Screening repellents for the management of rodent damage to subsurface drip irrigation systems

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Worldwide use of subsurface drip irrigation systems (SDI) in agriculture increases to boost production in semi-arid and arid areas. Because of low water use these subsurface pipe systems ensure effective soil watering in the fields. Rodents can cause extensive damage to the pipes and therefore be responsible for a considerable water loss and extensive repair. However, reported problems of SDI users with rodent damage are increasing.

To identify substances to repel the rodents from the SDI-pipes we ran choice trials with common voles (*Microtus arvalis*) and house mice (*Mus musculus*). Common voles are the major vertebrate pest species in agriculture in Europe and occur in dry regions of southern and western Europe. House mice damage stored goods and are a health concern because they can transmit zoonotic diseases.

Secondly we test the most promising substances from the screening under semi-natural conditions experiments with both pest species.

For these trials small rodent populations were established in enclosures in semi-natural conditions. The rodents were offered buried plastic boxes with attractive food on soil that was either untreated or treated with a potential repellent substance. Through a transponder scanner we recorded how often each animal visited these boxes to identify repellent effects.

Summarizing the results of both trials point out how effective the substances repel the rodents. An effective repellent applied to piping material or in the vicinity of pipes will help to minimize damage to SDI systems and consequently conserve water resources.