

This is an update report on the progress of the native grass seeding trials conducted at Moorunde and reported on in May 2014 – see “Spear Grass Seeding Trials and Results at Moorunde” by John Endersby, 28 May 2014.

Most of this activity was conducted in the 2.5ha Peter Collins Enclosure on high calcrete ground while a smaller demonstration was conducted in a 30m<sup>2</sup> enclosure on the Casuarina Flat claypan.

### **Peter Collins Enclosure**

In May 2013, 63 grams of Spear Grass was sown into a total of 525 metres of furrows. No grass that was artificially sown, germinated that year, although some seed present in the soil did germinate! However in my initial progress report in May 2014, I pointed out that Spear Grass seed has a dormancy period of at least one year and up to several years. So the lack of germination in 2013 of sown seed came as no surprise. Sown seed started to germinate in 2014. A brief summary of the 2013 seeding is given below:

- 63 grams of grass seed sown in a total 525 metres of furrow cut by a cultivator shear (three furrows, 175 metres long).
- A number of seeds (uncounted) germinated alongside but outside the furrows in 2013 in the soil spoil created by the shear cutting the furrows. This indicates that some naturally existing dormant seed had been dug up and thrown aside as the furrow was cut. NO germination occurred inside the furrows in 2013, leading to the reasonable conclusion that subsequent germination of seed in 2014 within the furrows is from the artificially sown seed.
- The Delivery Rate (quantity of seed by weight applied per unit length) was 0.12 grams of seed per metre or 12 grams per 100 metres (one flat teaspoon of sugar weighs 4 grams).
- The per-hectare Seeding Rate (quantity of seed by weight applied per unit area) can be calculated based on the furrows spacing of 1 metre. One hundred rows, 1 metre apart and 100 metres long would cover 1 hectare so:

0.12 grams per metre x 100 metres x 100 rows = 1.2 kilograms per hectare.

### **Results for 2014:**

- A total of 252 plants were counted in the total 525 metres of furrow.
- Strike Rate (number of plants germinated per unit length) was  $252/525 = 0.48$  plants per metre or 48 plants per 100 metres.
- Germination Rate (number of plants germinated per unit area) was calculated as for Seeding Rate above to be 4,800 plants per hectare.
- This was a significant result given that the delivery and seeding rates used were quite low together with the dormancy factor of the seed.

On Friday 1st May 2015, I re-examined the three furrows under the supervision and scrutiny of Graham Nye. I was keen to examine the area following the four rainfall events since the beginning of the year: 7-13 January (65mm), 5-7 April (32mm), 16-18 April (138mm) and 24-25 April (14mm); with the expectation that more dormant artificially sown seed had germinated – and it had.

## Results for 2015:

- I had previously marked about one hundred of the first artificially sown seeds to germinate in 2014 with small cairns of pebbles, so I was able to note that some of these plants had since died. Despite this loss, a total of 597 living Spear Grass plants were counted, 2.37 times the 2014 count.
- Strike Rate has cumulated from 48 plants per 100 metres in 2014 to 114 plants per 100 metres in 2015.
- Germination Rate has cumulated from a calculated 4,800 plants per hectare to 11,400 plants per hectare.

Given that the enclosure is sited on a less than ideal location; with approximately a third to a half of the soil not suitable for germination or grass survival, this is a pretty remarkable result from only 63 grams of seed.

Between 2013 and 2015, there has also been some natural regeneration of grass within the enclosure from in-ground dormant seed. So I conducted a "string line count" to compare this natural germination with the furrow seeding results.

Three 175 metre stringlines were stretched out across three different transects of the enclosure and under the supervision of Graham Nye, all Spear Grass plants within 10cm of either side of the string were counted. This method was selected to directly compare to the 20cm wide furrows within which counting of sown plants had been conducted:

- Line 1 was run out between the 1 metre spaced furrows. Spear Grass count was 23 plants (compared to counts within the three furrows of 201, 148 and 248 plants).
- Line 2 was run out adjacent to the area seeded by other people using a variety of soil preparations (such as burning, raking, weed-spraying) followed by hand seeding. 18 plants counted.
- Line 3 was run out in the "control" area of the enclosure where no artificial seeding had been conducted. 21 plants counted.
- In total, 62 plants were counted along the three 175 metre long by 20 cm wide stringline strips compared to 597 plants in the three furrows of same length and width.
- Over three years (2013 to 2015), natural germination in the enclosure is only 10% of the germination achieved after two years (2014 to 2015) for seed artificially sown in furrows using the cultivator shear.

## Casuarina Flat Enclosure

- No germination count has yet been done for the seeded area in 2015
- The unseeded "control enclosure" still has no germinated Spear Grass plants.



Figures 1 and 2: Spear Grass in rows within furrows.



*Figure 1*



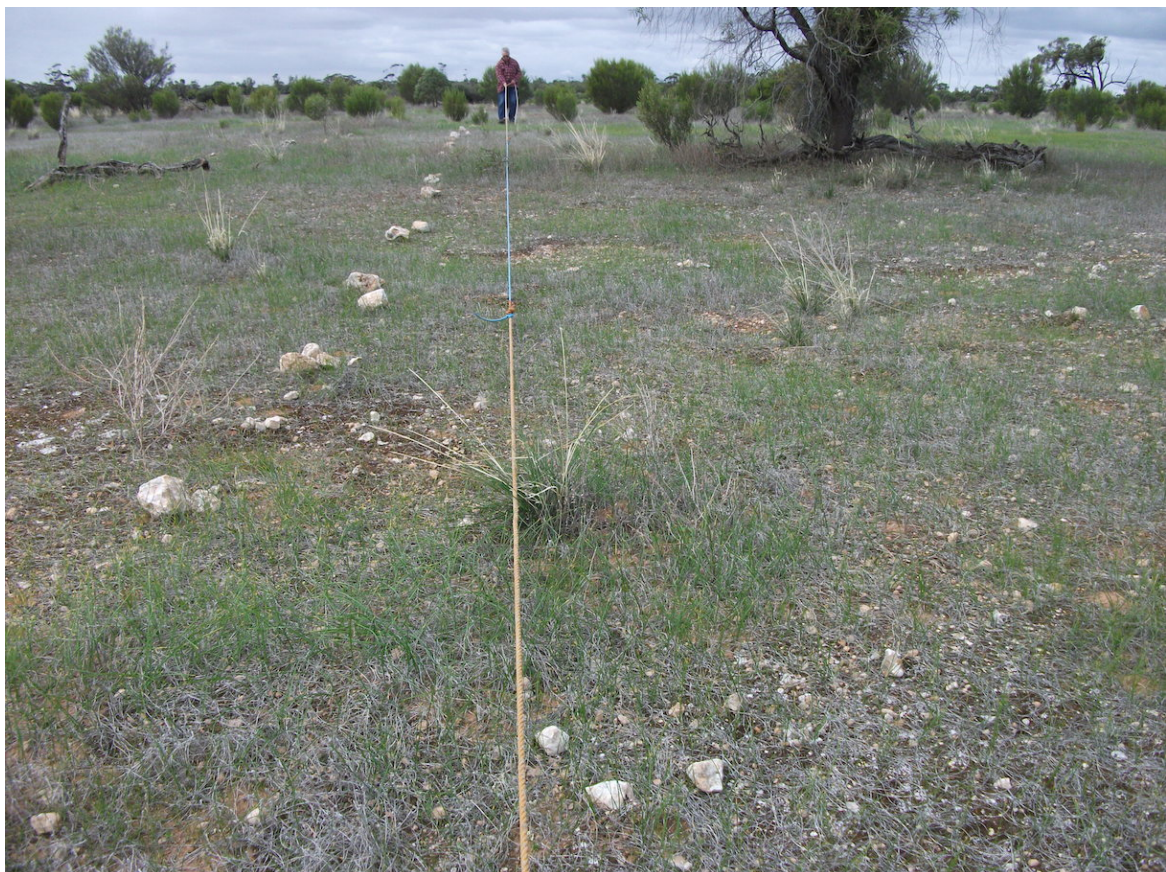
*Figure 2*



Figures 3 and 4: Conducting string line count



*Figure 3*



*Figure 4*