



Small-scale geodiversity and dirt road management, Ede (NL)

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A large part of the countryside roads on the Pleistocene sands of The Netherlands are dirt roads. Most are footpaths, but a small percentage are relatively heavily used by motorized vehicles. These latter roads are a cause subject of debate. Puddles and potholes develop during periods of wet weather, while dust whirls from the roads form during spells of dry weather as do washboard ripples. They cause problems for people living along these roads and tourists (walkers and bikers).

The community of Ede (NL), like many other communities on the sand, wants to keep its 80 km of dirt roads because of the natural values they harbour as well as for their characteristic landscape quality and cultural heritage value. A part of the dirt roads in Ede is heavily used. In 2009, the community of Ede developed a decision model to support management of the dirt roads. Ede acknowledges that each dirt road is unique and asks for a tailor-made solution. Road maintenance measures include grading, making a camber, digging pits, applying loam or sandy loam. If problems become too large, one-way traffic can be an option. In more and more cases the dirt roads are barred for motorized through traffic (Gemeente Ede, 2009).

As a reconnaissance we have studied the dirt roads of the Horabos/Horalaaan over the last year. Incidentally we looked at other parts of the main Horalaan and the footpaths in the adjacent forest of Hoekelum. All dirt roads lie near the top of a Saalian push-moraine in which the upper course of dry valleys are present. Some results of the reconnaissance:

- Most dirt roads sections in the Horabos lie lower than the surrounding terrain;
- The problems develop in a short period of time during special weather conditions;
- Certain dirt road sections e.g. those sections crossing a slight depression are quickly developing potholes;
- Even a small slope of the road (< 2 degrees) causes water to flow over the road and form rills in the pavement. On preferential spots the rills develop into potholes;
- Although in general the natural infiltration of the terrains surrounding the roads is sufficient, in some road sections water from adjacent sloping terrain brings extra water on the road;
- A thin cover of leaves on the footpaths and road sections with low car traffic improves the infiltration in the road, and reduces the run-off to other the road sections to nearly zero. Leaves along the roadside also help to retard and reduce the run-off over the roads. However leaves on or along the road are not tolerated by most inhabitants, the roads need to be 'clean'.

Our conclusion: Each dirt road is unique, but also within one dirt road there are important geological differences that have consequences for its maintenance. Knowledge of geodiversity of the terrain and study of small-scale erosion processes can help to improve the management of dirt roads.

References

Gemeente Ede, Nota Zandwegen, 2009.