
SLU
SCIENCE AND EDUCATION FOR SUSTAINABLE LIFE

Potential för vattenlagring i landskapet

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PERSPECTIVE

Special Section: Through the Lens of Phosphorus—Honoring the Legacy of Andrew Sharpley

Toward better targeting of mitigation measures for reducing phosphorus losses from land to water: Andrew Sharpley's legacy in Norway and Sweden

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In Sweden, a governmental advisory program was introduced in 2000, where farmers are offered free advisory support and education for improved nutrient management. This program also involves further education for staff engaged in advisory service for farmers, and it thereby constitutes an important link between research and practice. In 2018, the Swedish Authority for Water and Marine Management started the project LEVA (local engagement for water) based on a government mandate, where local catchment officers in 20 pilot areas in Sweden develop and support local actions and measurements against eutrophication. Catchment officers are the link between the farmers/landowners, the authorities (municipality or county), and different funding and consulting agencies (Swedish Agency for Marine & Water Management, 2021). The role of research in this context was to offer education to catchment managers and decision support through online platforms to make relevant modeling results easily available, as well as to offer farmers, catchment officers, and all other stakeholders a learning environment (https://arcg.is/1HC001) and an interactive tool to estimate the role of mitigation measures on nutrient losses (https://waterguide.online/nutrient-loss).

~1000 ha

30 cm depth

3 000 000 m³

Skyddsbarriär vid Svartån i Västerås. Foto: Boel Holm /TT

VISA ALLA BILDER (2)

RÖD VARNING

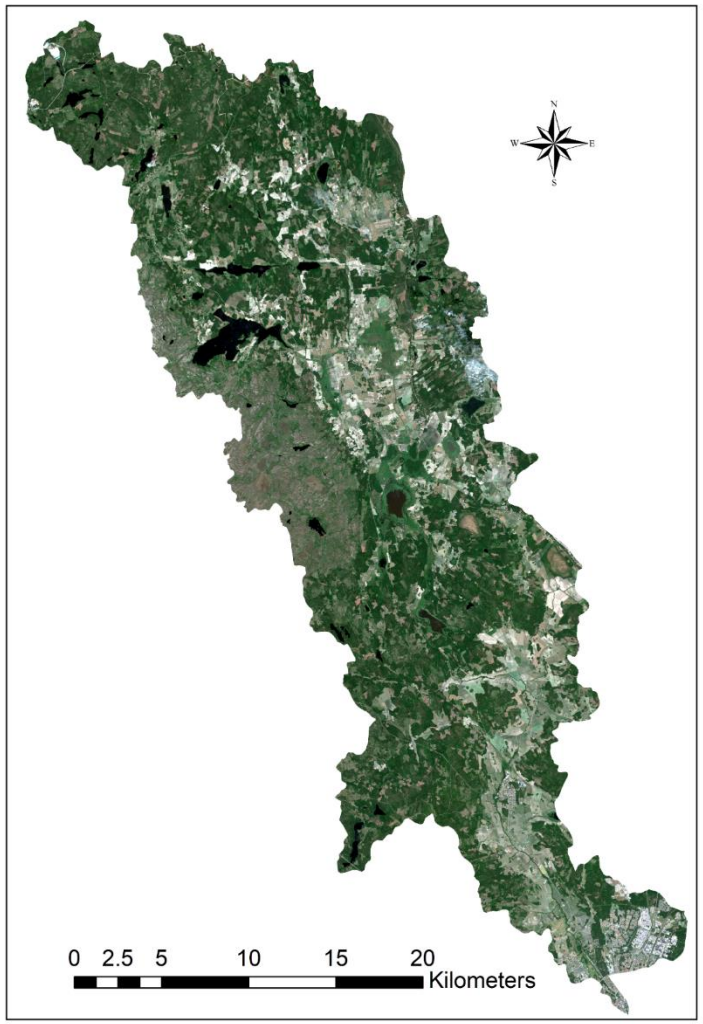
Översvämmat Västerås – barriärer byggs för att skydda staden

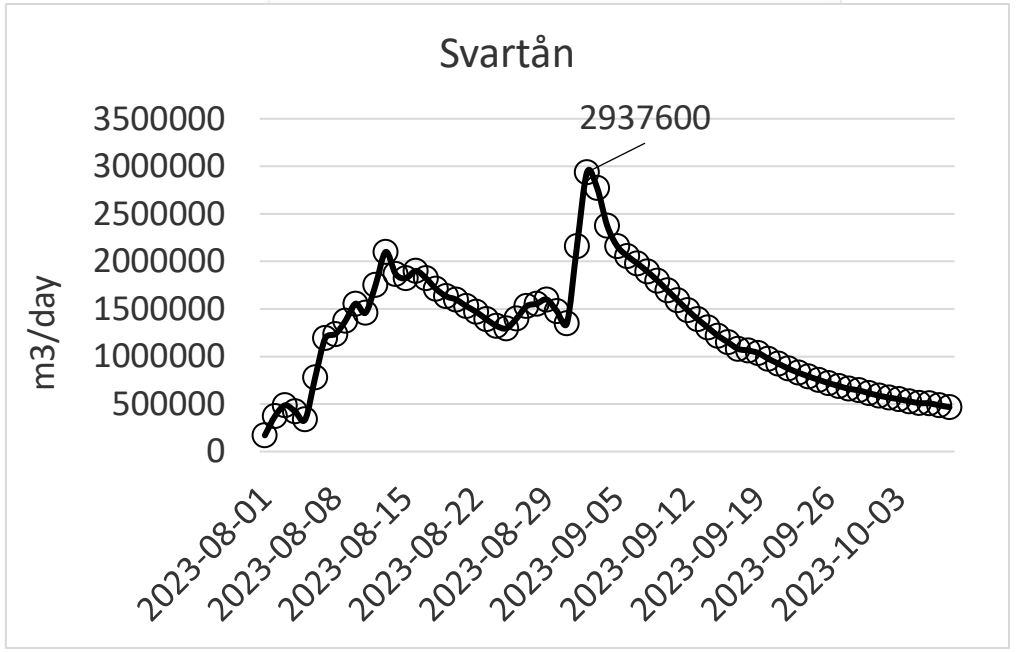
2:49 min Min sida Dela

Publicerat lördag 2 september kl 15.58

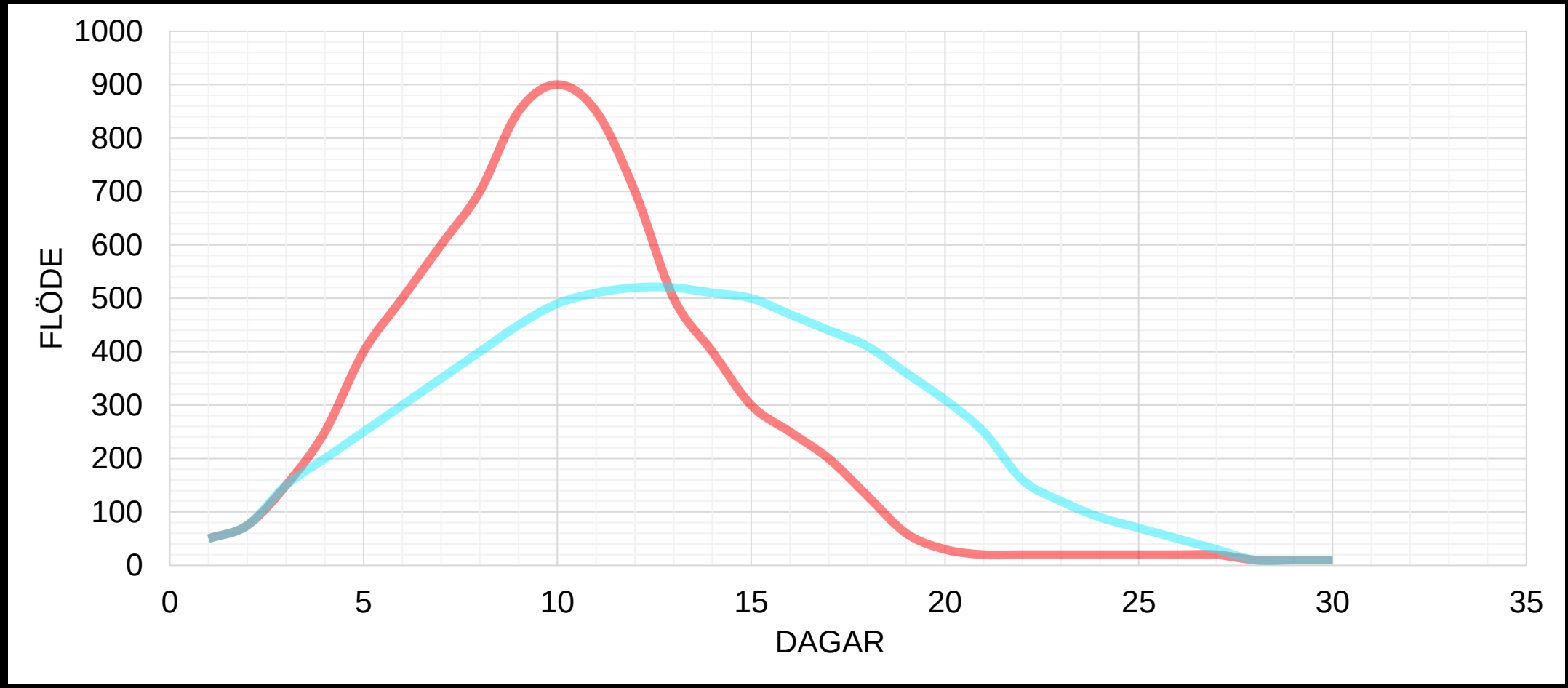
- SMHI har utfärdat en röd varning för höga flöden i Svartån i Västmanland efter det kraftiga regn som föll under natten till lördagen.
- Grävskopor bygger en skyddsbarriär för att skydda hus och staden har begärt extra förstärkning från Myndigheten för samhällsskydd och beredskap, MSB. En barriär har satts upp för att skydda stadshuset.
- Hör P4 Västmanlands reporter Liselotte Mellesmo på plats.

Ekot
ekot@sverigesradio.se





Att ”platta till kurvan”



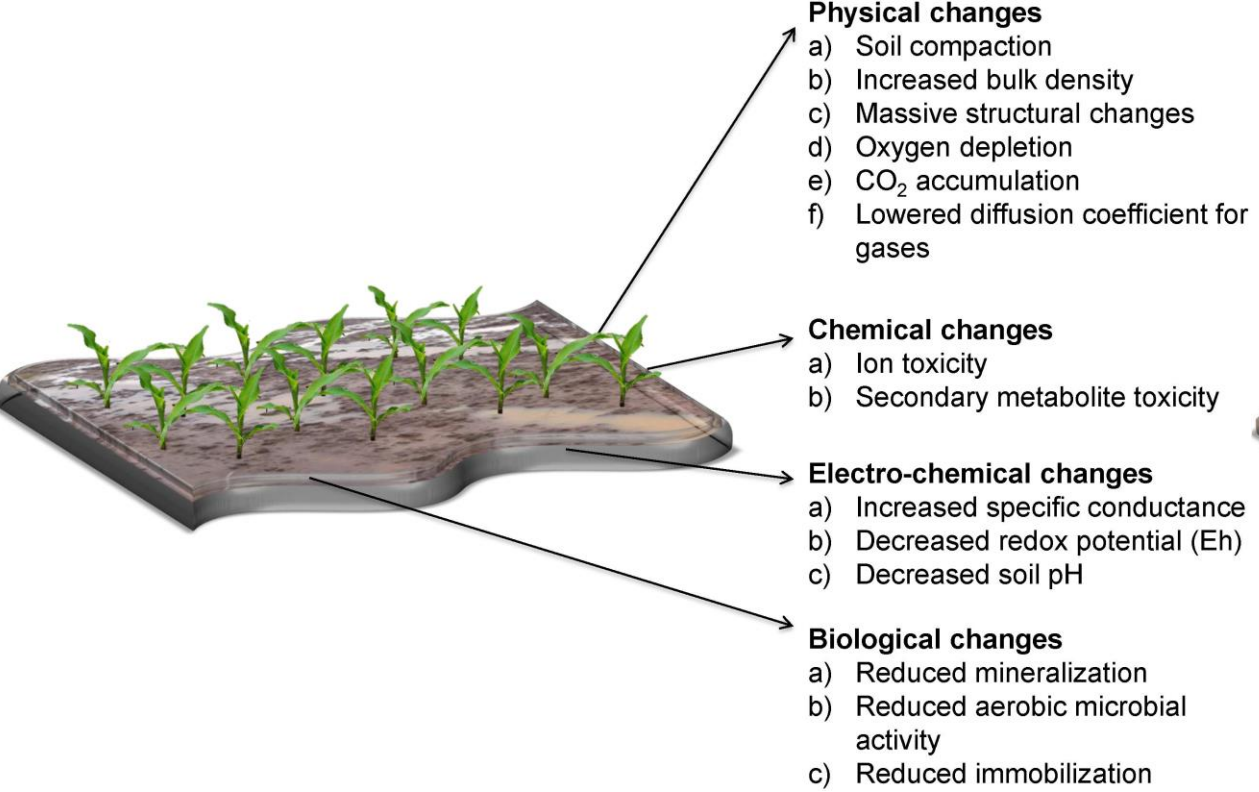


FIGURE 1. Effects of waterlogging on soil properties

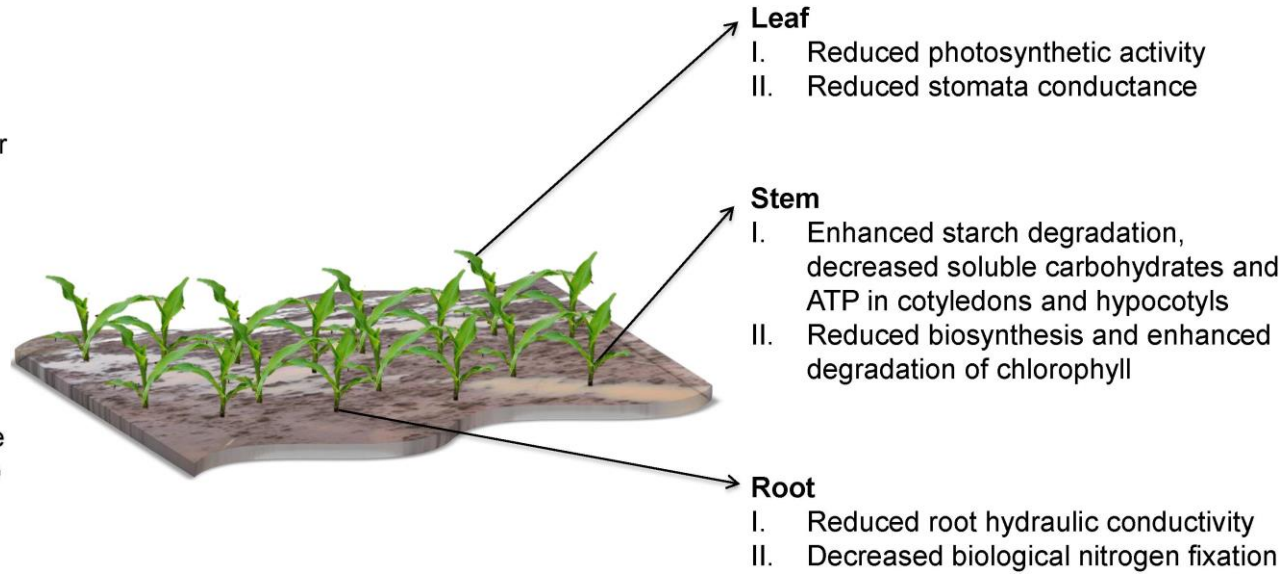
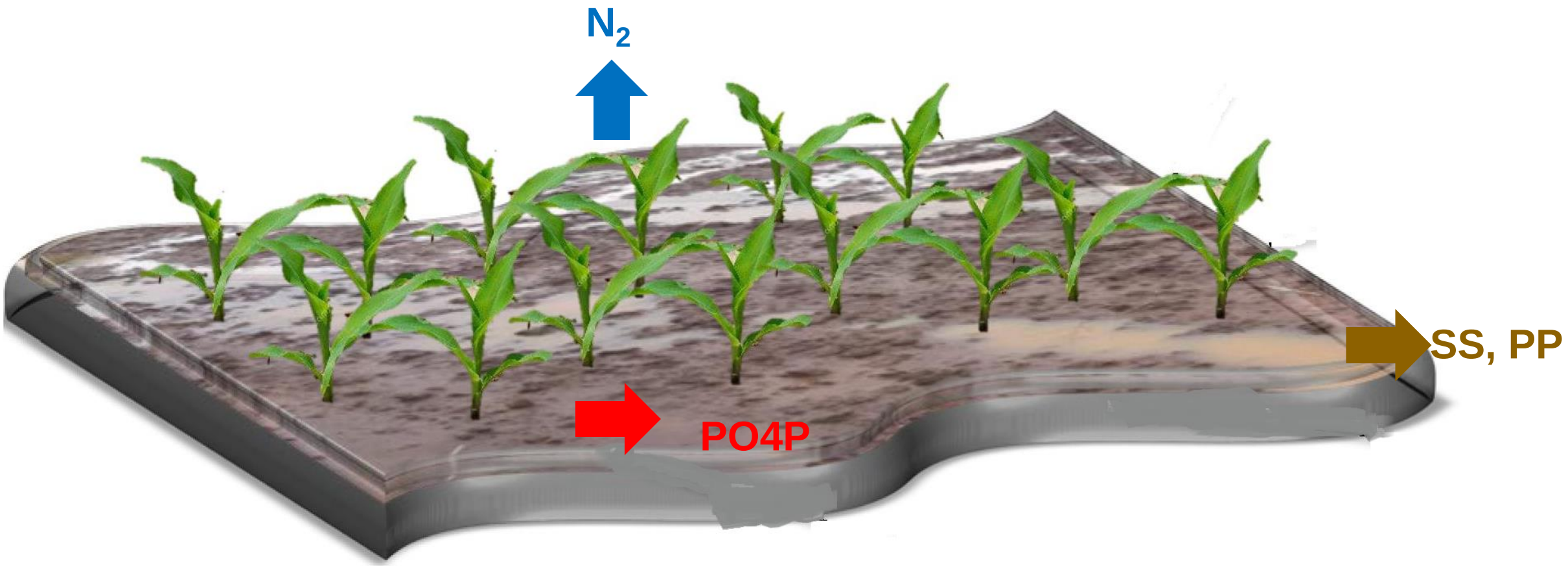
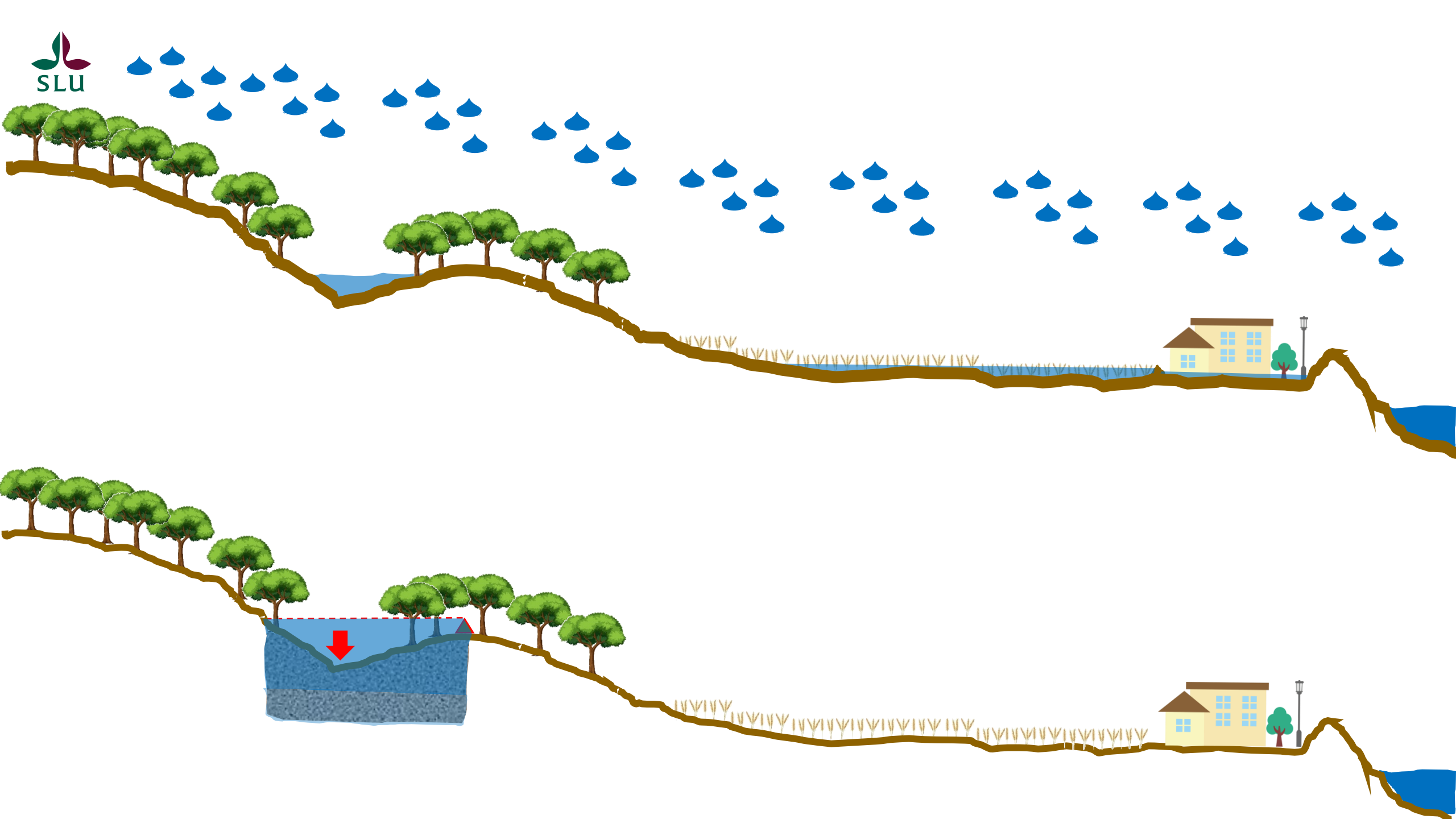
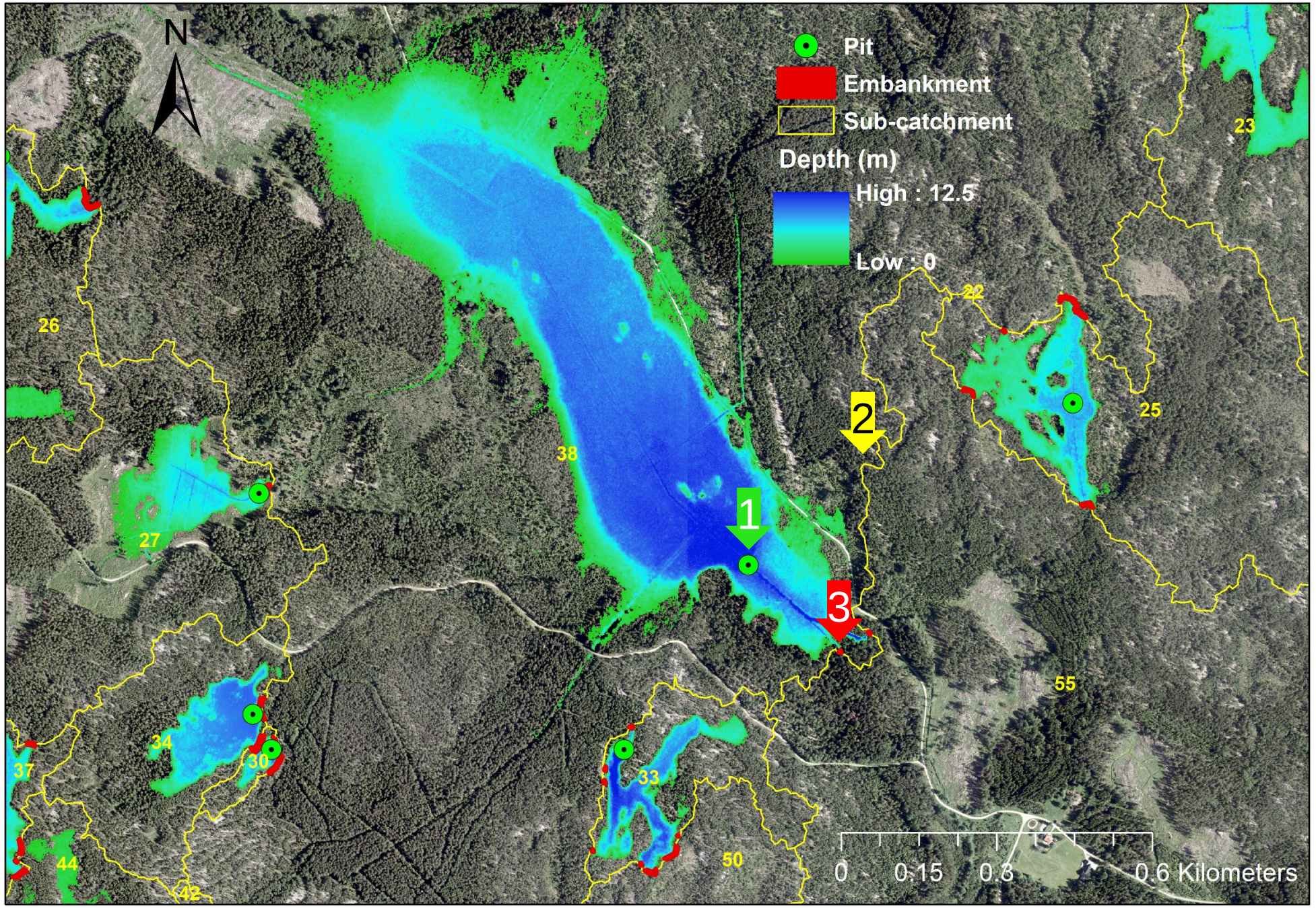


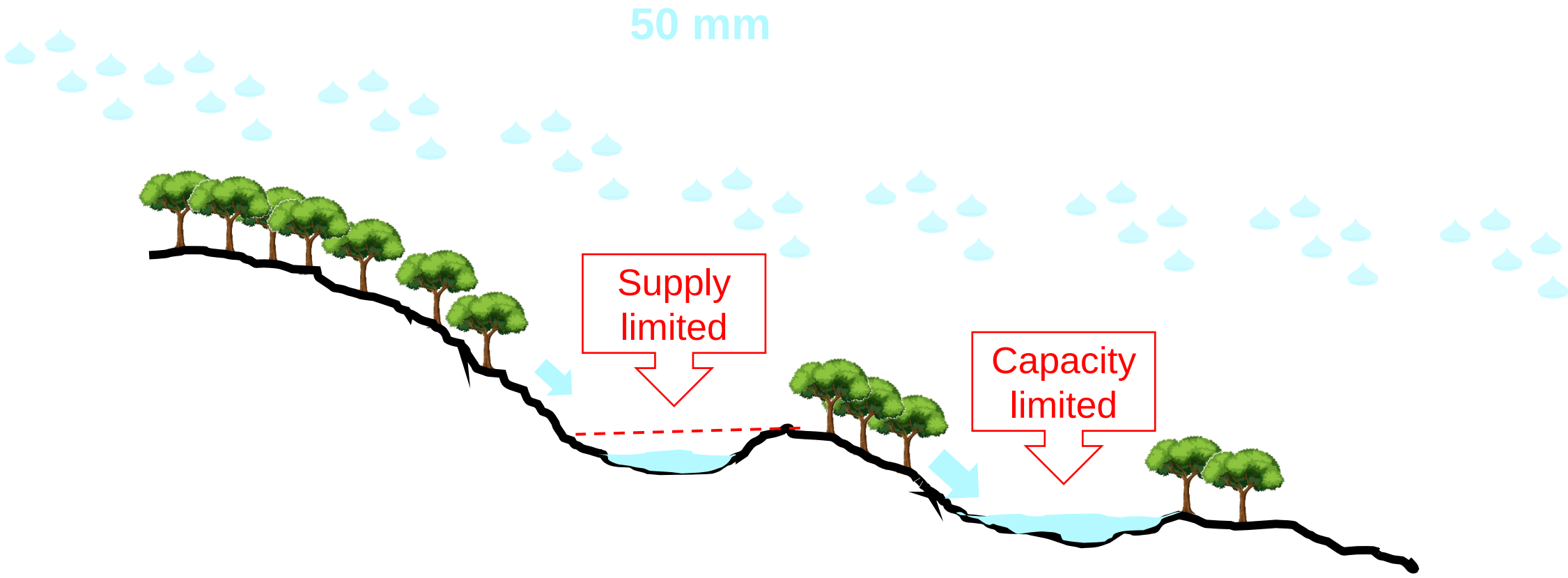
FIGURE 2. Effects of waterlogging on plant growth

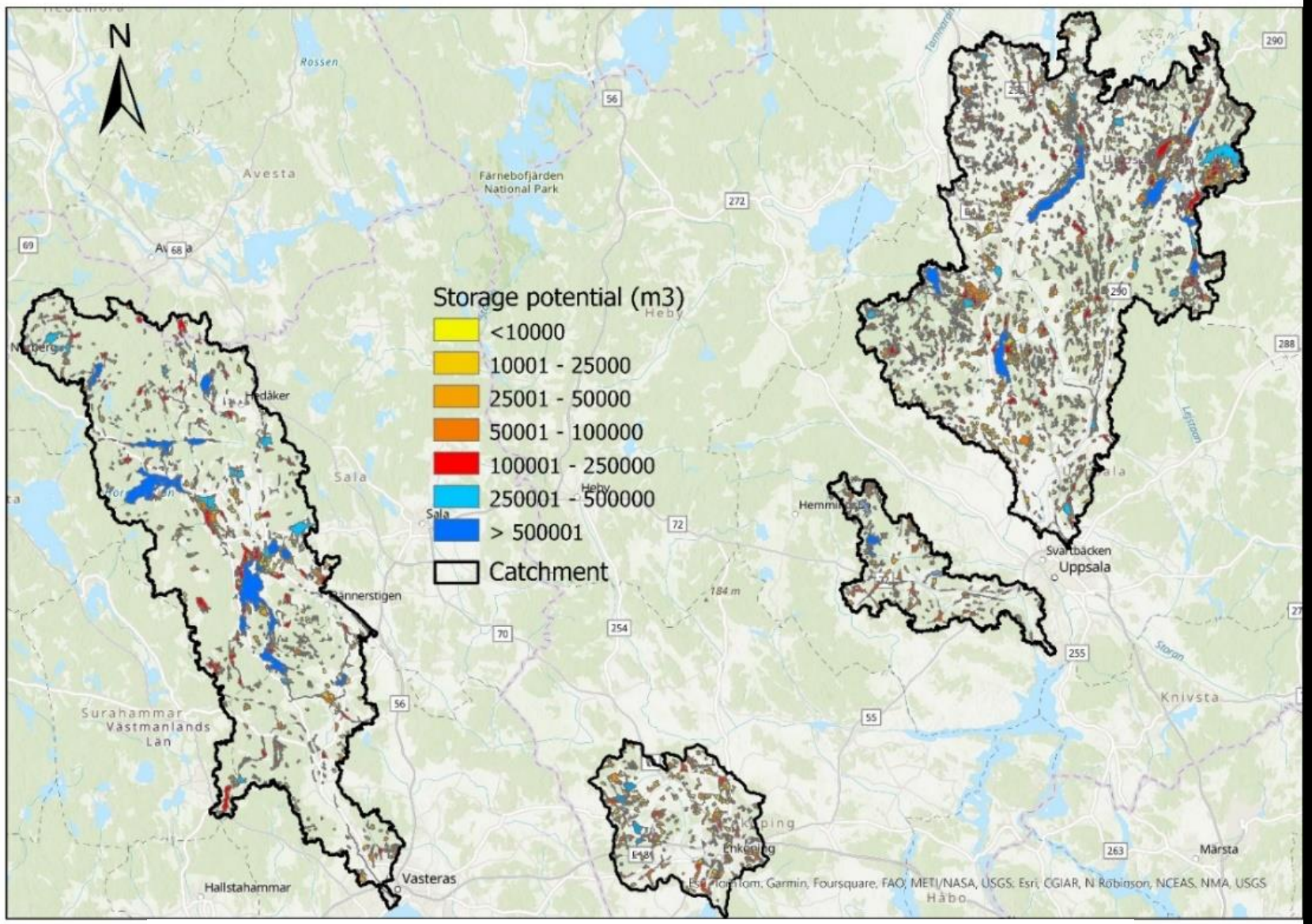
Manik SMN, Pengilley G, Dean G, Field B, Shabala S, Zhou M (2019) Soil and Crop Management Practices to Minimize the Impact of Waterlogging on Crop Productivity. Frontiers in Plant Science 10. doi:10.3389/fpls.2019.00140.


N_2
PO4P
SS, PP




N
Pit
Embankment
Sub-catchment
Depth (m)
High : 12.5
Low : 0
1
2
3
23
22
25
26
38
27
34
30
37
33
55
50
44
42
0
0.15
0.3
0.6 Kilometers


50 mm
Supply limited
Capacity limited



Catchment	Area km²	Wetland	Arable	Open land	Water %	Forest	Pasture	MHQ* m³sec⁻¹	HQ50*
Enköpingsån	164	1	42	16	0	38	3	5.97	10.7
Hågaån	119	7	21	12	1	58	2	5.28	10.3
Fyrisån	915	9	21	9	2	57	2	21.6	43.7
Svartån	761	9	19	7	4	59	2	26.1	42.6

*(Bergstrand et al. 2013)

Table 2. Some characteristics of potential ponds per studied catchment. Conditions for the pond selection (row 3) are that pond area covers at least 90 % of a combination of wetland and forest soil, and at the same time has a storage potential larger than 10 000 m^3.

Catchment	Enköpingsån	Hågaån	Fyrisån	Svartån
No. total	377	209	2313	902
Storage under soil surface (%)	3.4	8.1	11.7	8.4
No. selected	14	27	504	165
A (ha)	139.3	337.1	5297	1247.5
A (%)	0.85	2.82	5.79	1.64
Embankment length (m)	4 374	2 340	319 565	63 016
Potential storage (m^3)	435 544	1 230 771	19 910 052	6 089 933
No. to reach HQ50	na	4	20	38
A (ha)	na	163	601	546
A (%)	na	1.4	0.66	0.72
Embankment (m)	na	323	36 010	26 022

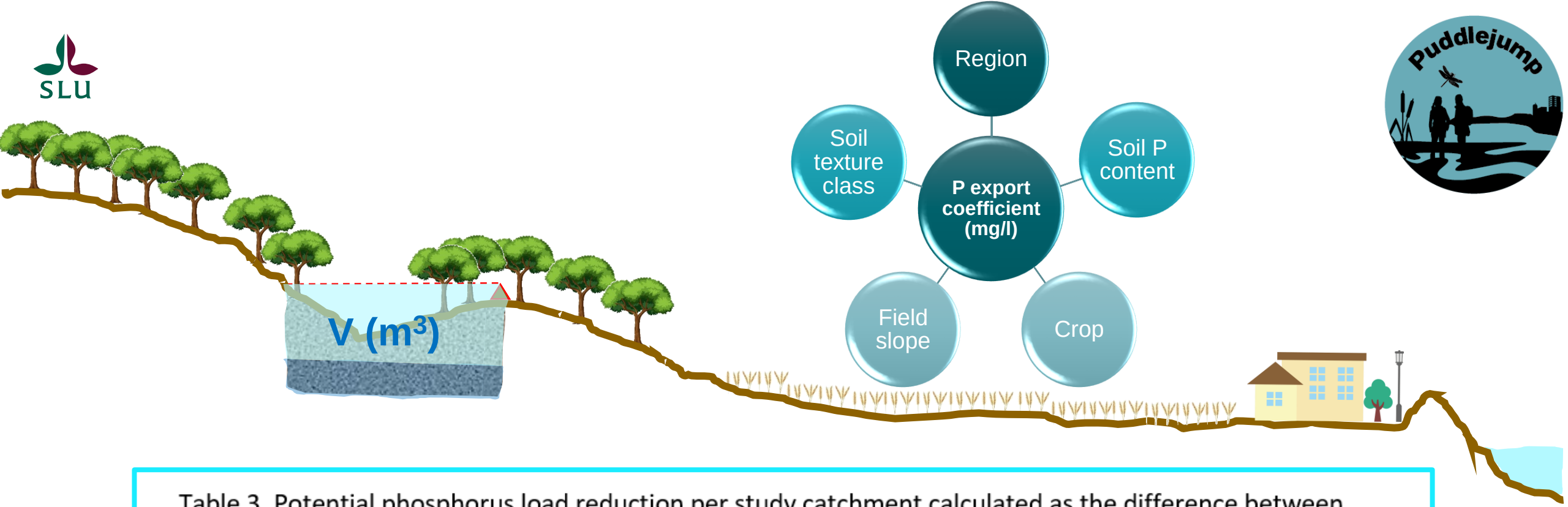


Table 3. Potential phosphorus load reduction per study catchment calculated as the difference between area-weighted export coefficient for arable land and export coefficient for forest.

Catchment	Enköpingsån	Hågaån	Fyrisån	Svartån
Potential water storage (m^3)	435 544	708 480	3 611 520	3 490 560
Area-weighted export coefficient (mg P l^{-1})	0.44	0.45	0.37	0.43
P load (kg)	192	319	1336	1501
P load difference (kg)	186	310	1289	1456
Targeted load from arable land (kg yr^{-1})*	2181	954	3086	2565
Reduction (%)	9	32	42	57

*Data from Water Information System in Sweden (Erlandsson Lampa et al. 2021)

Risk för
översvämning


Puddlejump

Istället för slutsatser

- Vad vill vi inte ha under vatten?
- Vad kan vi leva med att det står under vatten?
- Kan/ska vatten lagras om torka uppstår?
  - Hur påverkar det design och underhåll?
- Hur kan vi prioritera?
  - Insats?
  - Många små / en stor?
  - Anpassa uppdämningen till uppströms potentialen?
- Hur hanterar vi risker?
  - Vad om uppdämningen brister?
- Chans ~~Risk~~ för översvämning


5/2022
På gång:
Erosionskarta 2.0?
Image © 2024 Maxar Technologies
865 m
1985
Bilddatum: 17-5-2022 latitud 59.618004° longitud 17.047678° höjd 7 m visningshöjd 3.91 km
Google Earth


5/2022
Erosionskarta 2.0?
ojekt i 3D-visning
Image © 2024 Maxar Technologies
865 m
Google Earth
1985
Bilddatum: 17-5-2022 latitud 59.618004° longitud 17.047678° höjd 7 m visningshöjd 3.91 km