

What Rate of Interest in Cost of Growing Timber?

Four per cent. compounded should be the maximum charge. No business earns over 50 year periods 6 per cent. compound interest.

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EVERYONE who advocates the establishment of forest plantations is confronted, at one time or another, with problems relating to the costs involved and the returns to be secured. Problems of this character demand that we take into account four factors, first the initial and annual costs, second the yields in timber to be expected, third the stumpage values of the product when mature, and fourth a rate of compound interest with which all charges can be carried from the time at which they are incurred until the trees are ready to be cut.

We know within reasonably close limits what it costs to start forest plantations and can also tell with fair accuracy the annual costs involved. The yields in volume and the future stumpage values are not so definitely known and we frankly admit that, at the present time, we can do little more than give intelligent estimates of these. Our existing yield data are all too scanty, but if those which we have are carefully used, we can give a good estimate of the volumes of wood that can be grown. The common practice is to use average stumpage values that exist at the present time. There is very little likelihood of their going lower, and all indications point to values that in future years will be higher. Although more exact information on the above factors would be greatly welcomed, we can, for many of our prominent species, use such data as we have and not be far out of the way. And as time goes on it is reasonable to expect that we will be furnished with much additional data on costs, yields and stumpage values.

The fourth factor, the rate of interest, is one that has come in for but little comment in the past. Yet the rate chosen is of great importance and to many is a standard that an investment in timber growing must reach if it is to be classed as worth while. The principal point in this paper is not to disagree with this opinion, but to offer a few comments as to the rate of interest to be used and invite discussion on the rate which foresters can agree upon as being fair and satisfactory from every standpoint. It is needless to go into a discussion here of the problem of

simple versus compound interest. Compound interest is universally used in calculating costs in growing timber and associated with it we usually find the rate of six per cent. It is highly probable that this six per cent. rate is chosen because it is the rate that is found in most of our business transactions. But in most forms of business enterprise, simple interest is used. Outside of savings banks, insurance companies, saving and loan associations, and possibly a few other organizations, practically all of our business is carried on on an annual basis. No argument is to be advanced here for using simple interest with financial calculations in growing timber. Compound interest is always used where returns are deferred for a period of years, and timber growing should be no exception.

Table showing interest variations

Rate of Compound interest	Value of Capital and Compound interest	Compound Interest	Rate of simple Interest to be earned and saved to equal amount in Column 3.
3.	2191.95	1691.95	6.76
3.5	2792.45	2292.45	9.17
4.	3553.35	3053.35	12.21
4.5	4516.30	4016.30	16.06
5.	5733.70	5233.70	20.93
5.5	7271.00	6771.00	27.08
6.	9210.10	8710.10	34.84

Is Six Per Cent. Reasonable?

Although a rate of six per cent. simple interest is universally accepted, is it fair to use a rate of six per cent. compound interest, when one is urging that forests be planted from the investment standpoint? Unless the use of this rate is carefully qualified and explained, erroneous and undesirable impressions on the part of the causal reader or the laymen are certain to result. Usually these explanations are not made, and the average man is convinced that a forest should pay six per cent. compound interest to be the equal of the six per cent. simple interest with which he is familiar. The writer does not believe that a rate of over four per cent. should be used in computing the costs of growing timber and in support of this submits the above table and following calculations:

If we take a certain sum of money, \$500.00 (though any amount can be used and the same results secured) and invest this so that it will yield six per cent. compound interest, in a period of 50 years, this sum of \$500.00 would grow to \$9,210.10. Deducting the principal of \$500.00, \$8,710.10 would remain—a large sum of compound interest only.

What rate of simple interest would have to be earned and saved without further investment over a period of 50 years to equal this interest return of \$8,710.10 on an initial investment of \$500.00? It would be \$174.20 per year, which represents 34.84 per cent. In other words, if a man invests \$500.00 and earns 34.84 per cent. annually on it, and saves this amount for 50 years, the aggregate will be equal to the sum earned at a six per cent. compound rate. It will be argued that no man would ever allow this annual income to lie idle, and this is of course true. It will in actuality be reinvested whenever possible in order to bring in additional revenue. Everyone will agree that it is an absolute impossibility for anyone to foresee or predict even closely how the annual income would be invested, either from the standpoint of amount or of time. If any of it is successfully reinvested the increased returns will amount to a sum larger than the amount received by the six per cent. rate of simple interest. Yet unless the six per cent., or \$30.00 for the first year is upon being received, immediately reinvested at the same rate of interest, and this process kept up till the end of the 50 years, the amount earned finally will have fallen below the 34.84 per cent. spoken of previously, or the six per cent. compound interest. Economic opportunities are too limited to permit of any sums expanding at such a rate for any protracted period of time. Yet this is exactly what we demand of a forest when we use the rate of six per cent. compound interest. If we admit that it is a practical impossibility for a normal business to earn returns equal to a compound rate of six per cent., then it certainly is unfair to say that growing forests must measure up to this standard in order to be classed as a worth while investment. If we hold to this view, just what rate