover), the other was a 3 hectare site in Goon Nure made up of 2 hectares of native grasses and 1 hectare of both grasses and forbs.

THE GOON NURE SITE

This site is located to the south of Bairnsdale not far from the Gippsland Lakes. The soil is made up of a very sandy top layer 100 mm – 600 mm thick above clay and the original vegetation would have been a red gum over story with a grassy under story.

Site Preparation

This site was full of weedy challenges. We must have sprayed here at least six times over a year and a half and it amazed me how every time we sprayed we were presented with a new suite of different weed species all attempting to take advantage of a disturbed site at different times of the year. I think part of the reason for this was because the site had been cropped as well as pasture improved and so there were many weeds of disturbance in the soil seed bank. Our last weed invasion was the most challenging. It was an invasion of prickly wild melon (a cropping weed) which didn't die when it was sprayed with glyphosate. The end result was that I spent several days raking up little prickly balls with the assistance of the landholder.

After the last spraying there was also quite a bit of dead material on the ground which we were worried might clog up the seeding machine when it came time to sow. We tried burning however this only got rid of the material on about half of the site. We then hired someone to mow it with a ride on mower which chopped up the material well. The hectare where the forbs were to be sown was graded in two 30 m x 100 m strips to give them the best chance without a nutrient load and weed competition.

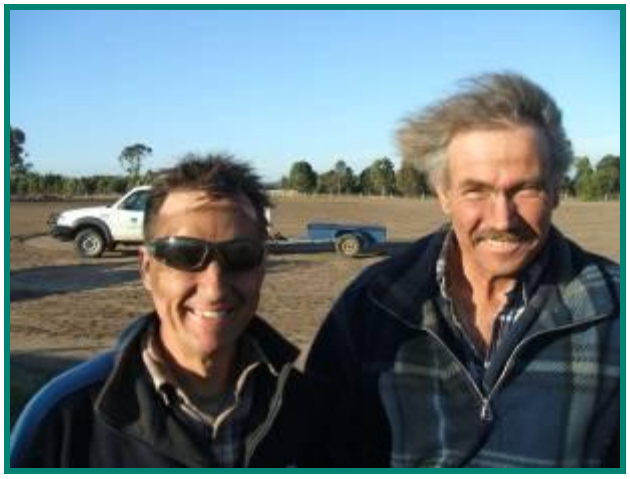
Sowing the seed

The timing of sowing for both of the Gippsland sites was interesting in itself, as most sites have previously been sown in Spring due to a lack of an Autumn break. In terms of numbers of species, however, there were 13 sown in the two hectares of native grasses while there were 69 sown in the one hectare made up of forbs and grasses. On the site made up of just grasses we sowed approximately 30 kg per hectare (which equates to about 3 kg of pure seed), and then, over half of that area, we threw another 30 kg per hectare on top as a trial to compare sowing rates. In the one hectare sown with the mix of forbs and grasses we used approximately 35 kg of forb seed and 30 kg of grass seed. One of my concerns was that on the area that had been graded we would be left with a hard pan that nothing would germinate on, as had been the case in another revegetation trial in the local area. However those fears were soon allayed because Paul's machine shattered the soil so well.

The windswept Goon Nure site after it had been sown

What we are looking at

There are three main things of interest we have attempted to investigate (plus a couple of others). Firstly we want to find out if we can manage broad leaf weeds (like the abundant cape weed) with a selective herbicide in the area we have sown to native grasses. After we have depleted the broad leaf seed bank we are hoping to sow native forbs into the area. Another thing of interest is to see if, in the area of grasses, if burning just before sowing has any affect on the stimulation of weeds and the germination of native grasses. Lastly, we wanted to see if spreading extra grass seed out after sowing with the machine had much affect on numbers of germinants.



Paul Gibson Roy and Rob Logan after a hard day's work

THE BOISDALE LANDCARE PROJECT

This was a site the local landcare group hoped to turn from a disused quarry into a revegetated area that could also be used as an arboretum and seed production area for local native plants.

This site was a moonscape before we started. There was virtually nothing that was able to grow on the gravelly ex –quarry soil. It certainly made the site preparation easy because there were no weeds to kill. The only site preparation that was done was some of the landcare members had gone through and ploughed the soil so that our machine could penetrate into it. On the night before we sowed it rained and our main concern when we showed up for the day was that we would get bogged. However, we were surprised at how well the seeding machine actually went. It worked up an excellent seedbed and by the end of the day we felt that the dozen or so species that we put in had a really good chance in what Paul described as the toughest site he has done so far. We even made the 6:30 news headlines after a film crew from the local TV station came out to film us at work. The story was introduced by the newsreader as "Boisdale Quarry gets an extreme makeover".

It did indeed.

TV stars in action at Boisdale

WHAT WILL HAPPEN NEXT?

I'll definitely be crossing my fingers for some rain in the coming months but besides that we'll set up some monitoring on the Goon Nure site to see what comes up. We're also expecting that we'll have a few weed problems so we'll be selectively spraying the broad leafed weeds where we have sown grasses and we'll be getting a few volunteers to help hand weed the area we have sowed the forbs.

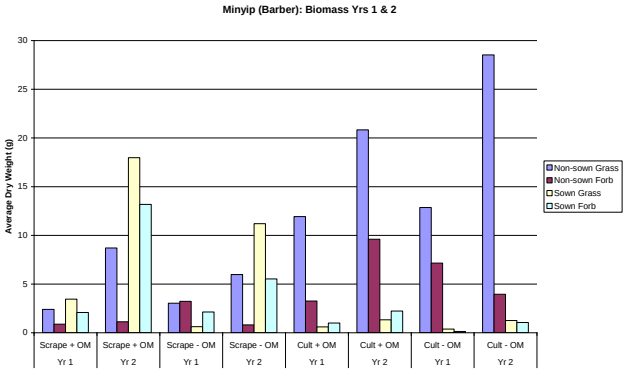
We are also establishing a forb seed production area at the back of the Greening Australia office in Maffra and we are hoping it will produce plenty of seed for native grassland improvement projects that we'd like to see happen. Even if this project doesn't go ahead because of lack of funding, we now have a lot more expertise and resources to improve the groundcover layer in Gippsland rehabilitation projects, a layer that is a really important part of the ecosystem on the Gippsland plains.

Andrew Wolstenholme, Greening Australia

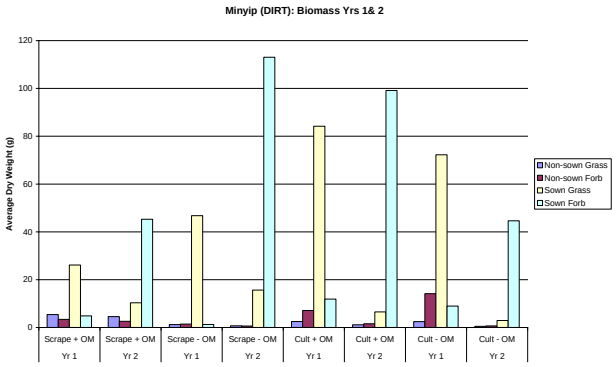
Some preliminary biomass outcomes

Recently I have begun to process the huge amount of biomass data from our various sites. As one of our measures we cut biomass (plant material) above 100 mm from sample areas within plots at all our sites. We have done this one a yearly basis so far. The following graphs show biomass (dry weighted) results from within each of our experimental plots for particular sites over two years. The treatments we looked at were scraped + organic matter, scraped – organic matter, one year herbicide (pre sowing) + organic matter and one year herbicide (pre sowing) – organic matter. It was interesting to note that in the first year plant counts and biomass seemed to show that scraped plots had less weeds/weed biomass than the non-scraped plots. This made some sense because weed seed had been removed and so had nutrients, so plants were smaller on the scraped plots.

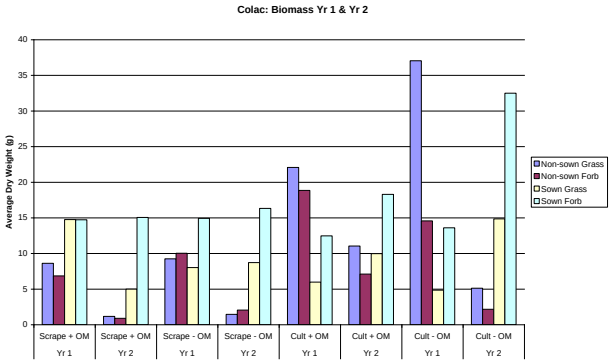
The graph below is from a site in the Wimmera region near Minyip at the property of Darryl Barber. At this site happily the grasses and native forb biomass in the scraped plots increased in the second year, while in the non-scraped plots exotic grass and broadleaf biomass increased in the second year.



The second chart is from a sowing just down the road from Darryl's. Interestingly we sowed the same seed mixture at both with quite different outcomes, suggesting the importance of site-specific factors at and following sowing. At this site the sown native grasses did well in the first year, but dropped off in terms of biomass in year two. A lot of this was silky blue grass, which may be a bit of a pioneer. However, the forbs at this site have done extremely well, with sown forb biomass increasing dramatically in year two. This site looks great with this array of wildflower that established from seeding. There are also a large number of forbs appearing in walkways around the plots, suggesting recruitment from parent plants in the plots.



Finally, a biomass chart from a site on the basalt plains near Colac at the property of Claire and James Dennis. A point of encouragement here is again the sown native species (both grass and forb) have persisted into year two and in fact increased in biomass. A really interesting thing about data from this site is that the non-sown or weed biomass has fallen in all plots from year one to year two. Was this as a result of competition from the sown native species, or did the natives just cope better under the prevailing conditions? It will be very interesting to see if this trend is maintained at this site when we look at biomass again for these plots in yr 3.



These snippets from just three sites are not meant to be a comprehensive analysis of data. Rather I thought I'd just present some of the preliminary results to highlight interesting happenings. By and large these biomass results are very encouraging, because they suggest the plants that established from our initial sowings have indeed survived in the field for two years under extremely harsh climatic conditions. In the next few months I will look in detail and statistically analyse at all our field data including the biomass results, but also plant counts and percentage cover. This should help to explain how these sown communities are developing over time, which will be important information in relation to the longer term management these, GGRP and perhaps other remnant grassland sites.

Paul Gibson Roy

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