

## Chemical Composition and Amount of Macro and Microelements of Pine (*Pinus silvestris* L) and Larch (*Larix sibirica* Ldb) Trees in Mongolia

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### Abstract

One thousand seed weight of pine and larch trees taken from district Bugant of province Selenge and district Mungen Mort, Tuv province and the bark, other mixture and the items still with bark were defined and comored. Chemical composition of the seeds of pine and larch trees was defined. The dry substance in pine seeds was 94.6%, protein 45.1%, oil 22.1%, ash 1.5%, respectively. In the seeds of larch trees dry substance was 93.8%, protein 18.7% and ash 2.1%, respectively. The amount of macro and microelements in the ash samples of above tree seeds is determined in a spectrum laboratory. There were 20 elements in the seeds of pine trees and 19 elements in the seeds of larch trees.

**Key words:** *Pinus sylvestris*, *Larix sibirica*, seeds, pure seed, macroelements, microelements.

### Introduction

In coniferous trees such as pine and fir, monoterpenes accumulating in resin ducts found in the needle twigs, and trunk. The principal monoterpenes of conifer resin are  $\alpha$ -pinene,  $\beta$ -pinene, limonene and myrcene. Many conifers respond to bark beetle infestation by producing additional quantities of monoterpenes (Taiz & Zeiger, 1998; Shatar, 1975).

Seeds of pine cones ripen after the blossom of the following year. The size of cores varies 2 to 30cm depending on the species. The seed size is equal to 0.5-2.5 cm (Jamsran, 1957). The ripen cones of larch trees are 2-4 cm in length and color is brownish grey (Myagmar *et al.*, 1992).

The pine tree is mostly used for medicine while the bark of larch tree is used for treating gripe, pneumonia, acute bronchitis and head diseases (Nikolaev *et al.*, 1994; Khaidav *et al.*, 1985).

The researchers of our country have already determined those including 1000 seeds weight of conifers, seed plantation and seed ling, however, the study of chemical composition of minerals is just only in the beginning stage. We have interested the minerals of conifer seeds taken for the study. The elements used for plant seed are involved in various biochemical processes and determined the structure of organic molecules and penetrating power of membrane. Feeding substances exert

favorable condition to the growth of plants.

Mineral salt of non-organic acids exist in plants in a form of liquid, and about 99% of total dry weight of animals and plants are K, Ca, Mg, Na, S, P, Fe and Si, together with C, H and O<sub>2</sub>. The principal microelements in plants are Fe, Cu, Zn, Se, Co, Mn, Ni and Al. The quantity of those elements is limited and it depends on the biogeochemical structure landscape. The microelements are actively participating in metabolism, synthesis of enzyme, hormones and blood creation (Bitutskiy, 1999).

It was approved that in vascular plants the iron is unfaillingly present. It has active interaction capacity with gumin substances, organic acids, phenolis, siderophors (Bitutskiy, 1999). Today, over 80 chemical elements of the periodic table of Mendeleev have been found in plant tissues. The distribution systems of chemical elements in plants are linked closely with the earth's crust (Dorjgotov & Ligaa, 1979).

### Material and Methods

Seed samples of larch trees were taken from District Mungen Mort, Central Province and those of pine trees from District Bugant, Province Selenge in central and northern parts of Mongolia, respectively. The seed weight of both the trees was determined by 1000 seeds' weight, other mixture