



Acid soils of western Serbia and their further acidification

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Acid soils cause many unfavorable soil characteristics from the plant nutrition point of view. Because of increased soil acidity the violation of buffering soil properties due to leaching of Ca and Mg ions is taking place that also can cause soil physical degradation via peptization of colloids. Together with increasing of soil acidity the content of mobile Al increases that can be toxic for plants. Easily available nutritive elements transforms into hardly available forms. The process of deactivation is especially expressed for phosphorous that under such conditions forms non-soluble compounds with sesqui-oxides. From the other hand the higher solubility of some microelements (Zn and B) can cause their accelerated leaching from root zone and therefore, result in their deficiency for plant nutrition. Dangerous and toxic matters transforms into easily-available forms for plants, especially, Cd and Ni under the lower soil pH.

The studied soil occupies 36675 hectare in the municipality of Krupan in Serbia, and are characterized with very unfavorable chemical properties: 26% of the territory belongs to the category of very acidic, and 44 % belongs to the category of acidic.

The results showed that the soil of the territory of Krupan is limited for agricultural land use due to their high acidity. Beside the statement of negative soil properties determined by acidity, there is a necessity for determination of soil sensitivity for acidification processes toward soil protection from ecological aspect and its prevention from further acidification. Based on such data and categorization of soils it is possible to undertake proper measures for soil protection and melioration of the most endangered soil cover, where the economic aspect of these measures is very important.

One of the methods of soil classification based on sensitivity for acidification classification the determination of soil categories is based on the values of soil CEC and pH in water. By combination of these two parameters the 16 categories for main three chemical processes are emerged: sensitivity for base losses, sensitivity for acidification process and sensitivity for Al-solubility. Based on the combination of these three sensitivity categories the total soil sensitivity for acidification was determined:

- Upon soil sensitivity for base losses, the 5% belongs to the category that is highly subjected to losses, and 73% belongs to medium-sensitive category in the studied area.
- Upon sensitivity on acidification, 88% of soils in Krupan region are weakly sensitive, while the rest 12% is sensitive, where only 0.5% is highly subject to acidification.
- Upon sensitivity on solubility of Al, the 28% belongs to the category of highly risky, while 36% of the territory is not endangered.

The very high sensitivity on acidification processes is detected on 5% of the total territory, while 74% belongs to medium sensitive category.

Considering that in Krupan region about 50% of the territory is subject to acidification processes there is a necessity of melioration measures toward prevention of this process. Special attention should be given to the soils that are highly sensitive to overall acidification. Within those soils there should not be constructed industrial objects because of enhanced emissions of industrial gases rich in nitrogen and sulphur, as well as some other toxic microelements toward protection of the environment.

Key Words: Soil acidity, mobile Al, CEC, acidification