FOREST NOTES

FORESTS DEPARTMENT
PERTH
WESTERN AUSTRALIA

VOLUME 6 NUMBER 2

FOREST NOTES

Volume 6 - Number 2

March 1968

Editor: R. J. Underwood

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EDITORIAL

In a normal issue of 'Forest Notes', the general aim is to present articles covering a range of forest activities in W.A. In this issue a break with tradition is made, articles from two broad fields only being included.

The first part of this issue comprises reports from two departmental research workers on their activities during the latter half of 1967. It is very pleasing to have this opportunity to assist with the dissemination of research findings to field officers. It is hoped that this sort of material will be a regular feature of 'Forest Notes' in the future.

The second part of this issue consists of the first edition of a Departmental Safety Newsletter. This section was prepared by the officers responsible for the Departmental Safety Programme, and is introduced on page 11.

It is hoped that the next edition of 'Forest Notes' will be produced in July of this year. Would potential authors please submit their material by mid-June to the Office at Mundaring Weir.

SUMMARY OF BIANNUAL REPORT - JARRAH DIEBACK RESEARCH

by F. Batini

This summary covers the period June to December, 1967.

1. POT TRIALS.

A. To test several species of Eucalyptus for resistance to Phytophthora cinnamomi

The aim was to determine which eucalypt species are hosts of Phytophthora cinnamoni and to observe their gross reaction when inoculated with this fungus.

The trial was shown on the 15/12/66 and closed on the 26/7/67.

Results:

P. cinnamomi was recovered from dying seedlings of the following species:-

Eucalyptus	andrewsi	Eucalyptus	pauciflora
"	baxteri	"	pilularis
"	cloeziana	"	radiata
"	globulus	"	salubris
"	gracilis	"	sieberi
"	micrantha	"	wandoo
	E. obliqua		

At the conclusion of the experiment root pieces from apparently healthy seedlings of all species were plated onto 3P agar.
P. cinnamomi was recovered from these additional species :-

Eucalyptus	botryoides	Eucalyptus	maculata
"	camaldulensis	"	marginata
"	campaspe	"	paniculata
"	cladocalyx	"	robusta
"	dalrympleana	"	salmonophloia
"	fibrosa	"	tessellaris
"	goniocalyx	"	viminalis

The host list of P. cinnamomi in eucalypts has been extended to a total of 27 new host records. Though it appears that a wide range of eucalypts are hosts of P. cinnamomi, the response to inoculation has varied between species and a number appear to be moderately tolerant to root rot.

The root systems of all pots in the inoculated series were washed and classified into four categories using E. marginata as a reference.

TABLE 1.

Category	Root Rot Rating	Species
1.	Root systems markedly better than those of jarrah	E. resinifera maculata globulus propinqua robusta goniocalyx grandis
2.	Root systems better than those of jarrah	blakelyi botryoides fibrosa calophylla citriodora gummifera microcorys paniculata bosistoana tessellaris sideroxylon cladocalyx melliodora wandoo dalrympleana camaldulensis saligna tereticornis cornuta
3.	Root systems the same as those of jarrah	salmonophloia viminalis micrantha pilularis radiata
4.	Root systems worse than those of jarrah	baxteri sieberi obliqua pauciflora campaspe andrewsi scabra gracilis cloeziana salubris

TABLE 2.

AVERAGE PERCENT MORTALITY BY CATEGORY CLASS

Category	No. of Species (from Table 1)	Average % Mortality		
		Inoculated	Control	Difference
1	7	6%	6%	0%
2	19	12%	6%	6%
3	5	38%	12%	26%
4	10	69%	44%	25%
	41			

A correlation between susceptibility to P. cinnamomi root rot and taxonomic classification (according to Blakely) was observed. Species belonging to the section Renantherae appear to be more susceptible to Phytophthora root rot.

For the present, with only the odd exception, the Stringy Bark and Ash group of eucalypts must still be regarded as suspect. Species from this group should not be included into field trials other than for experimental purposes.

Unfortunately this section includes the bulk of the hardwood species of economic importance to Australia.

After considering the sawmilling potential, root rot tolerance and adaptability to the West Australian environment; it is suggested that the following species be used for trial planting in dieback areas :-

First preference	Eucalyptus	maculata
		resinfera
		propinqua
		goniocalyx
Second preference	Eucalyptus	saligna
		microcorys
		grandis
Third preference	Eucalyptus	bosistoana
		globulus
		citriodora
		botryoides
		robusta
		blakelyi

B. Nutrition Trial WP.36/66:

The influence of nutrition on host resistance to Phytophthora cinnamomi.

The effects of eight nutrient regimes on the resistance of Eucalyptus marginata and Pinus pinaster to Phytophthora root rot are being studied. The species were shown in April 1967. Nutrient amendments commenced in August and are applied at fortnightly intervals. The trial was inoculated on the 31st. October, 1967.

Results:

Nutrition.

Nutrient amendments have markedly improved the height growth and leaf area production of Eucalyptus marginata in all treatments other than -P, -N and Water.

The effect of nutrition on the growth of Pinus pinaster has not been as marked.

Mortality.

Within one month of inoculation seven jarrah seedlings have died. Phytophthora cinnamomi has been recovered by direct plating of root tissues. No pinaster deaths have occurred to date.

No relationship between mortality and nutrient amendment is yet possible.

C. Factorial Trial WP.6/67:

Susceptibility of Pinus pinaster seedlings to Phytophthora cinnamomi root rot.

The influence of seedling age, nutrition and watering levels on the resistance of Pinus pinaster to Phytophthora cinnamomi are studied in this trial One and two year old pinaster seedlings were inoculated in May and September, 1967. Height measurements are recorded monthly and the trial is expected to close in March, 1968.

No pinaster mortalities have occurred in the inoculated series. Inoculation has caused a slight depression in top height in both age classes of pine. In the one year old stock, nutrition has resulted in a marked increase in growth but this increase is only slight in two year old pines. To date there has been no response to the watering treatments.

D. To test seedlings of some coniferous species for resistance to Phytophthora cinnamomi.

The experiment was designed to test whether P. cinnamomi was pathogenic to P. pinaster and to compare the resistance of this species with that of other hosts.

Ten coniferous species and nine seed loys of P. pinaster were tested. The trial was sown on the 9/1/67 and closed on the 26/7/67.

Results:

P. cinnamomi has been recovered from the roots of all species except:- Araucaria cunninghamii(Hoop pine).

At the completion of the experiment the root systems in the inoculated pots were washed and rated into four categories :-

Root Rot Rating		Species.
Slight	Less than 20% of roots rotted	Pinus taeda " elliottii
Moderate	Between 20% & 50% root rot	Pinus pinaster(Leiria) " " (Corsican) " insularis C.lusitanica C.glauca A. cunninghamii
Severe	Between 50% & 90% root rot	Pinus radiata " halepensis
Complete	Over 90% root rot	A. pyramidalis

Discussion.

The pathogenicity of P. cinnamomi to the Leirian and Corsican strains of P. pinaster has been demonstrated. Under the conditions of this trial P. elliottii and P. taeda have demonstrated a greater tolerance to root rot than has P. pinaster, which, in turn, is better than P. radiata.

A wide range of root rot within P. pinaster has been observed. It appears that the Leirian strain may be more susceptible than the Corsican. Further work on the root rot resistance between and within strains of P. pinaster is planned. Because of its current field tolerance, the continued use of P. pinaster for the reforestation of dieback areas is recommended.

It is considered that further trial plantings with P.taeda and P. elliottii are warranted.

1. NUTRIENT CULTURE TANKS.

The large nutrient culture tank purchased by the Forest Research Institute has required an extended period of modification and testing. This unit has been formally handed over by the Works Department.

3,500 seedlings are being raised in the Shadehouse and Nursery for subsequent screening in this tank.

During this period several small trials have been run in nutrient solution using battery cases. Seedlings of jarrah, marri, P. pinaster and lupin have been successfully established in nutrient solution. In the earlier trials severe algal and fungal contamination occurred. These problems were overcome by the use of darkened containers, weaker solutions and the addition of animal charcoal. Successful infection of all four species has been achieved using zoospores of P. cinnamomi.

2. FIELD TRIALS.

The planting of field trials was completed in July 1967. Trial plots are inspected at two monthly intervals and survival counts made at each inspection. To November 1967, 6% of the seedlings in the inoculated series have died compared with 3% in the controls.

3. SOIL BAITING.

A. Pinus pinaster - The Dell, Manjimup Division.

Soil and root samples were collected from dying 11 year old Pinus pinaster and Pinus radiata planted in an old dieback area. The roots of both species had severely discoloured cortices and steles. Though Phytophthora cinnamomi was recovered from the soil sample by the lupin baiting technique, no recoveries were obtained by direct plating of root material on to 3P plates. Microscopic observation of the dead roots revealed black pycnidia within the tissues. When plated on to a general medium a fungus, tentatively identified as Macrophomina phaeseoli, was recovered. The culture was checked against isolates obtained from the Agricultural Department and were shown to the University Plant Pathologist, Mr. R. Hilton. All current evidence points to the probability of this fungus being Macrophomina phaeseoli. A sub-culture will be forwarded to Kew for positive identification. This fungus is considered to be an important root parasite in warm regions.

B. Eucalyptus diversicolor - Bridgetown/Nannup Road - Nannup Division.

Root samples collected from this area by D.F.O. B. White were baited for Phytophthora. Both large and small roots were extensively decayed. No recoveries of Phytophthora cinnamomi were obtained. It is considered that the unthriftiness of the Karri trees in this area may be due to waterlogging, rather than to damage by P. cinnamomi.

C. Muja Construction site - Collie Division.

Patch dying of the native flora and ornamental species in this area are affecting the plans for the beautification of the site.

At the request of the Construction Engineer, A.D.F.O. Butcher sampled this area and the samples were baited for Phytophthora. Positive recoveries of P. cinnamomi were obtained and Mr. Butcher advised accordingly.

It was suggested that the area be planted with a mixture of P. pinaster, P. elliottii, P. taeda, Eucalyptus saligna and Eucalyptus grandis.

4. CO-OPERATION WITH A.D.F.O. S. SHEA.

(a) Predisposition of jarrah dieback.

Inoculum for the field infection of jarrah stands in the Dwellingup area has been produced at the Forest Research Institute. Lupins infected with P. cinnamomi in nutrient culture solutions were used as a source of inoculum.

(b) Pot trials.

Lupins infected with Phytophthora and mycelial suspensions were produced at the F.R.I. and used by A.D.F.O. Shea to inoculate pot trials at Dwellingup. Subsequently, dead seedlings were plated on to 3P agar and recoveries of P. cinnamomi obtained.

(c) Lupin baiting.

A number of samples collected by A.D.F.O. Shea from logging equipment have been baited for the presence of P. cinnamomi. Several positive recoveries were obtained.

HALF YEARLY PROGRESS REPORT

by J. J. Havel

In the period under review, the final report on site quality studies has been submitted. A summary of the report has been published as a contribution to the 1968 Commonwealth Forestry Conference in New Delhi.

The findings of the study have been applied on a large scale to delineation of future planting areas in the western sector of Wanneroo Division. Future planting areas up to the year 1971 have now been demarcated on the ground through co-operation between research and administrative staffs. Recently taken aerial photographs will be used to map the boundaries.

The methods developed in the Wanneroo Division are now being applied to northern jarrah forest between Julimar and Collie. In addition to suitability for pine planting, the susceptibility to jarrah dieback is also being investigated. There is already an indication that the sites characterised by high proportion of monocotyledons (Liliaceae, Restionaceae, Cyperaceae) are most susceptible to dieback. It appears that poor internal drainage, which limits the growth of many dicotyledenous shrubs, is also the predisposing factor in the case of dieback.

The report on the first stage of nursery research is now complete. The detailed stocktake carried out during the 1966-67 season, was analysed by multiple regression and stratified sampling methods, has yielded much useful information. It has been shown that medium size seedlings, 7 - 14" tall, are the best stock in terms of survival, form and rate of growth. The chief factors affecting the production of planting stock were found to be organic matter, seed stratification and density of sowing. Very marked response has been found to increases in organic matter content of up to 3% - 4% : beyond this point the response is relatively slight. Withdrawal of nursery beds with organic matter content below this level from production, and continuous cropping of beds markedly above this level, have been recommended. Stratification of all seed, and avoidance of stocking above 10 plants per linear ft. of drill have been also recommended. The effect of organic matter content has been shown to be mainly due to its influence on water retention, and to a lesser degree on holding of nutrients against leaching.

Sprinkler irrigation was shown to give much better development of lateral roots and hence better top/root ratio. A minor effect was the lower content of potassium and nitrogen in the seedlings, indicating that irrigation accelerates the leaching of these nutrients.

Partial sterilization of soil with formalin drench resulted in increased numbers and size of seedlings, attributable to better uptake of nutrients from the soil. It also greatly reduced the initial crop of weeds.

Of the four weedicides tried, Grammoxone, applied post emergently was found to give the best control of weeds, but also caused the greatest amount of damage to pine seedlings. Pre-emergent application of Dacthal at 18 lbs./acre gave adequate control of weeds without any injury to pine seedlings, and the highest production of seedlings of suitable size.

Re-examination of the routine kerosene weed control revealed that its decreased effectiveness was due to too low a level of aromatic hydrocarbons in the proprietary brand. Tests of three levels of aromatics and three rates of applications on cool and warm days early and late in spring were carried out. The effectiveness of the treatments increased with the increase in the level of aromatics and in the quantity applied. However, at highest possible level of aromatics severe damage to seedlings occurred later in the season. The aromatic content of 32%, obtained by 80 : 20 mixture of power and lighting kerosene, applied at 70 or 105 galls. per acre, combines adequate weed control with a low level of damage to seedlings and has been recommended for routine practice.

As a continuation of nursery studies, experiments dealing with green cropping and continuous cropping, and with optimum methods of formalin application, have been established in the current year.

A pot trial has been established to study the effect of soil type x fertilization x irrigation interaction on the growth of pine seedlings. A large scale field trial has been established to study the optimum methods of fertilizer application on grey sands. The effects of various forms of phosphate, and of split application, are under study. The possibility of boron deficiency in young plantations is being examined in the light of recent overseas publications.

A recommendation dealing with new method of site appraisal has been submitted following a visit to the Busselton Division, but cannot be implemented due to lack of field staff.

In the field of computer calculations the programme for thinning plots, originally compiled by Mr. McKinnell for P. radiata, has been adopted for use with P. pinaster. The pool of proven computer programmes applicable to silviculture, has been built up to a point when most problems can be handled by this efficient method. Work is in progress on developing a chain of programmes which will handle the full range of operations involved in site assessment on the ecological basis, from processing of field data through the principal component analysis to the graphical screening of indicator species.

INTRODUCTION TO THE SAFETY NEWSLETTER

This special issue of 'Forest Notes' incorporates the first edition of our own Departmental Safety News. In future the Newsletter will be included regularly as a section of 'Forest Notes'. It will provide a means of disseminating safety information of general interest. We will be able to preach a few safety principles at regular intervals and publicise the progress of Divisions and specialist sections in the field of accident prevention. In so doing, it is hoped, a sense of competition will be stimulated, there will be less accidents and everyone will benefit.

Reports of any local achievements of "happenings" in the field of Safety which deserve general acclaim, comment or amusement will be welcomed for publication.

The Officers in charge of Divisions and Districts centres are to ensure that all employees have access to this and future editions.

EDITORIAL

There is now clear evidence in seven Divisions that accident frequency rates are on the decline. That there are some divisions not yet succeeding is disappointing. For those who have forgotten or failed to learn I am going to repeat some of the key facts of accident prevention.

First: Safety is not an extra job to be done for an hour a week or by one officer - it is a way of life and everyone must think "Safety" on every job they do or supervise. This is "Safety Awareness".

Second: To achieve "Safety Awareness", Management - all supervisors from the overseer up - must provide leadership and demonstrate their personal interest in accident prevention at all times in all jobs. The Divisional Forest Officer in charge plays a key part in this as in all job control. He must demand the application of Safety principles and point out at every opportunity to his supervisors how and where improvements can be made.

Third: Everyone must aim to avoid Accident situations. Watch for unsafe acts and conditions. Identify the possible accident cause and remove it or guard against it. Know what hazards exist in each job you do and be conscious of them.

Fourth: If there is an accident, investigate it. Find the causes. See that they are removed or guarded.

RECORDS AND STATISTICS

All divisions are now keeping their accident statistics in the same form. Table 1 has been drawn up to give you some idea how your records of Disabling Injuries compares with those in other Divisions over the six months to December, 1967.

It is relatively simple to get past accident records from your copies of S.G.I.O. forms and man hours worked from time sheets. The frequency rates at the end of each month calculated from the past twelve months data each time can be readily graphed to show your progress. The graph for Dwellingup is included as an example. The progress they have made is obvious.

There will be a selection of these Divisional graphs in each edition of the Safety Bulletin. Dwellingup can be proud of their record. Would your record reflect credit on your division if it was selected for publication?

Four Divisions, namely, Dwellingup, Kelmscott, Pemberton and Busselton have now completed a 50,000 hour period of work without disabling injury. Congratulations to these divisions. Keep up the good work - the next grade is 100,000 hours. I hope we can give other divisions an "honourable mention" in the next Bulletin.

Statistics emphasise the reasons for everyone to support the accident prevention programme. From July, 1966 to June 1967 one hundred and eighty five men incurred disabling injuries. This resulted in a total of 3,244 days or 13½ man years lost time.

The individual man was off work for an average of 3½ weeks.

If he was a single man and on grade 2 margin he lost an average of $64.75 in wages.

If he had two dependants and was on grade 2 margin he lost an average of $32.20 in wages.

The suffering represented by those 185 accidents and 3,244 lost days must be left to your imagination.

For 1966-67 the 185 disabling injuries represent a Departmental frequency rate of 100.

Two Divisions give an indication of the massive improvement possible.

Collie for 12 months to January, 1967 - Frequency Rate 100.
For 12 months to January, 1968 - Frequency Rate 13.

Dwellingup for 12 months to January, 1967 - Frequency Rate 168.
For 12 months to January, 1968 - Frequency Rate 44.

Surely these facts provide justification and incentive for your active interest and participation in the accident prevention programme.

Table 1

DIVISIONAL ACCIDENT STATISTICS 19

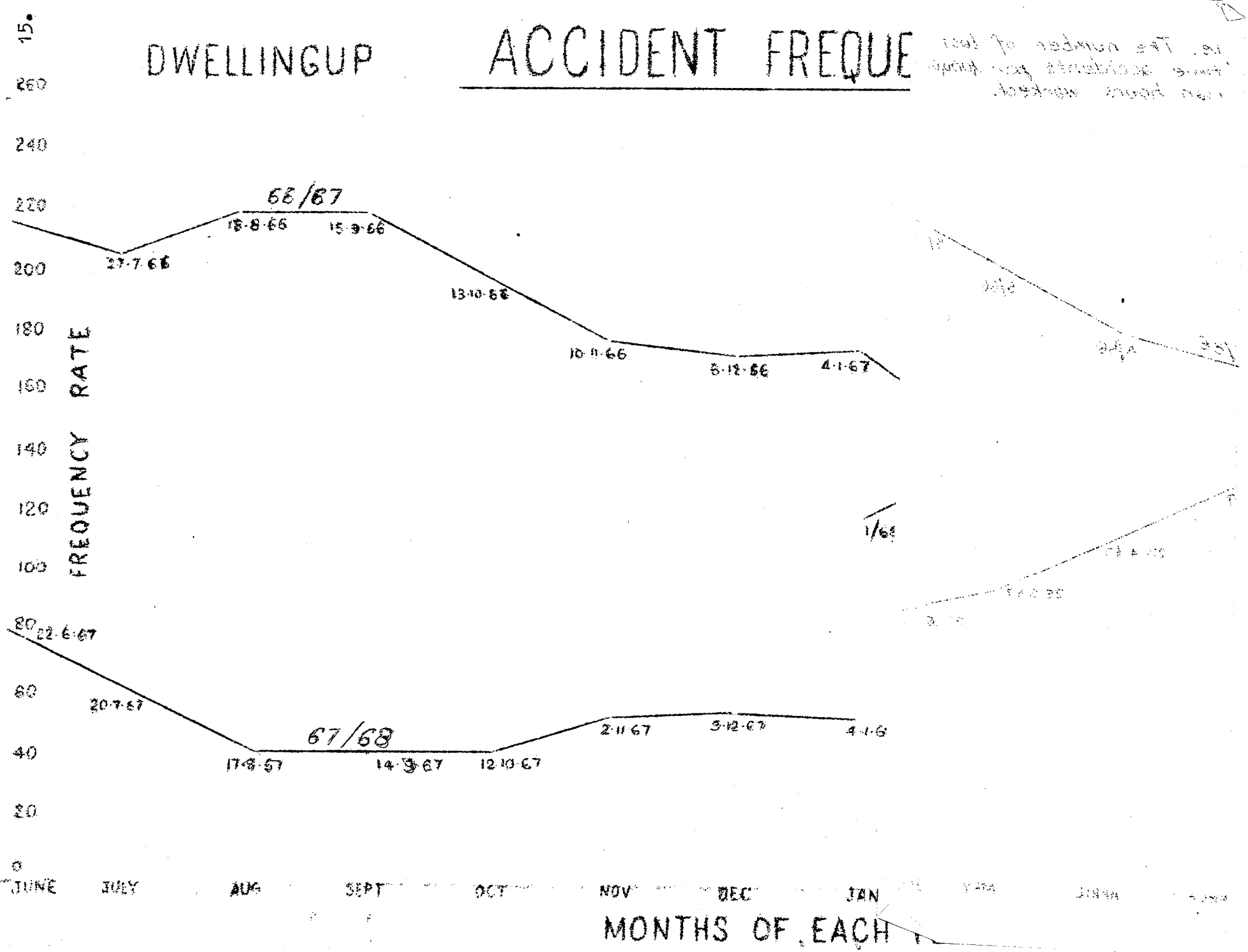
July 1967 - December 1967

	JULY			AUGUST			SEPTEMBER			OCTOBER	
	Mthly Man Hours	Year to Date	DIA	Man Hours Mthly	Man Hours from 1.7.67	DIA	Man Hours Mthly	Man Hours from 1.7.67	DIA	Man Hours Mthly	Man Hours from 1.7.6
BUSSELTON	14574	14574	5	13700	28274	4	13782	42056	-	14735	5679
MUNDARING	8328	8328	1	8901	17229	1	8329	25558	1	8431	3398
DWELLINGUP	11578	11578	1	12535	24113	-	10444	34557	1	10960	4551
COLLIE	8045	8045	-	8051	16096	1	7590	23686	-	9299	3298
KIRUP	8232	8232	2	9016	17248	5	8232	25480	5	8528	3400
MANJIMUP	13506	13506	2	13512	27018	1	12297	39315	-	15587	5490
NARROGIN											
KELMSCOTT	6526	6526	-	5327	11853	-	6526	18379	-	6062	2444
COLLIER-SOMERVILLE	3320	3320	-	3003	6323	1	2416	8739	-	4203	1294
WANNEROO	10811	10811	1	11781	22592	3	9679	32271	1	9617	4188
HARVEY	16744	16744	1	18307	35051	1	15985	51036	3	14313	6534
PEMBERTON	7696	7696	-	7785	15481	-	9093	24574	-	8565	3313
NANNUP	10189	10189	1	10118	20307	1	9032	29339	1	11294	4066
SHANNON	4340	4340	1	4787	9127	-	4140	13267	-	4533	1780
TOTALS:			15			18			12		

D. I. A. = DISABLING INJURY

F. R. = FREQUENCY RATE

DWELLINGUP ACCIDENT FREQUE



THE "EVENIF" FACTOR

Industry has been concerned about the difficulty of determining whether any particular job or work situation is dangerous or not. We lack a means of measuring scientifically the degree of safety in any particular situation so that it can be compared with others.

Professor O'Gubberoff of the University of West Vietham has developed what he calls the "O'Gubberoff Evenif" factor.

The Professor claims that the safety of any two situations can be accurately compared by measuring their "Evenif" factors. Operators can be trained fairly quickly to measure the "Evenif" factor provided they have a reasonable working knowledge of the particular industry.

During a TV interview in his cave last night the Professor claimed that the danger of his losing his trousers in public for instance would have an "Evenif" factor of 4.

The Professor is a cautious man and usually wears a belt as well as braces. He therefore calculates the Evenif factor of losing his trousers as follows: -

The belt holds the pants up but

1. Evenif the belt breaks the braces will hold and

2. Evenif the braces break the trousers will catch on his hips but

3. Evenif they slide off his hips he usually stands with his hands in his pockets but

4. Evenif he did lose his strides his underpants are sewn onto his singlet.

The Professor also illustrated the industrial situation of a man working on an electric motor. There is no danger in this case because the motor is switched off and

1. Evenif someone does want to switch it on the operator has been warned to stop them but

2. Evenif the operator doesn't see them near the controls there is a "Danger" notice on the switch but

3. Evenif they ignore the notice the fitter has remembered to trip the isolator and

4. Evenif there is a fault in the isolator he has the fuses in his pocket.

The Professor does agree that we need not go to the extreme of sewing our underpants to our singlets but he does believe that the "Evenif" factor for electrical equipment should always be at least 3.

The average industrial situation with mechanical equipment requires an "Evenif" factor of 2 - 3.

Professor O'Gubberoff was asked if it was possible to work in a situation with an Evenif factor of Zero. He agreed that it was possible but not for any length of time.

(Reproduced with thanks from C.S.R. Safety Bulletin)

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DEFINITIONS

For those who are still having trouble interpreting Frequency and Severity rate figures the following extract from a Safety reference book may help.

"Frequency rate is the number of disabling injuries per million man hours worked .... The million man hour rate may seem a peculiar base to have chosen. The situation is the same however as when it is stated that a cricketer bowls a ball at 90 miles per hour. The ball of course does not travel 90 miles, nor is it in flight for the period of one hour. But the time of flight can be measured along with the distance the ball travels. On the basis of this data, the computation can be converted to the miles per hour figure, which is quickly understood, since it has become the standard method of expressing speed. The stating of the cricket ball's rate of travel at 90 miles per hour will describe more quickly, for the average person, the speed of the ball than would the statement that the ball travelled the length of the pitch in one $\frac{1}{2}$ second. Similarly people in the safety field need a standard base for frequency and are accustomed to the million man hour unit".

Severity rate is the number of days charged for disabling injuries per million man hours worked.

Together these rates provide a measure of the accident record for a group of people. This measure allows direct comparisons say between divisions or between different periods in one division.

Do you remember the definition of an accident?

"An accident is an unplanned, uncontrolled and undesirable event, caused by unsafe acts and/or unsafe conditions, and resulting in an interruption to work activity, and damage to property and/or persons".

Considering this definition, is your "accident" recording procedure adequate. It is important to identify your problem by accurate recording if you are to successfully deal with it. If action is not being taken to prevent "unplanned, uncontrolled and undesirable events" in jobs being done or supervised by you your efficiency is highly questionable.

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SAFETY RULES

The following report was presented to the Mundaring Safety Committee. I wish to compliment the author who has demonstrated the type of job understanding and safety awareness everyone must learn and apply if accidents are to be prevented in the many hazardous jobs in the forest.

SAFETY FOR THE JIB SWAMPER

- A report by G.E. Hampel

I would like to draw the attention of the Safety Committee to the conditions under which the jib swamper works. This is one of the most dangerous jobs in the Forestry and it seems to me the only reason we have not had a fatality is sheer good luck.

We could run out of luck.

I feel that this is the major reason why men are so reluctant to take on this job. It is certainly the reason why I do not like it. If I were a little more agile it might be all right but as it is I am built on too substantial lines to be lightly hurdling pine tops and rolling logs.

The swamper is in danger from three major sources:

1. He has to work in close proximity to a jib which is constantly being backed and where the driver's vision is necessarily somewhat restricted:

2. He must avoid being hit by a wildly swinging scissors or load:

3. He has to beware of rolling logs. This can be a serious matter when logs are large and hillsides steep.

He can be in danger from all three sources at once.

At the present time there seems to be no training in safety at all. The new swamper is just put to work and receives his only instruction from the driver of the jib when the latter is not too busy driving.

I have wondered a little whether this lack of training is not the cause why one young man was recently found unsuitable for the job.

The suggestion was made to me that a new swamper should be sent out with a more experienced man for a few days before starting on his own. It seems a good idea.

The job requires considerable nimbleness and I think that only agile men should be selected.

I have been asked about deafness being a handicap on this job. It is certainly a nuisance and it is difficult to hear over the noise of a jib, but I am not greatly concerned over this aspect.

The person who is deaf and doesn't realise it or who tries to hide the fact is probably in more danger than a person who knows he is deaf and makes allowances.

This is a touchy subject. Most people are very sensitive about it and resent references to it. I cannot understand the attitude but there is no doubt they do resent it.

I have listed a number of points for a swamper to note. Most of these may seem obvious enough but are they? Only yesterday I saw one of Holbrook's most experienced carters break rule number 3. If the rope had broken while he was under the load we would have had to use a hose to separate him from the log.

I put these points forward not as a blueprint but as a basis for discussion.

SAFE WORKING RULES FOR JIB SWAMPERS

1. Wear a safety helmet. If you don't a swinging scissors will get you one day.

2. Safety boots are a good investment and can save your toes from a rolling log.

3. Never, under any circumstances, stand under a loaded sling. A sling rope can break any time. It should be noted that a falling load will travel sideways as well as down if the sling is swinging. It usually is.

4. When attaching rope or scissors make sure you have a getaway. In a thick mass of pine tops you may not be able to dodge a fast moving log.

5. When attaching rope or scissors keep on the uphill side of the log in case it rolls. It does happen.

6. Keep on the far side of the log or load so that the jib draws the load away from you.

7. Move well back so that if log catches on something and swings round it will hit something that ISN'T you.

8. Do not grab the sling where it is spliced. The sharp ends of the splice make a very painful puncture.

9. Don't jam your fingers in the scissors. You can do it if you are careless enough.

10. Don't depend on the jib driver to avoid you. He will do his best but his vision is restricted.

11. Don't trust to luck at any time. You will run out of it one day.

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