

Comparison of Soil Parameters in Various Land use Paradigms

By Abby Hinsley and Collin Gould



INTRO

We investigated the characteristics of soil on the New Hampshire side of the Connecticut River. We were trying to answer the following questions:

- What role does soil play in carbon draw down?
- What role does soil play in nutrient run off?
- Do we see variability in soil types in a specific area?

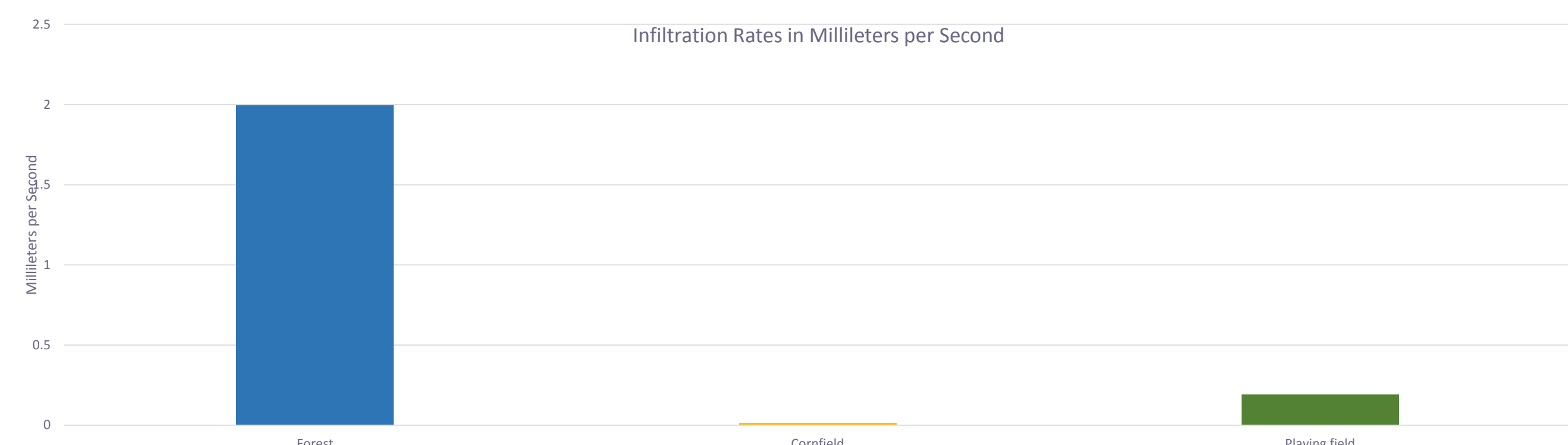
What is carbon draw down?

Carbon in the atmosphere being sequestered in the soil.

What is nutrient run off?

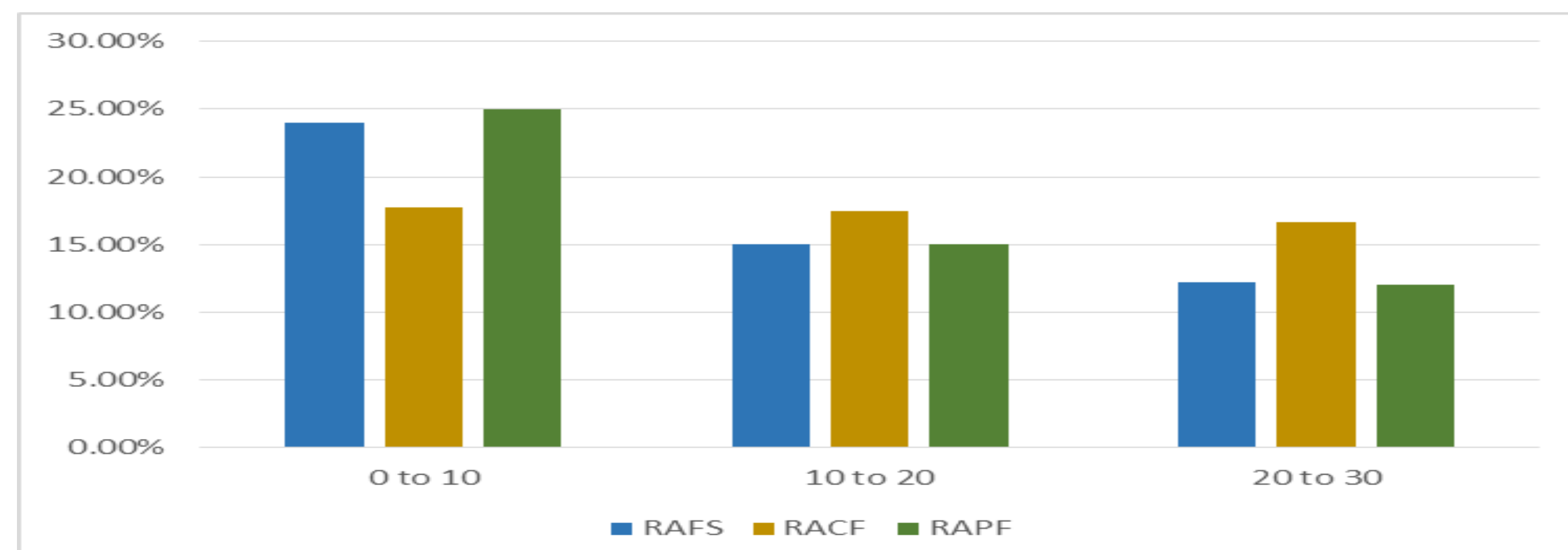
When the nutrients in the top layers of the soil cannot be absorbed and therefore the nutrients run off into lakes, rivers and streams causing eutrophication which can lead to changes in the ecosystem.

INFILTRATION RATES



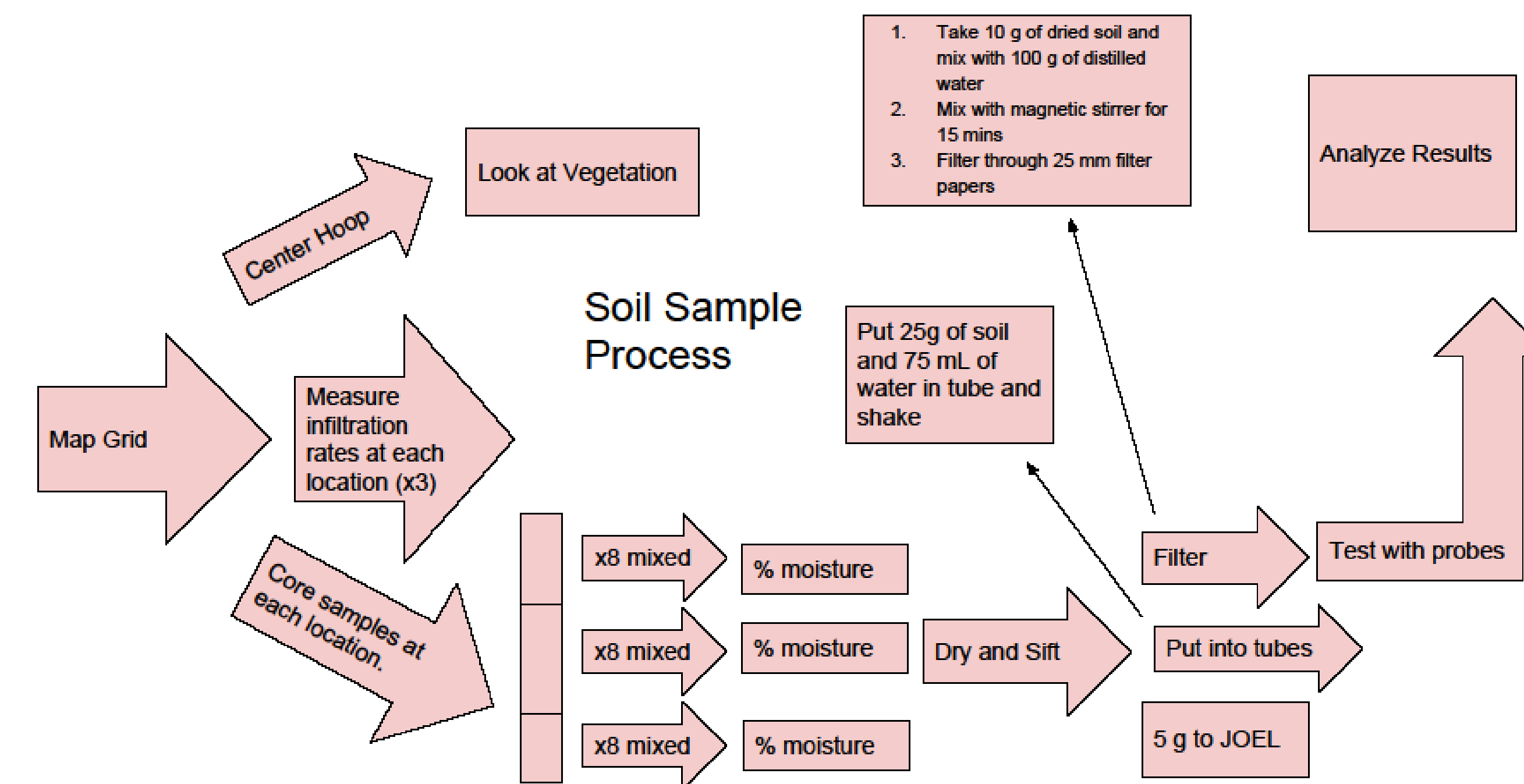
Rate of water absorption in mL per second in three different locations. Data shows averages of three different tests for each location. The forest has a substantially larger infiltration rate compared to the corn field and the playing field.

PERCENT MOISTURE



The percent soil moisture at three depths for each sample site. The percent moisture gets lower as you get deeper into the soil.

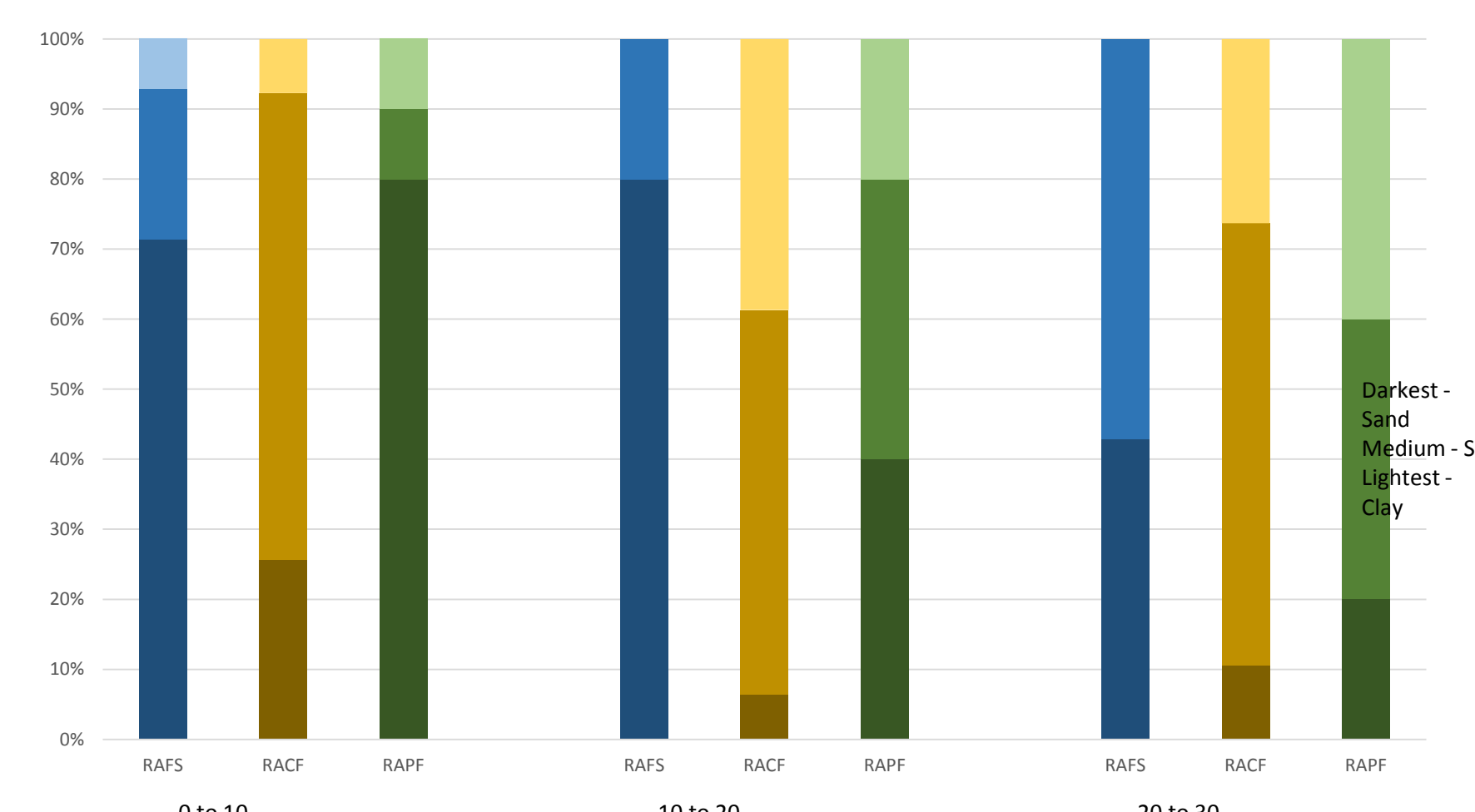
METHODS



- Percent Moisture Test
- Infiltration Rate Test
- Test for Nitrate, Ammonium and Carbon
- Soil Composition

- - RAFS (Forest Site)
- - RACF (Cornfield Site)
- - RAFP (Playing Field)

SOIL COMPOSITION



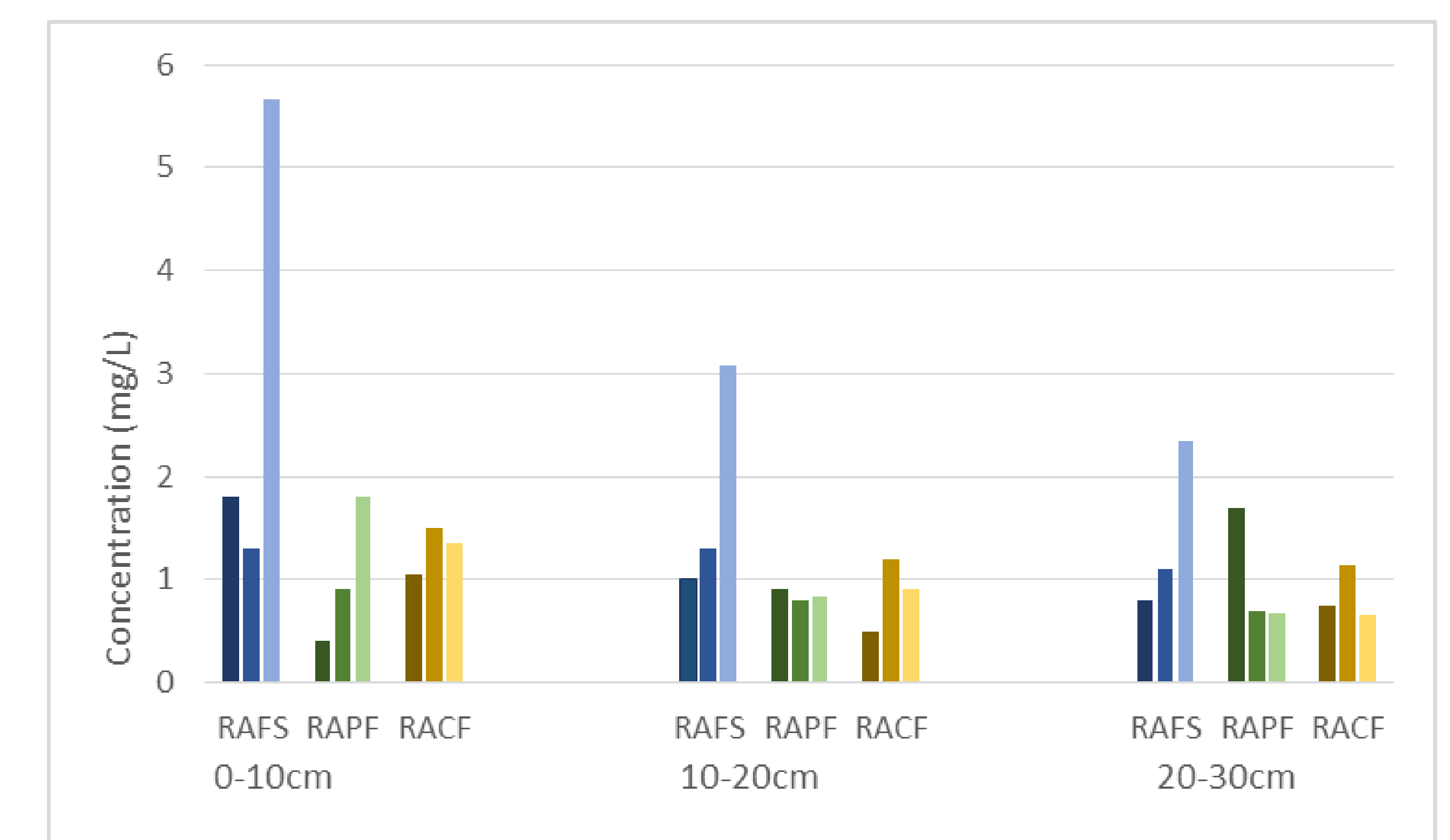
The percent of sand, silt and clay in each layer of soil for three locations. The cornfield is composed of more silt and clay than both the playing field and the forest.

CONCLUSIONS

- Because there is no direct correlation between infiltration rates and percent moisture we can conclude that the infiltration rate is connected to the composition of the soil.
- Overall there is much less sand in the cornfield than forest or playing field. Sand is the largest particle size this lack of large particles in the cornfield may explain why the infiltration rate is low.
- Low infiltration rates in the cornfield suggest that there will be higher nutrient run off.
- Due to this, we suggest that farmers be aware of the amounts of nutrients in their fields.
- Carbon storage is greater at the surface of the soil.
- Carbon levels are much higher in the forest than in any other location.

NUTRIENT CONCENTRATION

Darkest is Nitrate, middle is Ammonium and lightest is Carbon



The concentration of Nitrate, Ammonium and Carbon in each location at three depths. High levels of nutrients are observed in the near surface in forest and cornfield. Whereas the high nutrient levels of the playing field are in the deepest layers of soil.