KARRI REGENERATION

by

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INTRODUCTION

Under the present seed tree system of regenerating karri there are many alternative site treatments which may be considered both prior to and after regeneration burning. Much information is available on individual aspects of karri regeneration but no overall plan exists.

This article is an attempt to define the problem as a whole and to discuss briefly the various alternatives that exist. The emphasis is on overall planning and no attempt has been made to enter into any detail. For more detailed information on individual aspects of the problem the reader is referred to the reference list at the end.

THE ANNUAL SEED FORECAST

Referring to Fig. 1 we begin at the top with the annual seed forecast (see For. Notes Vol. 8 No. 2 1970, and Vol. 9 No. 2 1971). This forecast is published in Forest Notes each winter and is the result of a survey of the karri done by Research branch each year (for method see For. Notes Vol. 7 No. 2 1969).

Using the information contained in this forecast the fate of each cutover area should be decided in advance. If a good or reasonable seed year is forecast all areas should be allocated to the 'good seed supply' or left hand column. If on the other hand a poor seed year is forecast then it may pay to select certain areas for artificial re-stocking. Once having made a decision the area should be allocated to the 'poor seed supply' or right hand column.

GOOD SEED SUPPLY

This situation is depicted in the left hand column. Detailed seed estimates will be carried out by research branch on request. Poor or doubtful areas may then either be deferred till later, or transferred to the right hand or 'poor seed supply' column.

Areas with a good seed supply or where it is decided to chance a doubtful seed supply, may be scrub rolled, that is the scrub may be pushed over by means of a bull-dozer prior to burning. Although this involves considerable extra expense, it has become almost standard practice now since it results in a much improved burn which creates good ashbed conditions ensuring optimum seedling development. Once having been scrub rolled an area should not be left too long before burning as the flash fuel created quickly deteriorates and green scrub grows, resulting in a loss of the effect of rolling.

Nursery stock, either in the form of Jiffy pot stock or open-rooted plants, may be grown and held on hand in anticipation of a percentage of failed areas. Open-rooted stock is recommended and it should be sown in the nursery in spring and kept down to 2' high by root pruning. Summer sowing as a means of producing smaller plants and thus avoid root pruning can be disastrous (see Bi-annual report July 1972).

Burning may be carried out either in summer or in autumn. The pros and cons of this are discussed fully in two articles in Forest Notes, Vol. 8 No. 3 1970.

Regeneration counts may be carried out as indicated either in early winter or in spring. In most years it is advisable to wait until spring, as autumn results are generally inaccurate (see For. Notes, Vol. 8 No. 3 1970). However in some years reasonable results are achieved in autumn because of early germination and development due to favourable conditions. For regeneration count method see B.J. White 1972.

If regeneration counts are done in autumn, and the area is deemed a failure, it may be artificially regenerated by means of either planting or sowing. Nursery stock may be used if this was provided for, if not wildings may be used if a supply is readily available (see For. Notes Vol. 7 No. 3 1969 and Vol. 8 No. 1 1970 and Vol. 10 No. 3 1972). Plants should be fertilized preferably with a fertilizer containing a high percentage of phosphate (Christensen 1972 b.) Sowing is also a possibility but is not recommended in practice. No suitable seed pellet has yet been developed for karri. Broadcast or spot sowing gives extremely variable results and is recommended only as a stop gap measure for very limited areas.

Again it is warned that autumn regeneration counts may be misleading.

Spring regeneration counts are reliable. The seedlings are all easily visible and they have passed the most susceptible stage and the majority are likely to survive the summer, (see For. Notes Vol. 8 No. 3 1970). If the results of regeneration counts are good then no further action need be taken. If however, they are poor, problems arise. It is too late to regenerate the area artificially, this can now only be done next season, and by then a scrub problem has developed.

Scrub control by spraying with 2,4,5-T in spring is a possibility if it is desired to plant the area. However this is expensive and not always successful and it is doubtful if it is justifiable on a large scale.

There is however some evidence that good open rooted nursery stock 60-75 cm in height, will compete with one-year-old karri wattle (Acacia pentadenia) and hold its own if well fertilized. Jiffy pot stock or wildings are not recommended for planting at this stage unless no other stock is available. Jiffy pot plants are generally too small and wildings do not have the vigour of open rooted nursery stock.

POOR SEED SUPPLY

This situation is represented by the right hand column in the diagram. It is suggested that this line of action could be followed at least on a limited scale between seed years. This would help to reduce the build-up of very large areas for regeneration burning which at present tends to occur between seed years.

Once having made the decision to artificially re-stock an area and not to wait for a seed year, there is no longer any need to keep the seed trees. They can be removed and their crowns will add to the available fuel.

Something which has yet to be tried, but which might prove successful is windrowing of the logs and planting mainly in and along the edges of the resultant lines of ashbed.

If it is desired to keep the seed trees for the little seed that they might contribute then the area may be scrub rolled as already described. This also applies to any areas that have been deferred from the left hand column because of poor seed crops.

Burning can again be carried out during either summer or autumn.

After burning, if germination should exceed that expected, in the cases where seed trees were left, then an area may be transferred again to the left hand column and treated in any of the ways already described. For the rest, the logs may be heaped or the area may be sprayed with 2,4,5-T before planting. Heaping of logs may be advantageous for later access and fire control. It could be done before the burn but it should be remembered that this

would then confine ashbeds to a few scattered spots and it might also be difficult to obtain a good continuous burn.

Planting may be done using open rooted nursery stock or Jiffy pot plants, either would be successful under these conditions.

DISCUSSION

It is obvious from the diagram that karri regeneration relies heavily on the seed tree system. Though this method is often regarded as being somewhat primitive it is eminently suited to the present situation. It utilizes the natural fire adaptations of karri to provide a cheap and effective method of regenerating the forest after trade cutting.

There are only two methods which might be considered as replacements of this system, namely, aerial seeding and planting. Neither of these appears to be a viable proposition at the present time. Seeding of karri has received a lot of attention but results of experiments have not been encouraging. Variability both with site and season is extremely high and results are unpredictable.

Planting on the other hand is very successful but with the ever increasing labour costs it does not appear to be a real alternative to regeneration of the 2000-3000 acres that are clear cut every year.

Therefore although a certain amount of both planting and seeding will be done, indeed should be encouraged between seed years, it does not seem likely that there will be any major deviation from the present seed tree system in the near future.

REFERENCES

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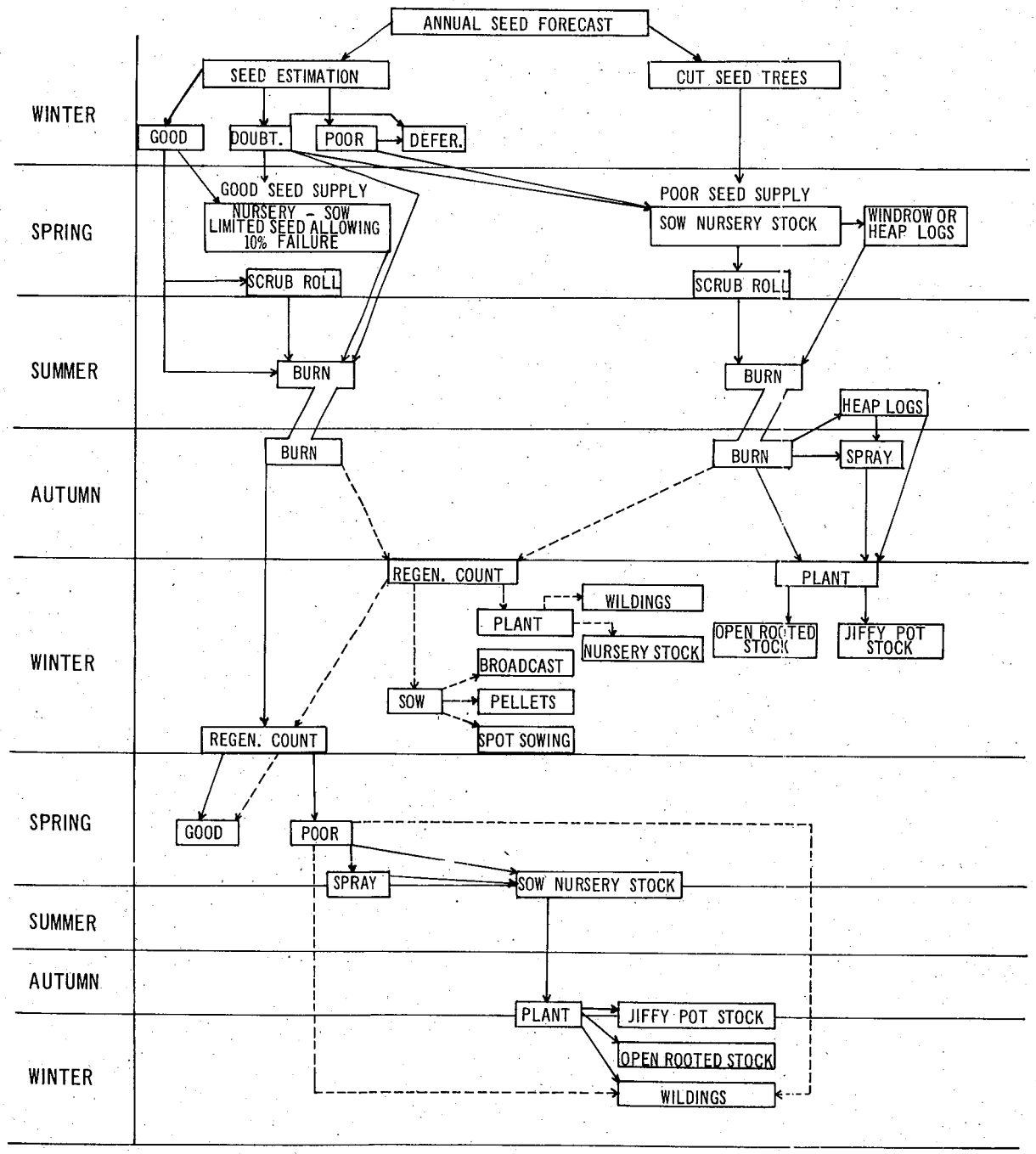
KARRI REGENERATION - ALTERNATIVES



ARROWS INDICATE ALTERNATIVES DOUBTFUL ALTERNATIVES ARE SHOWN BY BROKEN LINES.