

Comparing and contrasting clear felling and selection system environmental scienc...

[Environment](#), [Ecology](#)



C. s. foresters use different Silvicultural systems in order to handle woods throughout its life. A silvicultural system can be defined as the procedure of be givening, reaping and renewing a wood. Forests and forest bases are treated, tended, harvested and regenerated utilizing different techniques. Felling of bases is a common intervention in order to reap lumber, to derive some net income but besides in order to renew woods. Based on the forest direction objectives a Forester or a forest proprietor can follow different silvicultural systems.

During the past old ages a base was managed with the chief aim of lumber harvest home (wood wood merchandises) and a higher direct net income. Nowadays, due to the enhanced cognition and consciousness of the complexness of the environment and besides due to the consciousness of people for their quality of life, bases are non managed merely for lumber production but besides for ecological and resource aims. This includes climate alteration, quality of life, agreeableness and diversion, national and planetary pacts and ordinances / Torahs, conservationists concerns, planetary heating, C segregation and C emanations.

The purpose of this study is to compare and contrast two Silvicultural systems. These are: a) Clear Felling (clear felling) and B) Choice system. Clear Felling is the system where the full base is cut at one time and so the country is either unnaturally or of course regenerated. Choice system is the system where some trees are harvested (groups or single) in order to do infinite for natural regeneration. Variations for both systems are discussed within the present study.

Both of the discussed systems have a figure of advantages and disadvantages, and both can be used in woods and forests of any country, ever based on the forest direction aims.

Clear Felling can be categorized in the undermentioned three classes: a) Clear dropping i?? whole base system, B) Clear dropping i?? progressive strip system and degree Celsius) Clear dropping i?? alternate strip system. Choice system can be categorized into: a) The choice system and B) The group choice system.

1. The Clear Felling System

FAO defines Clear Felling as the technique applied in order to fell all trees found on a considerable country at one clip. Clear felling is done for two chief grounds, i. e. gross and regeneration. Many environmental groups are against this technique due to the fact that in most instances clear felling is carried out in big countries and therefore big countries are exposed to eroding and are cut downing the aesthetical, economical and societal value of the site. This is due to inauspicious impact of dirt, dirt eroding, agreeableness and wild-life. Impacts are present in the country until is regenerated and trees grow plenty to cover the country.

Clear felling, is the system where all trees of a considerable country, i. e. larger than 1ha i?? as stated by Clayoquot Sound Scientific Panel, 1995, Chapter 3 i?? are removed and so the country is of course regenerated or regenerated by seting. This leads to a future even-aged base.

Clear felling can be applied in bases with the undermentioned features:

& A ; gt ; Stands where many dead, unhealthy, or diseased trees are found

& A ; gt ; Stands where a batch of damaged trees is present (amended by air current or fire)

& A ; gt ; Stands with short rotary motion species, or with light demander species that can non turn in the shadiness

& A ; gt ; Stands where after reaping desirable regenerations will be present or are predicted to be present

Christou, 1995, states that Clear Felling can be categorized in the undermentioned three classes: a) Clear dropping i?? whole base system, B) Clear dropping i?? progressive strip system and degree Celsius) Clear dropping i?? alternate strip system.

1. 1. Whole base Clear Cut System

This is the Silvicultural System where the whole base is removed go forthing back a bare country. The country is so regenerated either of course or unnaturally i?? in most instances by seting (Figure 1: Clear cut system) . When natural regeneration (seeding) is to be applied, dropping must be carried out in the leeward side in order to enable seeds to be blown by air current and to cover the clear cut country. (Christou, 1995, p. 75) . In instance that unreal regeneration with either seeding or seting is to be

applied, the cost will be really higher due to the cost of seeds, works but besides due to the high labor cost.

Figure 1: Clear cut system

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1. 2. Clear dropping i?? Progressive Strip System

With this system (Figure 2: Clear cut - progressive strip system) felling is carried out in the signifier of strips which progress in turn in one way across the regeneration country. The produced base will be even-aged if we consider each strip as a compartment. The regeneration largely comes of course from seeds from the staying standing strips/trees. The intent of this system is to derive entree to the base for transit, development and direction. Besides, is the proviso of unreal regeneration from next trees and the protection against air current and snow(Christou, 1995, p. 78) .

A new strip will be felled when sufficient regeneration of the old felled strip is present and when that strip is sufficient protected against inauspicious factors, like air current and snow.

Figure 2: Clear cut - progressive strip system

Beginning: [hypertext transfer protocol: //www. forestrynepal. org](http://www.forestrynepal.org)

1. 3. Clear dropping i?? Alternative Strip System

Is the system where felling is carried out in strips (Figure 3: Clear cut - alternate strip system) . Strips are at right angle to the air current way, enabling seeds from the staying untrimmed strips to be blown to the felled strips and therefore natural regeneration to be present ([hypertext transfer protocol: //www. forestrynepal. org](http://www.forestrynepal.org)) . Uncut strips are to be cut when there are marks that equal natural regeneration is established in the antecedently felled strips i?? this system largely depends on natural regeneration. The breadth of the strips depends on assorted factors, like weight of seed (seed travel distance blown by air current) , terrain (sloppy/flatted countries) , inauspicious factors (air current, snow) (Christou, 1995, p. 79) .

Figure 3: Clear cut - alternate strip system

Beginning: [hypertext transfer protocol: //www. forestrynepal. org](http://www.forestrynepal.org)

1. 4. Advantages and Disadvantages of the Clear Felling System

1. 4. 1. Advantages of the Clear Felling System

Christou, 1995, p. 75 and Nyland, 1996 province that the advantages of the clear felling system are the undermentioned:

& A ; gt ; It is the simplest of all Silvicultural systems. No particular proficient accomplishments are needed

& A ; gt ; Higher outputs per unit of country and lower harvest home costs

& A ; gt ; Better control of plagues, viing flora, better seedbeds, and better dirt lacks

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& A ; gt ; Easier supervising and direction of dropping operations

& A ; gt ; Where unreal regeneration (seeding or seting) is to be used, coveted species can be established since this is up to the director manus

& A ; gt ; Regeneration failures can be seen really early (from the 2nd twelvemonth) , and so crushing up of failures can be carried out

& A ; gt ; Less or even no amendss to the staying trees

& A ; gt ; If unreal regeneration will be applied or if natural regeneration which will be decently tended will be applied, the freshly established trees will be clearer from knots and more cylindrical due to natural pruning

& A ; gt ; If unreal regeneration of the full country is carried out in one operation, the cost will be lower

& A ; gt ; Distribution of age categories are nearing the normal more closely than other systems

& A ; gt ; More light reaches the land therefore assisting the regeneration and constitution of the new harvest, particularly for light demander species

& A ; gt ; Damages and / or losings of lumber by windfall is avoided

& A ; gt ; Most applicable system when mature and over mature bases are present system

& A ; gt ; Easier application of fertilisers in the new harvest

& A ; gt ; Easier control of insects and diseases since the whole base is removed

& A ; gt ; Yield can be determined before reaping starts

& A ; gt ; Specialized equipment designed for harvest home and site readying can be used due to the big country of the site, e. g. if really big country is to be felled, overseas telegram Cranes and reapers can be used

1. 4. 2. Disadvantages of the Clear Felling System

Christou, 1995, p. 76 and Nyland, 1996 province that the disadvantages of the clear felling system are the undermentioned:

& A ; gt ; Is the worst system as respects biodiversity of a site - a batch of breaks to vegetations and fauna - taking all the big trees adversely impact some wildlife home ground

& A ; gt ; Increased weeds invasion in clear felled countries

& A ; gt ; In most instances unreal regeneration is applied, which is really dearly-won

& A ; gt ; Clear felled countries are exposed for a long clip to weave, hoar and rain, therefore enduring from eroding

& A ; gt ; Crop established after clear felling is an even-aged harvest which is normally less immune to weave and snow

& A ; gt ; Immature trees are besides felled which non make their concluding increase i?? less gross

& A ; gt ; Soil capacity and features is decreased

& A ; gt ; Disturbance of the surface litter during logging displaces stored seeds and additions opportunities for surface eroding on sloppy countries, at least until new workss are grown plenty

& A ; gt ; Landowners must hold equal stored seeds in order to use seeding

& A ; gt ; The site factors are non to the full used.

& A ; gt ; Lowering the aesthetic and diversion value of the country, until the new harvest is to the full established

& A ; gt ; If markets can non absorb all the timber the system can non be applied

& A ; gt ; Is non a good system for shadiness tolerant species which are used to turn easy under protection

2. The Choice System

The Selection System differs from all other systems and is the system where felling (selective fellings) and regeneration are distributed over the whole of the country. Christou, 1995 provinces that the chief differences between Selection System and other systems are: a) Fellings, cuttings and regeneration confined in all over the country and during the whole base life

and B) the ensuing base is uneven aged, where all age and size categories are found in every portion of the base. This system is really the i?? Continuous Cover Forestryi?? system, where in the country ever some trees are found standing.

In this system, single or groups of trees are harvested to do infinite for natural regeneration. The established harvest is uneven-aged, where trees of all ages are found assorted together over every portion of the country. Regeneration operation is carried out throughout the life of harvest (Hart, 1991, p. 252-253) .

Felling of trees all over the country of a wood is possible when the country is little but if the country is big it is non possible to fell the trees over the full country yearly. Therefore, felling is done in a smaller country (portion of the whole country) after a certain figure of old ages, which is equal to the figure of the smaller countries i?? the interval scopes from five to ten old ages (Hart, 1991, p. 252) . This interval is known as felling rhythm. It is really the clip between two consecutive fellings on the same country. In most of the times natural regeneration (where favorable conditions are present) will be present and therefore the freshly established base will hold all age and size categories ensuing to an uneven-aged base.

In Cyprus, harmonizing to the Marking regulations for *Pinus brutia* and *Pinus nigra*, 1992, single trees (individual tree choice system) are selected for felling (over mature, dead, deceasing, diseased, trees of unwanted species, trees with bad features, trees that when felled will enable younger and

better trees to turn plenty without competency) . Besides, in immature plantations, positive or negative choice is carried out. In instances that natural regeneration fails to be present, so setting or seeding is carried out.

Figure 4: Choice system

Beginning: [hypertext transfer protocol: //www. forestrynepal. org](http://www.forestrynepal.org)

Figure 5: Choice system

Beginning: Dr. Owen Davies Et Al, 2008

Harmonizing to Christou, 1995, p. 87 and Dr. Owen Et Al, 2008, p. 64 there are 2 types of Selection System, viz. a) Single tree choice system and B) Group Selection system. These two sub-systems are discussed moreover in the following paragraphs.

2. 1. The Single-tree Selection System

Is the system where felling of single trees is spread throughout the whole base, therefore enable the base to be regenerated within the whole base (Dr. Owen Et Al, 2008, p. 64-65) . In most instances, single mature trees are selected for dropping enabling replacement by regeneration (Christou, 1995, p. 89) and therefore taking to a wholly uneven-aged base. This means that all size categories are distributed throughout the whole base.

Felling of trees in the same country is merely possible when a little country is found. In instance of big woods this is non possible and so the country is divided into smaller coupes (block) , each coupe (block) is felled at regular

intervals of not more than ten old ages. In each block cuttings are carried out when necessary (Dr. Owen Et Al, 2008, p. 64) .

Since all canopy stratas are to be present, natural pruning is present. Forest developed utilizing this system has a great aesthetical value with a more natural expression i?? all tree sizes are present within the whole country. Skilled forces are needed in order to choose trees for dropping, following some regulations, e. g. remotion of dead, bad shaped, rivals etc. Besides, extraction cost would be higher and eventually give will be lesser than in even-aged bases.

2. 2. The Group Selection System

This system is largely used for light demanding species. In this system the felling is confined to a group of trees alternatively of any single 1. Besides, utilizing this system an uneven-aged base is produced. Felled countries are little in order to have protection and shelter from environing trees/areas (Dr. Owen Et Al, 2008, p. 64) . If bigger countries are felled there is a high hazard of amendss caused by inauspicious climatic conditions, like air current and hoar (Christou, 1995, p. 91)

2. 3. Advantages and Disadvantages of the Selection System

2. 3. 1. Advantages of the Selection system

Harmonizing to Christou, 1995, p. 90-91 and Hart, 1991, p. 253-254 the advantages of the Selection system are the undermentioned:

& A ; gt ; As respects aesthetical value this system is the most applicable, since the whole country will hold trees and regeneration

& A ; gt ; Regeneration and stand amendss from air current and hoar amendss are limited

& A ; gt ; Elimination of land and dirt eroding

& A ; gt ; The general expression of the base is more of course since to the uneven-aged base produced

& A ; gt ; Due to the flexibleness of the system we have better possible usage of the site

& A ; gt ; Where market requires uninterrupted and little output this system is extremely recommended

& A ; gt ; By opening the upper canopy the fire jeopardy is lower

& A ; gt ; We can choose each one tree individually if it will be felled or non and this enables the director to fell merely those trees that have reached their increase halt

& A ; gt ; Better shelter proviso to fauna and flora

& A ; gt ; Weedss are better controlled, since less weeds will turn

& A ; gt ; It gives the highest possible protection for sensitive species in order to renew and turn in inauspicious climatic conditions, like hoar and air current

2. 3. 2. Disadvantages of the Selection system

Harmonizing to Christou, 1995, p. 90-91 and Hart, 1991, p. 253-254 the disadvantages of the Selection system are the undermentioned:

& A ; gt ; A high cognition and accomplishments are required

& A ; gt ; Continuous fellings in the same country may non be perceived favorably by the populace

& A ; gt ; No clearly output appraisal and finding

& A ; gt ; Mostly shade tolerant species are favoured particularly in Single tree Selection system

& A ; gt ; If there are jobs with insects and diseases in the country the control will be hard

& A ; gt ; If certain harvest home methods are to be used so debasement of the site is possible

& A ; gt ; High costs for be aftering and executing of the whole procedure (taging, dropping, regeneration)

& A ; gt ; Is non a suited system in cropping countries

& A ; gt ; During felling and extraction, hurts are caused to the standing trees

& A ; gt ; There is non a determined period of thinning in which attending to the quality of the base will be given

3. Evaluation (Comparisons and Contrasts) of the two Silvicultural systems

Taking into consideration all the above advantages and disadvantages of both Silvicultural systems, we can do some ratings and comparings, which are detailed discussed in the undermentioned paragraphs.

3. 1. Fiscal considerations

Under clear felling system there is no demand to engage specialised directors and labors, which will be of a higher cost, and since all trees are removed from the country net income will be higher. On the other manus, in most instances specialized heavy machineries are used for harvest home, conveyance, site readying and for planting/seeding and this addition the cost a batch. Using the clear felling system a big country and a batch of trees are felled. This means that the output will be the higher per unit of country. Besides, the activities cost per unit country will be much lower than in Selection system because machinery, labor, fellings and regeneration will be carried out in the same country. The cost for the extraction roads will be besides lower in the clear felling system (Clayoquot Sound Scientific Panel, p. 53) .

Site readying after clear felling is easier but more expensive per unit of country. Damages to standing trees and loss of lumber gross are besides avoided, since all trees are felled. Besides, in most instances where clear

felling is used, unreal regeneration will be applied since no female parent trees to give their seed will be found in the neighbour country. On the contrary, by using choice system natural regeneration will be an evident, since a batch of environing female parent trees will be found. Sing regeneration, particularly if planting is to be applied in a clear cut country, seedlings will be of the coveted species, and the turning infinite will be controlled and so trees of better features will be grown (Christou, 1995, p. 75, 90) .

3. 2. Fauna and Flora

Under Selection system, zoology and vegetation is less disrupted since trees are staying in the country. For illustration, under individual tree choice system if there is a nest on a tree, this tree will non be felled. Besides, in instances that sensitive or threatened flora species are found under some trees, or within a little country, the Forester will make up one's mind non to use dropping on that country, enabling the protection and/or enlargement of this vegetation (Christou, 1995, p. 75, 90) .

3. 3. Aesthetic, Recreation and Amenity

It is clear that, under Selection system, a natural visual aspect of the base will be produced i?? uneven aged base. This will increase the aesthetical value of the base and stand will be unfastened to public for diversion and agreeableness much earlier than if clear cut is applied (Clayoquot Sound Scientific Panel, p. 54) .

3. 4. Dirt and H₂O protection

In clear felling there is ever a large job with dirt eroding and landslides, since the whole felled country is unprotected from any trees. In choice system, particularly in the individual tree choice system the dirt is extremely protected from standing trees and staying land flora. Besides H₂O catchments countries are enrich with much H₂O (Hart, 1991, p. 254) .

3. 5. Tree features i?? shade tolerant / visible radiation demanding species

When there is a demand to reforest an country utilizing light demanding species clear dropping system is the most applicable since the base is opened plenty to acquire more visible radiation which favours their growing. If in the country shade tolerant species are found or if this type of species is to be used for re-afforestation so the Selection system is the most applicable. Under this system shade is provided to enable immature seedling to turn plenty and to be protected from inauspicious climatic conditions (Christou, 1995, p. 90) .

3. 6. Windfall, Insects, Diseases Animals and Weeds

In the clear cut system there are no windfalls because all trees are felled, where in Selection System we may hold jobs with windfalls. Sing insects, diseases and animate beings the clear felling system offer more advantages since the country can be controlled by these inauspicious factors. All trees are cut and so no insects and diseases will stay in standing trees. Besides when there is a large job with animate beings, like the ruddy cervid in UK, a

clear cut country can be fenced in order to avoid amendments to immature seedlings from animate beings (Christou, 1995, p. 90 and Hart, 1991, p. 254).

In contrary, in the instance of weeds there will be a large job in clear cut countries because the whole country will be without any trees. In choice system there will be no job with weeds since weed invasion will be avoided due to the uninterrupted screen of the country with trees.

3. 7. Ecosystem and Site factors

Clear cut system will finish alter the ecosystem of the country. This will be really distinguishable in countries with trees that are hard to renew. With the application of Selection system the ecosystem is retained since ever trees will be present and will protect besides the under storey species.

Now, sing site factors, e. g. in countries where there is a low precipitation, Selection system must be applied in order to protect and salvage H₂O for immature regeneration. In the reverse, when the country has a high precipitation the clear cut system can be applied since immature seedling will non endure from draft.

Decision

Within the current study two chief silvicultural systems country discussed: a) Clear felling and B) Choice system. The first 1 does non follow any regulations since all the trees are felled, where in the 2nd system (individual

tree choice system) a tree is removed if meets some standards. This indicates that particular cognition is needed.

Both systems have many advantages and many disadvantages. In order to make up one's mind upon the system to be followed in an country, a batch of consideration must be taken, like, site conditions, direction ends, public agreeableness and diversion and public protests.

In order to make up one's mind which Silvicultural system must be applied to each site a batch of factors must be examined such as the type of the harvest produced, site and climatic conditions, biological and fiscal considerations, biodiversity of the site and aesthetic factors.

Both of the systems will give good consequences in their application if they are used in the correct sites with the right manner of application after analyzing in deepness of the factors mentioned above.

Every system has its ain country of right application e. g. for United Kingdom which has a batch of rainfall but besides has a batch of jobs with windfalls Clear felling is the best system whether in Cyprus with really low precipitation and really dry summers Selection systems are the best for application.

Besides for states where the lumber production and fiscal returns are the primary aims Clear cut is the most applicable system. Choice systems are the best systems for countries where aesthetic, diversion, nature preservation, ecology and sustainability are the chief aims.