Institute of Monitoring of Climatic and Ecological Systems
Siberian Branch of the Russian Academy of Sciences, Tomsk

ESTIMATE OF THE DECOMPOSITION RATE OF PEAT-FORMING PLANTS IN DRAINED AND PYROGENIC PEATLANDS

Authors: L.G. Nikonova,
E.A. Golovatskaya

The aim of the study

Estimate the rate of decomposition of the organic matter of peat-forming plants in the drained and pyrogenic peatlands.

Eriophorum vaginatum L.

Chamaedaphne calyculata Moench.

Sphagnum fuscum Klinggr.

Scheme of experiment

Samples:

(1) *Chamaedaphne calyculata*

(2) *Eriophorum vaginatum*

(3) *Sphagnum fuscum*

(4) Mixed sample: *Chamaedaphne calyculata* - 40%

Sphagnum fuscum - 60%

Research area:

Peatlands	Phytocenosis	
"Vasyuganskoe"	Undisturbed pine-shrub-sphagnum phytocenosis (ryam)	**Native**
	Drained pine-shrub-sphagnum phytocenosis (ryam)	**Dry**
"Iksinskoe"	Restored pine-shrub-sphagnum phytocenosis	**Fire-site 1**
	Pine-birch-cotton grass-sphagnum phytocenosis with a less pronounced degree of pyrogenic succession	**Fire-site 2**

METHODS OF THE STUDY

- Decomposition of plants was studied using the litter-bag method.

  Losses of the plant mass were calculated as a percentage of the initial samples weight:

$$\text{Loss } (\%) = \frac{(M_0 - M_t)}{M_0} \times 100,$$

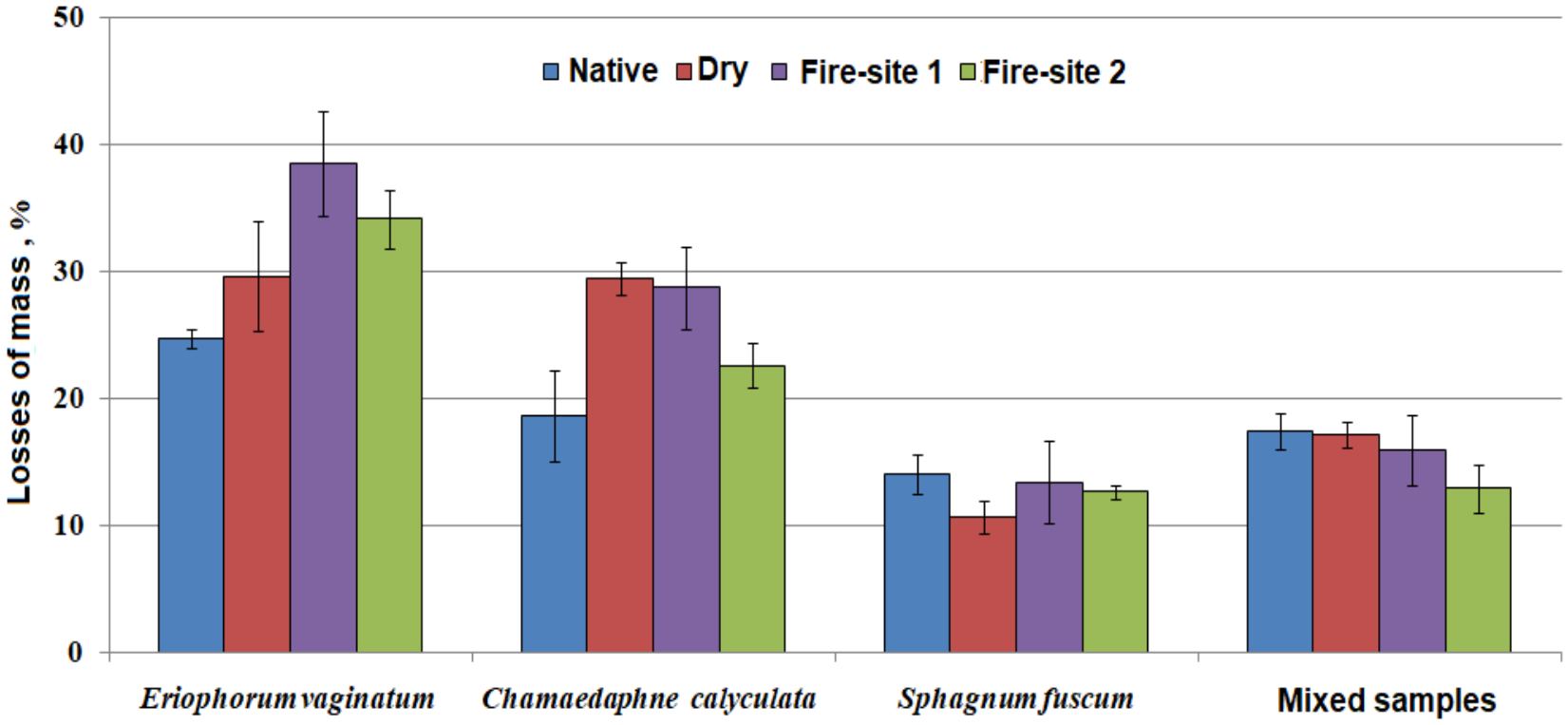
where M_0 is the mass of the initial sample, M_1 is the mass of the sample after the time t (1 years).

- In each sample, before decomposition, the content of carbon, nitrogen and ash elements was determined.

INITIAL CONTENT OF CHEMICAL ELEMENTS IN PEAT-FORMING PLANTS

Species of plant	Ash, %	C, %	N, %	C/N
Chamaedaphne calyculata	2,49	48,89	1,38	35
Eriophorum vaginatum	2,17	43,30	0,78	56
Sphagnum fuscum	1,77	43,77	0,75	58
Mixed sample	1,89	45,83	0,81	56

Losses of mass of organic matter for 12 months of decomposition (% of the initial value)



The decomposition process of *Chamaedaphne calyculata* and *Eriophorum vaginatum* more actively proceeds in drained and pyrogenic phytocenoses,
Sphagnum fuscum and mixed sample - in native conditions.

PRELIMINARY CONCLUSION

The impact of human activities (drainage) and post-pyrogenic recovery of peatlands leads to an acceleration of the process of decomposition of plant remains *Chamaedaphne calyculata* by 22-58%, *Eriophorum vaginatum* - 15-49%.

Whereas the decomposition rate of *Sphagnum fuscum* and the Mixed sample decreased by 2-24%.

Mixing litter from different plant species increases the rate of decomposition.

Thank you for attention!