

PEEING FOR HORTICULTURE ON MARS

Exobiologist Wieger Wamelink wants to make Mars soil fertile by using struvite from the urine of astronauts. Next week, he will start a down-to-earth experiment.

Wamelink has been working for years on his project of getting a fully self-sufficient agricultural system for Mars. He has shown that replica Mars and moon soil is suitable in principle for horticulture. In his latest experiment, he is using struvite (magnesium ammonium phosphate), a salt that contains nitrogen and phosphorous and can be extracted from urine. The compound is a very suitable

'You'd be crazy not to use human excrement'



▲ An impression of a human settlement on Mars.

fertilizer for Mars in particular, which has no nitrogen in the soil. On WUR's crowdfunding site, Wamelink implies that the film *The Martian* gave him the idea of using human waste for horticulture, but that is not actually the

case. 'I knew from the start that we would have to use human excrement. You'd be crazy not to.' That is forbidden on planet Earth for hygiene reasons but such rules do not yet apply on Mars. 'So that's not an issue for me,' says

Wamelink. Part of Wamelink's struvite comes from visitors to festivals in Amsterdam, where the urine was collected separately. One cubic metre of urine produces three kilos of struvite — named after the 19th-century German scientist Von Struve.

Wamelink will be growing green beans in his Mars, moon and Earth soils, with and without added struvite. 'I have 60 pots with 10 of every variant, so the experiment is watertight statistically speaking.' The trial will take four months, during which he will be vlogging regularly about the progress. He hopes he will be able to raise the required 15,000 euros through crowdfunding. That money is needed for materials, hiring the greenhouse capacity, measurements and analyses. Wamelink's own hours on his space agriculture project are pro bono. **® RK**

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