

# 高山冻原苔藓灌丛类型的光合产量和初级生产的研究

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## THE STUDY OF PHYTOMASS AND PRIMARY PRODUCTION OF SHRUB-MOSS TYPE GRASSLAND IN ALPINE TUNDRA

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### ABSTRACT

The phytomass and primary production of shrub-moss type grassland in alpine tundra were investigated in Qilian Mountain Range (3,250 m above sea level, with slopes facing northward) during 1980—1981. Furthermore, inquiry has been made preliminarily in several aspects related to the structure, function and productivity of this ecosystem.

The results obtained showed that the grass living phytomass was  $3500 \text{ g/m}^2$ , and the ratio of aboveground/underground phytomass was 0.28; net yearly primary production was estimated at  $187 \text{ g/m}^2$  for aboveground and  $143.8 \text{ g/m}^2$  for underground parts of the vascular plants, as well as  $76 \text{ g/m}^2$  for the mosses. The sum of their heat content amounted to 1503.230 kilocalories. The average rate of decomposition was determined to be 9.85% a year. In this respect, it may be inferred according to preliminary estimation that the keeping of a balance between input and decay would be reached in at least around 60 years.

Because of the fact that the moss layer is so highly developed (even to the thickness of 10—40 cm), and the status of water and heat within soil depth is so deeply conditioned by the moss layer that a special regime of nutrient conversion and provision might be established.

The study has pointed out that the shrub-moss community has a particular pattern in the utilization of minerals and energy in the habitat. After the vegetation has been destroyed, the function of soil-plant ecosystem in maintaining frozen earth and conserving water source would be substantially lost eventually.