

DURATION OF ALLELOPATHIC EFFECT OF LILAC (*SYRINGA VULGARIS* L.) RESIDUES

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It is known that plant residues are source of allelochemicals. Earlier we demonstrated that lilac residues at decay in the fallow soil exerted unfavourable influence on seedlings during two-year investigation. Decrease in photosynthetic pigments amount and simultaneous increase in allelopathic activity, proline and phenolics contents, activity of polyphenol oxidase in leaves were observed, which indicated stress state of lilac seedlings. The present work is the continuation of above-mentioned investigation. The aim of our study was to determine duration of allelopathic effect of lilac residues.

Seedlings of *Syringa vulgaris* were cultivated in greenhouse conditions in pots with grey forest soil collected after long-term fallow mixed with lilac residues (roots, fallen flowers and leaves – 1:1:1; 2% to soil dry weight). In the separate treatments humus and green-manure (*Brassica rapa* var. *oleifera*) were added to the described substrate (5% to soil dry weight). The fallow soil was used as control. The allelopathic activity of soil was studied by the method of direct bioassaying on cress (*Lepidium sativum* L.) seedlings. The phenolics content in soil was determined after Grodzinsky *et al.* (1988).

Phytotoxicity of soil maintained up to the third year after addition of lilac residues. Inhibitory activity of soil with lilac residues to cress root growth was 20-25% to control. The growth of lilac seedlings in the present treatment also was by 20% lower as compared with control. The application of humus and green-manure reduced phytotoxicity of soil, which led to increase in lilac seedlings growth by 35-39% as compared with control. Insignificant phytotoxicity of soil was found on the fourth year after addition of lilac residues, which indicated complete their mineralization. Lilac residues raised phenolics content in soil by 41%. The application of organic additions reduced phenolics amount. Evidently, phytotoxicity of soil at decay of lilac residues could be due to accumulation of phenolic compounds.

In natural conditions allelochemicals from root residues, fallen flowers and leaves are released into the soil constantly. Decay products of plant residues remain in soil long enough and could cause allelopathic soil sickness. Application of humus and especially green-manure as well as removal of fallen flowers and leaves are necessary to reduce phytotoxicity of soil after long-term cultivation of lilac.