

GRAZING OR FORESTRY FOR LOGGED OVER LANDS  
OF THE DOUGLAS FIR REGION

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Grazing or Forestry  
for Logged Over Lands  
of the Douglas Fir Region

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## Grazing or Forestry for Logged Over Lands of the Douglas Fir Region

### INTRODUCTION

It is believed that a considerable amount of the cut-over lands of the Douglas fir region of Oregon and Washington will be converted into productive agricultural use in the interval between logging and timber restocking. The production of forage crops for livestock grazing appears to offer a means of obtaining immediate return from these lands. A small part of them are of such character and so situated as to remain in permanent agricultural use.

The remaining area, while jointly used for agriculture, watershed, fish and game, mining, and recreation is primarily a forest area and should, if properly handled, produce an annual increment which would balance the annual cut of saw timber.

Experiments, conclusions, and documents applying to the returns from logged over lands overlap in the field of Agriculture or Forestry without comparison or relation of one to the other as to the maintenance of the land, limits of application, or income therefrom.

The ensuing document is an attempt to compile information on experiments, conclusions, and statements pertinent to Grazing and Forestry in the Douglas Fir region of the Pacific North West.



GRAZING OR FORESTRY FOR LOGGED OVER LANDS  
OF THE DOUGLAS-FIR REGION

The logged over area of the Douglas Fir region of the Pacific North West covers more than 6,000,000 acres. This fact in itself is astounding. Greater emphasis is placed on the problem of land use planning by the realization that this area equals approximately 90% of the total area of the Douglas Fir region now covered with timber of saw log size.

The economic problem of forest lands is expressed in the increase of tax delinquent acreage as the timber lands are denuded. The forests of this region of Douglas fir timber have, in the majority of instances, reached the pathological and silvicultural peak. The growth is less than the carrying charges plus deterioration of the stand from rots and insects. The early speculation in stumpage values, by "get rich quick" enthusiasts, placed the stumpage costs high above its liquidation value. The carrying charges on this high rate of capitalization doubles the investment approximately every twelve years, thus forcing liquidation as rapidly as consumption will justify this action.

County finances are greatly impaired as a result of the tendency of owners to permit the land to become tax delinquent upon completion of timber removal. The settling of farmers on stump land, which was marginal agricultural land

at the best, and the necessity of providing them roads and schools increases the need to improve the existing situation and to prevent further misuse. (3)

Fire loss is a major risk in owning, growing, and liquidating timber. This risk is not limited to timber alone for established grass lands may be reduced to waste, or unmanaged logged over land (which is covered rapidly by undesirable, flashy native vegetation) may become the main factor in fire damage as was the case of the Bandon burn in Coos County.

The disposal of slash from burning creates a receptive seed bed for grasses and trees, but lack of seed source for one or two seasons will permit the advance of undesirable weeds and shrubs to a point which renders means of natural seeding almost useless. This waste condition will be overcome by plant succession, but extends the period between crop returns or places a high investment value for improvement to grazing condition.

The average rainfall in the Douglas fir region as a whole exceeds fifty inches. The major portion of this is within four months, with very little rain falling during July, August, and September. Erosion during the rainy months is emphasized by the illustrations Figures 1 and 2. Considering the shallowness of top soil on a major portion of the Douglas Fir region it is obvious that a vegetative cover should be obtained as quickly as possible on logged over and burned over lands.



Figure 1

Sheet erosion on burned area

Courtesy of U. S. D. A. S. C. S.





Figure 2

Erosion typical of logged over or burned over land

Courtesy of U. S. D. A.- S. C. S.

### GRAZING

The burning of slash on logged over lands as a hazard reduction measure tends to create a more favorable alkaline condition for the growing of grass. (16) A receptive seed bed for grasses is formed by the ashes and should be utilized the same season that the first burning takes place. Since this is so, it is not necessary to seed the first burn, but successive burns tend to decrease the fertility of the soil especially in nitrogen content.

The conditions resulting from 50 or more inches of rainfall are exceedingly encouraging to the growth of grass. This is brought out in the following quotation made by E. Bruce Levy, Director, Grassland Division, Plant Research Bureau, Palmerston North, New Zealand, reporting to the fourth International Grassland Conference in Great Britain

in 1937. (1) "Much deforested hill country went repeatedly back to secondary growth until suitable seed mixtures were devised from carefully conducted experiments." (2) "The introduction of *Agrostis tenuis* (bent grass) and *Lotus* (under trial here and showing promise) to wet hill land has in many instances turned failure into success." (3) "To stock deforested hill country entirely to sheep leads to disaster." (4) "*Pteridium* (fern) with cattle assumes control, particularly on the more difficult country." (5) "The grazing management is extremely important and without exception sheep and cattle are employed." (6) "The climate that makes possible the development of rain forest (over 50 inches annual rainfall) is a grassland to be aided by fire and agriculture implements to maintain a balance in favour of grassland rather than forest."

The mixture of cattle, sheep, and goats in the management of grazing is advised and has proven advantageous.

This mixture provides a major control from the invasion of undesirable species of weeds and shrubs. The actual

cutting, clearing, and burning of undesirable shrubs insures grassland maintenance with unmixed grazing. This is borne out by the results obtained on an area at Chehalis, Washington, operated by J. T. Alexander over a 20 year period, using sheep, and keeping the pasture carrying capacity up by slashing and burning methods. (2)

The grazing of cattle in locations fitted to Pteridium or fern is limited to control by the introduction of sheep.

#### Grasses:

The desirable stands of grass are obtained from seed mixtures which include a long lived sod forming grass, a bunch grass, and a legume. Emphasis should be placed on the selection of seed as to quality, quantity, and place of origin.

The past practices of seeding bunch grass formations such as Alsike clover, red clover, rye grasses, and orchard grass, or brome grasses, rye grasses, and white clover have proven successful with good management. The improvement of the mixture of red and white clover, orchard grass and rye grasses with timothy and red top show encouraging results by saving the area from encroachment of weeds and shrubs. (2)

The introduction of adventive species of sod forming grasses (fescues and bent grasses) have shown promise in both the control of erosion and in the prevention of invasion of the area by weeds, fern, and shrubs. These grasses, seeded in the Northrup Creek area in an experiment set up in 1936 by the Oregon Experiment Station, have proven their



value to the extent of warranting their inclusion in seed mixtures for planting grazing areas of similar nature in the future.

Creeping red fescue (*Festuca rubra*) is a sod forming, perennial grass. This fine leaved highly palatable grass spreads by rhizomes. Tall fescue (*Festuca elatior arundinaceae*) is highly palatable and due to its adaptation to red hill soil may become popular for grass mixtures. The other main grass of this genus is chewings fescue (*Festuca rubra commutata*) a semi-bunch grass which is highly palatable forage for sheep.

The Seaside bent grass (*Agrostis palustris*) spreads by stolons and is limited to moist or marshy sites of low elevations. The Astoria bent grass (*Agrostis tenuis* var. *astoriana*) spreads by rhizomes and stolons to form a sod superior to the Seaside bent grass and with identical range limits. The colonial (highland) bentgrass has the most extensive root system of the bent grasses. It spreads by rhizomes and stolons to form complete coverage of the ground surface and to effectively control the invasion of weeds and brush of undesirable species. So rank and persistent is the growth of this grass that it is a weed on cultivated areas.

Timothy (*Phleum pratense*) is commonly used in seed mixtures. Although timothy is a highly palatable, hardy, perennial grass it is not adapted to hill lands.

The inclusion of rye grass (*Lolium perenne* L.) in seed

mixtures insures forage the first season. This grass grows rapidly the first two years and supplies a rank, highly palatable forage during this period.

#### Investment and Returns:

Operators of grazing units are aided in improving their ranges and pastures by annual cash allotments for designated procedures paid for under the following specifications as presented in form AC-General-130 of the United States Department of Agriculture by the Agriculture Adjustment Administration for 1941: (10)

1. "Three cents per acre for grazing land, plus seventy cents for each animal unit of grazing capacity (on a twelve month basis) of such grazing land.
2. "Provided that the amounts computed under this subdivision shall not be less than eight cents times the number of such acres or 2,000 acres which ever is smaller--thirty cents times the number of acres of mountain meadow land in the ranching unit from which hay is normally harvested for feeding on the ranching unit to range livestock owned by the operator of the ranching unit."

The grazing income in a Coos County survey shows a five per cent return on the investment in the less profitable areas and an average of eight and three tenths percent for the entire survey. The average cost of establishing grazing operations was \$33. per animal unit (one cow, five sheep or five goats), with 0 to \$5.75 per acre for slashing, 0 to \$2.00 per acre for burning, and fencing at \$.63 per rod for barbed wire alone or \$.90 per rod for woven wire with two barbed wires. The average cost of a desirable mixture on a twelve pound per acre basis as determined in seeding the Northrup Creek Area was \$1.59, with the seeding cost at \$ .40. (16)

### Limitations and Hazards:

The inclusion of rye grass in seed mixtures is apt to mislead grazing management by resulting in a rank growth the first year. The tendency is to completely utilize this luxuriant forage at a time when trampling will damage species of sod forming grasses. The sod forming grasses are considerably more desirable for brush and weed control and in forage value, but slower to become established.

Some of the desirable species of newly developed grasses are so limited in seed production as to make their use in planting prohibitive.



Figure 3. Rye grass in April following fall seeding.

Courtesy of U. S. D. A.-S. C. S.



The degree of erosion on grassland is directly related to the grazing management. Utilization to one half of the green growth is advocated. The results of grazing management are portrayed in Figures 4 and 5.

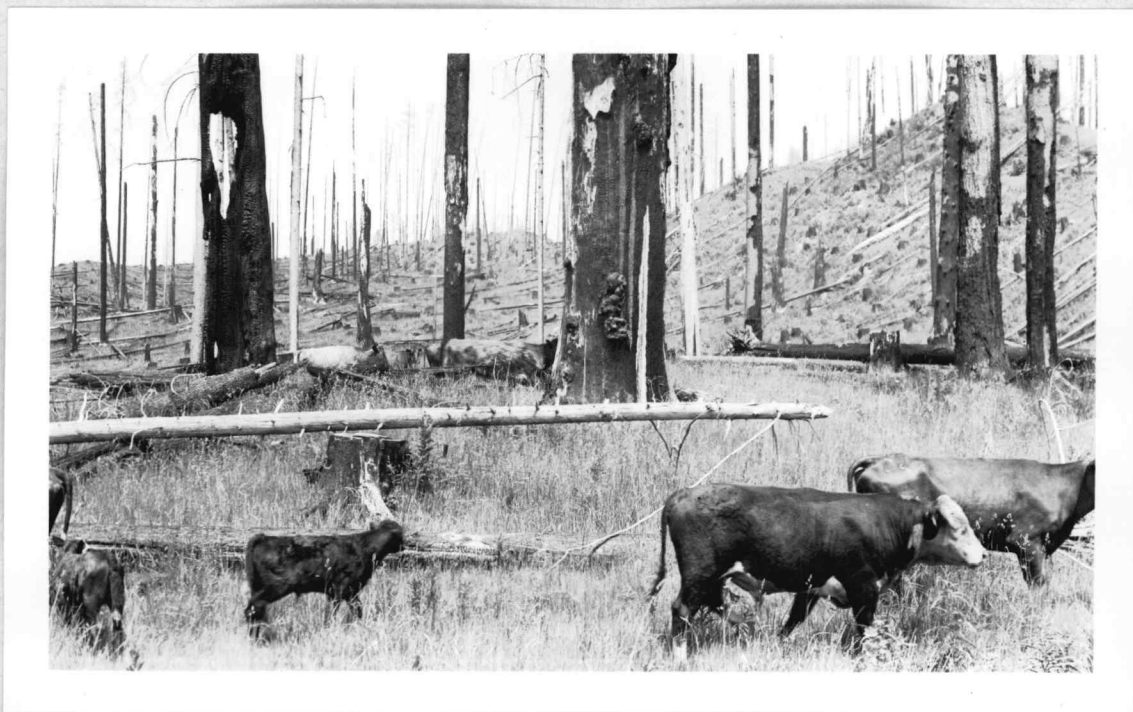


Figure 4. Typical forage production with managed grazing

Courtesy of U. S. D. A.-S. C. S.

Burning and clearing preparation for seed beds is limited by the responsibility which is placed upon the owner of the land from which the fire starts should the fire cause damage beyond his premises. Furthermore, residue from slash disposal burns includes frequent log jams which act as traps for the animals. In this regard it might be men-

tioned that four head of cattle out of fifty were lost in one season due to starvation while caught in a natural corral or log jam on the Northrup Creek area. (12)

The careful planning and selection of areas has resulted in the designation of areas in Coos and Curry Counties and the Nehalem Valley drainage as suitable for stock operations of some magnitude. Investigations for Washington show that large scale operations will be limited. The lack of winter feed for any area north of Coos and Curry counties limits the grazing development to areas adjoining or reasonably close to lands capable of carrying stock for a two months period each winter. The enlarging of herds from other than acclimatized animals may be a control here as one year is essential for this adjustment. (21, 2, 11)



Figure 5. Trail erosion permitted through mis-management.

Courtesy of U. S. D. A.-S. C. S.

The prevention of parasitic infection of sheep depends upon the intensity of grazing on the areas which are constantly moist. No control has as yet proven satisfactory for sheep parasites; therefore, prevention by managed grazing must be practiced.

Lamb loss from pulpy kidney disease (Infectious Enterotoxema) may run high, even to twenty five per cent, but may also be controlled with proper grazing practices.

The loss from disease, predators, weather, and rustling averages ten per cent with sheep which is invariably higher than with cattle.



## FORESTS

Fifty-six per cent of the twenty-six million acres of forest land in the Douglas fir region of Oregon and Washington has timber of saw log size. The present five hundred twenty billion board feet log scale has an average depletion of 7.9 billion board feet annually. The seriousness of the problem is further increased by seventy-one billion board feet being species of little commercial value, one hundred two billion board feet of Western hemlock of low commercial value, and eighty-three billion board feet of small second growth. The present annual increment is closely estimated at 2.4 billion board feet. (13)

### Investment and Returns:

The tendency to allow logged over land to revert to the counties through tax delinquency has created a cycle consisting of: the sale of the land for what it would bring in order to alleviate for taxes and replacement on the tax rolls, settling on marginal agriculture land due to low initial investment; then the provision of public services in the form of roads and schools increases tax delinquency by raising taxes on the balance of taxable land.

The creation of reforestation laws with intentions of setting a constant tax which is essential in calculations of future forest yields, aided in stabilizing tax delinquency without instigating any aid to the natural processes of reforesting. County administrators object to the low return from the lands thus classified, not realizing that the annual

return plus the yield tax (5¢ per acre and 12½% respectively) equal the annual return from taxes, and administrative costs are not added to the county expenses. (1)

The forest lands classified under the reforestation law subject to reclassification, also may become tax delinquent and are subject to foreclosure by counties without any additional costs to the same procedure for other tax delinquent lands. Seventy five per cent of owners interested in forestry retain their logged over lands under this act, but this figure will apply only to the area as a whole.

Further objections from county authorities are raised toward federal ownership, and this sentiment is growing regardless of returns from federal lands as follows:

1. One half of the Taylor Grazing Act fees are returned to the counties and one fourth are returned in improving the range, at present county allotments are added towards these improvements.
2. Pending legislation will return 25% of gross receipts of the national parks to the counties.
3. 25% of net wild life refuge receipts is returned to counties.
4. 25% of Forest Service receipts are returned to the counties and 10% is applied to roads and trails in the national forests of the county, but recently has been used in improving recreational facilities.

The refund to Oregon counties by pending legislation and active returns \$ 2,234,596. in comparison to \$ 2,332,678.

the estimated tax return which would considerably change adverse opinions if the apportionment were in proportion to areas within counties, but this is not the case as is shown by comparisons of Grant county in Oregon where national forests are being utilized, and returns to the county amounted to \$ 45,673. with total taxes and assessments only \$ 205,673. while returns to Lane and Douglas counties were reduced to negligible amounts due to national forest sale deferments. (14)

The rate or return on a sustained yield unit of high site III and better land if handled with a cutting operation will yield 3.94 per cent on the investment. The return is lowered to 3 per cent on the investment for lands starting with planting of trees and adding the necessary taxes, maintenance, and fire protection. These figures are based on the complete operation including logging, transportation and milling. (8)

The initial cost of tree planting as derived from experiments made by the Oregon State Department of Forestry is placed between \$ 7. and \$ 10. The distance of transportation into areas inaccessible to trucking facilities bring the cost nearer the upper limit of the cost range.

#### Utilization

The condition of stocking may vary the income from the land as the above calculated income from forest production is based on fully stocked areas. In the timber surveys under the supervision of The Pacific Northwest Forest and Range Experiment Station the degree of stocking was divided three



ranges: "Well stocked" when forest seedlings, saplings or small second growth covered 70 to 100 per cent of the area, "Medium stocked" with 40 to 69 per cent, and "Poorly stocked" with 10 to 39 per cent coverage. These figures were considered representative only if the area had been cut over 15 or more years before the date of the survey.

The complete coverage of the area and the ideal "Fully stocked" condition is shown in Figure 6, with Figure 7 Portraying the situation which will not bring the desired forest return under the present degree of stocking.



Figure 6. Douglas Fir reproduction.

Courtesy of Oregon State Forestry Department.

The normal waste per acre for logged over land is 42 cords of wood, and Figure 8 of second growth logging tends to bear this estimate as conservative. The annual loss from burning this slash is estimated to total 6,448,000 cords.



Figure 7. Douglas Fir Reproduction (in background)  
Courtesy of Oregon State Department of Forestry.



Figure 8. Douglas Fir logging waste  
Courtesy of Oregon State Department of Forestry

The most prominent advance in forestry practices is the leaving of seed trees at the time of logging. This provision of a seed source has already proven the worthiness of application, Figure 9, not only by reseeding the area, but by permitting concentration of improvement facilities on denuded areas where seed sources are lacking for forest trees.



Figure 9. Douglas Fir reproduction from seed trees  
Courtesy of U. S. D. A. -S. C. S.



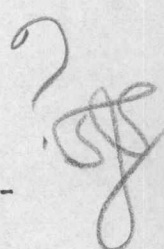
### CONCLUSION

Grazing has a definite place in the advance of the land use program for the Douglas Fir region, but the extent of application provides a major use for only limited areas of former forest land favorable to economic and physical development.

The forest area with allowance for proper practices in recreation and joint uses may, by emphasizing thorough reforestation, fire protection, and waste utilization, convert the present potential forest production to actually equal the average annual depletion.

Prevention of unsuitable species by tree planting, is the quickest means of obtaining any stand on areas having no seed source. The present practice of leaving seed trees on newly logged over lands will allow concentration of improvement forces on areas having no vegetation or undesirable vegetation. The status of Douglas Fir reproduction is satisfactory stocking on one half of the logged over area of the Douglas Fir region.

The actual difference in income between grazing and forestry is from two to six per cent with the returns on grazing coming in annually. This financial view of the grazing should not permit misuse by conversion to permanent grazing use that forest land which will not become a self-sustaining grazing unit or portion of such a unit.



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