9.2.3.4 Costs in Canada

Watt (pers. comm.) has recorded actual cost figures for purchase, delivery and distribution of crushed bagged limestone to Sandy Lake in Nova Scotia. The loading rate was about one metric ton/ha. The experiment was designed to protect salmon populations in downstream rivers. The lake was easily accessible, and crushed limestone was readily available. The total cost for liming the 70 ha lake was in excess of $11,000, or about $160 Cdn. per hectare.

Although costs per lake will vary according to dose required, generally application rates for lakes appear to vary from about 380 (Yan and Dillon 1982) to 1000 kg/ha which Watt has used in Nova Scotia. The Ontario example given by Yan and Dillon (1982) has maintained the lake pH for at least five years. Generally, average application rates of about 500 kg/ha are necessary to give multi-year pH stability.

9.2.4 Technical Evaluations Necessary in Liming Programs

The calculation of costs associated with neutralization programs must be accompanied by the necessary technical evaluations. Any system, considered for liming must be studied in a variety of ways (e.g., depth, flushing time, water chemistry, and biota). Swedish treatment and research costs of about $16,000 Cdn. per project are based on 304 projects which cover at least 700 individual lakes (Bengtsson et al. 1980). Therefore, average monitoring costs appear to be about $8,000 per lake. A minimum sample program of only twice per year would still cost at least $1,000 per lake including labour, analyses and data reporting. Meaningful evaluation of chemical and biological conditions would cost in the order of $10,000 per lake per year.

Control and management of the fisheries in treated systems would also add substantially to overall costs.

It is worth noting that the situation concerning fishing rights in Scandinavia and North America is quite different. In Sweden the rights to fish are privately owned, with the owners on some rivers issuing fishing licenses and to some extent controlling fish harvest. This element of "self interest" allows for easier control of fishing activities which can affect the success of fish survival and reproduction.

9.3 TERRESTRIAL LIMING

The addition of alkaline materials has been proposed as a means for ameliorating the effects of acidic deposition on terrestrial ecosystems. While lime applications have an important place in the efficient management of agricultural soils and much research has been conducted to determine optimum dosages for different crops and soils,