

PLANTING KARRI WILDINGS III

by

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This is the third article in a series dealing with the planting of karri wildings on failed regeneration burned areas. The first two articles described previous experiments which indicated that karri wildings could be planted successfully. A lightly trimmed 2' - 3' plant was the best size to plant, though smaller plants are more successful later in the season; and best results are obtained with earlier planting. It also appeared that for later plantings nursery stock hardened off by root pruning was easier to establish than wildings.

In the 1970 planting season a trial was established to try to determine the best time of planting for wildings, incorporating four different sizes and two different treatments of plants.

Plant size - four sizes were tried, 1', 2', 3' and 4'.

Treatments - stumped and trimmed. In both cases the roots were pruned.

Planting times - six different planting times for all four sizes and two treatments of plants were tried, starting on the 30th April and planting on the 30th of each month until the 30th September. In addition four plantings of 2' wildings only were made on 15th April, 15th May, 15th June and 15th July.

The combinations of planting time, treatment and size totalled 56 different plantings of 20 plants each, which were randomized within a block. The trial was replicated on two different sites. Unfortunately one replicate on a difficult site gave such poor overall results that for statistical purposes the trial here was abandoned. The pattern of survivals in the few remaining plants confirmed the results from the other site.

Table 1.

1 (a)

Percentage Survivals at the end of the first Winter

Planted	Stumped				Trimmed			
	1'	2'	3'	4'	1'	2'	3'	4'
15th April	-	30	-	-	-	85	-	-
30th April	20	20	0	0	60	25	15	10
15th May	-	0	-	-	-	45	-	-
30th May	25	10	5	30	30	35	10	30
15th June	-	25	-	-	-	65	-	-
30th June	25	15	10	15	70	45	50	45
15th July	-	0	-	-	-	75	-	-
30th July	5	0	0	0	65	65	20	0
30th Aug.	15	5	10	5	50	20	25	5
30th Sept.	0	25	0	5	15	35	25	25

Studying the results, it will be seen that mid-June to late July is the optimum time for planting trimmed plants, though the highest actual survival in one planting is that of mid April. The 1' plants have shown a better overall survival than other sizes in the plantings to 30th August, though it is interesting to note that in the 30th September planting the 1' size gave the worst results.

With stumps the overall survivals are much lower than those for trimmed plants, and the optimum planting time appears to be earlier - late May to late June. The comparison of the total survivals over the six comparable planting times at the 30th of each month is:

	Stumped	Trimmed
1' plants	15.0%	48.3%
2' plants	12.5%	37.5%
3' plants	4.1%	24.2%
4' plants	9.2%	19.2%

In addition to the main trial, two smaller trials were planted. At intervals from April 15th to June 17th, batches of twenty 2' trimmed wildings were planted at Pine Creek and Stewart Road to test the survival percentage. Though planting dates differed slightly these small trials showed the same trend as the larger one, i.e. fairly good survival in mid April, followed by a drop in late April, a further rise in mid to late May, and a drop again until the main planting time of mid June. The comparative percentage of survivals for the 2' plants is set out in figure 1.

Also at Pine Creek, 22 acres of failed regeneration area was planted with 2' - 3' wildings from June 4th to 12th as a normal Divisional planting operation. At the end of winter the survival rate varied from 46% to 73% in different areas, those plants on the hill slopes appearing to be the most successful, the mortality rate being higher both on the hill-tops and in the valley bottoms. The overall survival rate was 61%, which as can be seen from figure 1 was consistent with the survival rate for the various trial plots over the same period.

Throughout 1970, measurements were taken of the root, shoot and height growth of karri wildings.

Roots

Each month ten 2' plants were pulled up, roots pruned, and transplanted into plastic pots. After four weeks these were pulled out and the freshly-grown roots removed and weighed.

Shoots

Each month ten 2' plants were selected in the field, and cut back to 9" height, all side shoots being trimmed off. After four weeks any new shoots were measured to the nearest $\frac{1}{4}$ ", both the shortest and longest shoot being recorded.

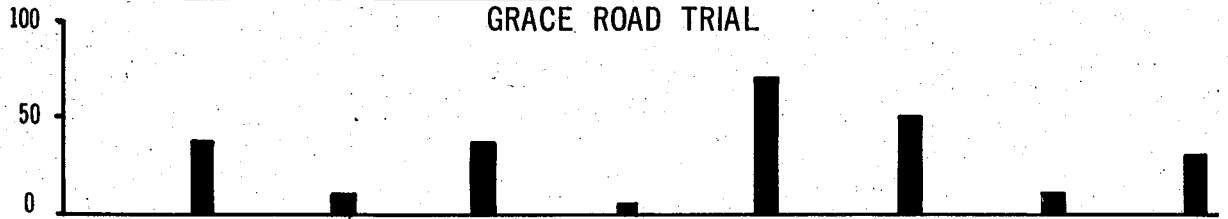
Height Growth

Ten trees from 2' - 4' were selected and their height increase measured monthly over a 12 month period.

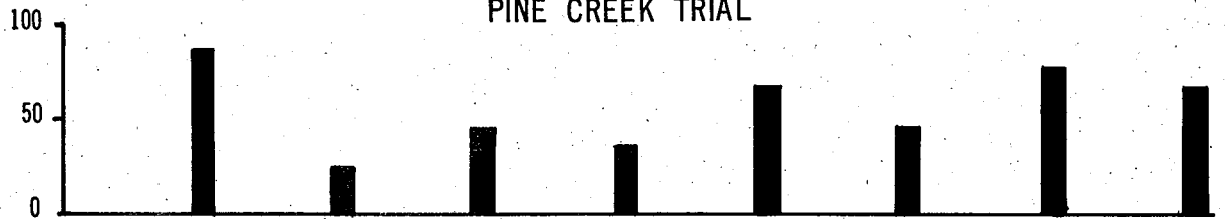
The above three trials showed that both height and shoot growth began in early October, reached a peak in January, then decreased until mid April, when growth was dormant over

FIGURE 1

PERCENTAGE SURVIVALS OF 2' WILDINGS PLANTED TO JULY 30th
GRACE ROAD TRIAL



PINE CREEK TRIAL



PINE CREEK TRIAL (SMALL)



STEWART ROAD TRIAL (SMALL)

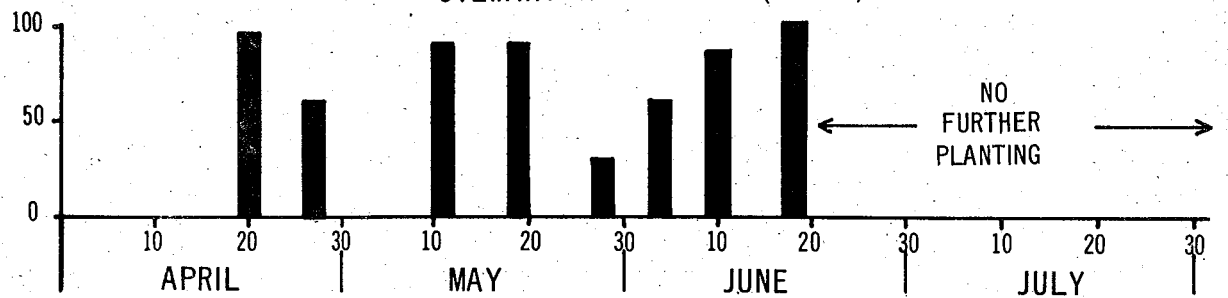
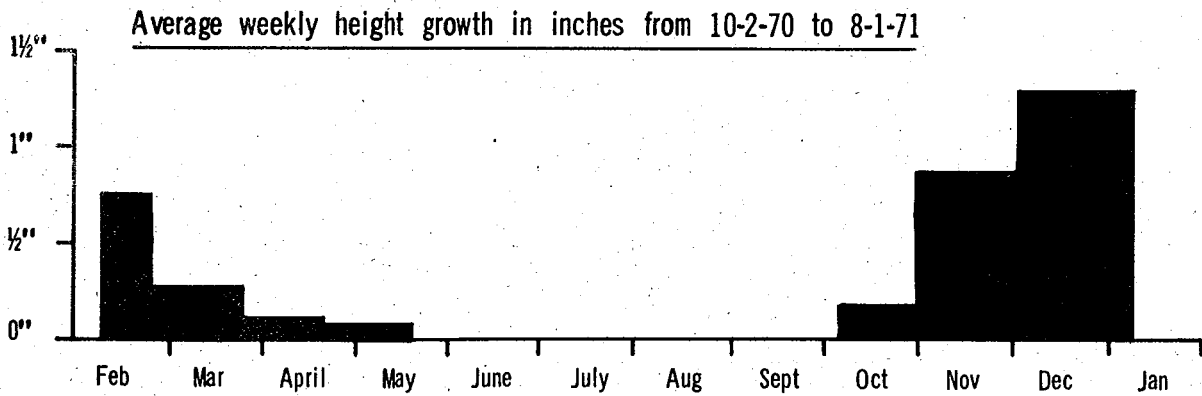
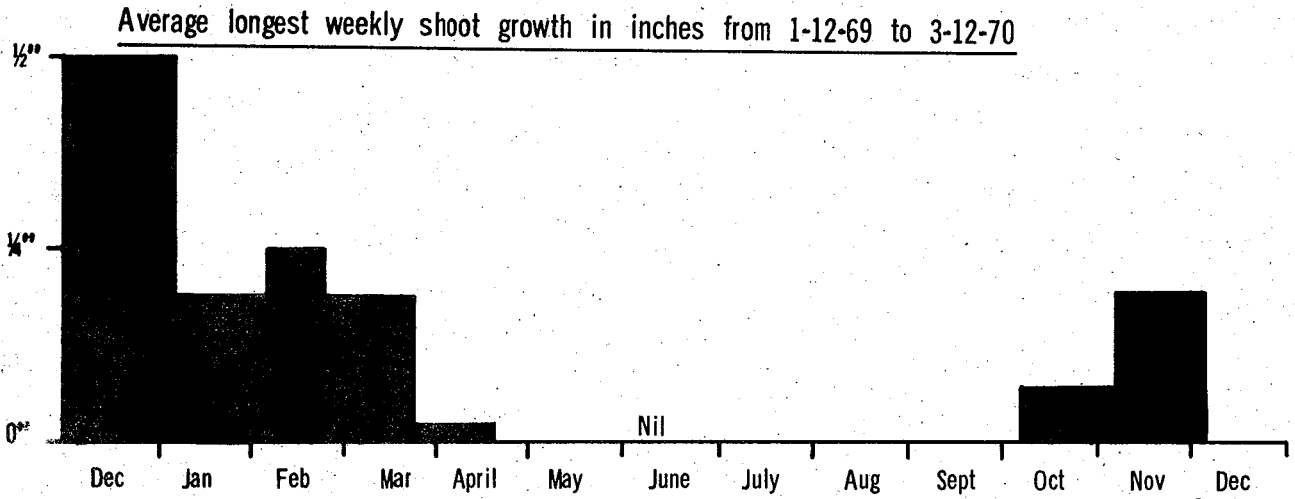
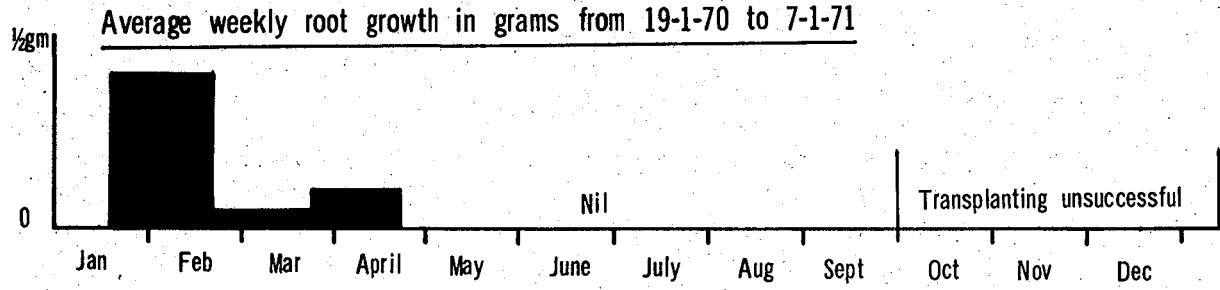


FIGURE 2



the winter period. Root growth was high in mid February and then fell gradually until mid May, with a minor peak in April. There was no growth at all in the winter. The date when growth recommenced was unfortunately not obtained as all the wildings transplanted in the November to January period died before producing any new growth. (See Figure 2)

In an attempt to ascertain why the fluctuation in wilding survival rates, a "moisture build-up" was compiled. This is briefly a cumulative total of rainfall, less the loss by evaporation from the soil. Evaporation varies according to temperature, but if both daily rainfall and maximum temperature figures are known, a fairly accurate picture of actual soil moisture build-up can be ascertained.

It is clear that the build-up was between 3 and 4 inches by mid April, fell slightly by mid May, then rose sharply to around 5 inches in late May and 6 inches in mid June. It can be assumed that the soil moisture by mid April was sufficient for plant survival, and in fact the survival of wildings planted at this time is good. As there is no appreciable decrease in soil moisture after mid April, some factor other than moisture must be the cause of the higher mortality rate in later plantings.

It can be seen from Figure 2 that root growth is still active until late April, and as soil temperature and moisture then are both sufficient for growth, the plants are able to establish themselves and survive. By May soil temperature has dropped, root activity has reached a very low ebb, and it requires a high soil moisture content to enable the plants to survive. This high moisture content is not available until about mid June, but then is maintained throughout the winter. The rapid fall-off in survival of plantings after late July might be explained by the increased incidence of frost at this time of the year. Drying out due to the high winds may also be a factor at this time. This theory is consistent with the mortality pattern shown earlier in the Pine Creek planting area.

To summarize, two clear factors have emerged from the above trials. Trimmed plants are far superior to stumps in planting, irrespective of size, and the best time for planting is mid June to late July. Though wildings planted in mid

April show better survival, this is for such a short planting period that for practical purposes it can be ignored.

Acknowledgment

I wish to acknowledge the help of Mr. J. Mc Alpine, who planted and measured the trial plot on Stewart Road.