



Czech University of Life Sciences Prague

**Faculty of Agrobiography,
Food and Natural Resources**

Study programme: **Exploitation and Protection of Natural Resources**

Department of: **Water Resources**

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Topic: Monitoring of the eutrofication of water bodies in the agricultural landscape using UAS

Hypotheses:

The development of the eutrophication of water bodies creates the need to monitor an local grows of the algal bloom in some areas of water bodies and/or the development and distribution of this algal bloom in the water body, the speed of the expansion and covering of surface water layer in certain reservoirs. The identification and observation of the algae bloom development could be done using UAS (drones) equipped with different types of sensors, being able to measure reflective, fluorescent and other characteristics including the geodetic data of the positioning.

Summary:

The algal bloom is massive, macroscopically recognised outbreak of algae in water bodies during summer period. It is usually the situation being repeated nowadays every year in European and Czech water bodies. This kind of natural development is not popular for the human society. The term algae includes many different organisms of different size, colour, growth rate and other behaviours. Blue-greens are microscopic cyanobacteria, they are in our European conditions occupying our fresh waters whole year and due to photosynthesis they take CO₂ and produce O₂. They are regular part of phytoplankton. Algae are more advanced organisms than cyanobacteria. They can have different colours, could be green (green algae) these are the most common in our conditions, brown (brown algae), red and other colours.

Blue-greens are in European conditions the most frequent case of algal bloom and algal bloom is certain increasing problem in the water bodies. The main reason for the massive development of this organisms is an excess of nutrients, mainly phosphates. During last few years the algal bloom has been registered in more than 80% of water bodies in the CR and the most common organisms are very toxic colonies of *Microcystis* (mostly *Microcystis aeruginosa*). They produce the harmful hepatotoxic microcystines in a massive amount. Several cases of the massive poisoning of humans via the drinking water distribution thanks to algal bloom products were registered in the World (Brasil, China), fortunately in the CR this situation has not been registered yet.

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