Agricultural measures to restore the Swiss midland lakes (Sempach, Baldegg, Hallwil)

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After the remediation of the municipal sewage the main part of the phosphorus load, which pollutes the lakes (lake of Sempach, Baldegg and Hallwil), originates from agricultural areas in the catchment areas of the lakes. Since 1999 measures to reduce the phosphorus load from agricultural areas are subsidised by the Swiss government within the ordinance of water protection. This program is based on a voluntary participation of the farmers under the charge of the department of agriculture and forest in collaboration with the department of environment and energy of the canton Lucerne.
The main measures of the program are: Limited phosphorus fertilisation according to soil-P- analyses, buffer-strips on waterways, no manure application and no open soils during wintertime, direct sawing of corn and cereals, improving of drainage systems and infrastructure on farm yards. Furthermore the closedown of swine and poultry units, alternatives in production and the building of retention ponds are subsidised.
In 2008 78% of the agricultural surfaces in the catchment area of the lakes were cultivated according to the Phosphorus-Project with a total of 573 farms (72%). A total of 5.7 mio. SFr./year has been paid to compensate for lower yield and bigger efforts. 78 % of this amount is financed by the Swiss government and 22% by the canton of Lucerne. This compensation corresponds to 500 Euros/ha.
Artificial mixing in winter and the hypolimnetic oxygenation in summer are still applied. In the lake of Sempach air is used for the oxygenation, in the other two lakes pure oxygen. The department of environment and energy is responsible for the monitoring regarding the phosphorus content in the lakes. Within the last years the average phosphorus content has decreased very rapidly and is now in the lake of Sempach and Baldegg at 26 mg/m^3 and in the lake of Hallwil at 20 mg/m^3. The target value of 4 mg oxygen per litre at any time and any depth of the lake could be reached, except for some short periods. However the aim of natural spawn whitefish is not yet achieved. As can be seen, important steps for improvement of the lakes have been taken. Long term measures, however, are necessary in order to maintain the healthy condition of the lake
The project of restoring the Swiss midland lakes is a good example of teamwork between politicians, communities, authorities, researchers and the inhabitants of the catchment area. Thanks to the contribution of all these peoples, it is clearly visible, that the condition of the lakes is much better than it was 25 years ago.