

Soil and Water Management Sample Questions for the CCA Exam



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The background of the slide is a photograph of dry, brown soil with several deep, irregular cracks running across it. Small, green, seedling-like plants are scattered across the soil surface.

Phosphorus may be lost from soil by

a. erosion

b. leaching

c. runoff

d. all of the above

The predominant form of N that leaches from soil is

a. organic

b. nitrate

c. ammonium

d. nitrite



In a corn field, movement of nitrate into groundwater

- a. can be managed by appropriate fertilizer practices**
- b. is more likely to occur when the crop is rapidly growing**
- c. is more likely to occur after harvest**
- d. is largely controlled by microbial activity**



The use of a rye cover crop in corn may

a. increase the K requirement for the next corn crop

b. reduce the N requirement for the next corn crop

c. reduce the K requirement for the next corn crop

d. increase the rate of leaching

Installing a filter strip at the bottom of the slope will

- a. reduce soil erosion on the cropfield above
- b. reduce the amount of sediment entering the stream
- c. trap nutrients and other contaminants
- d. “b” and “c”



Soil surface crusting is the result of

a. intensive conventional tillage

b. poor soil structure with low organic material content

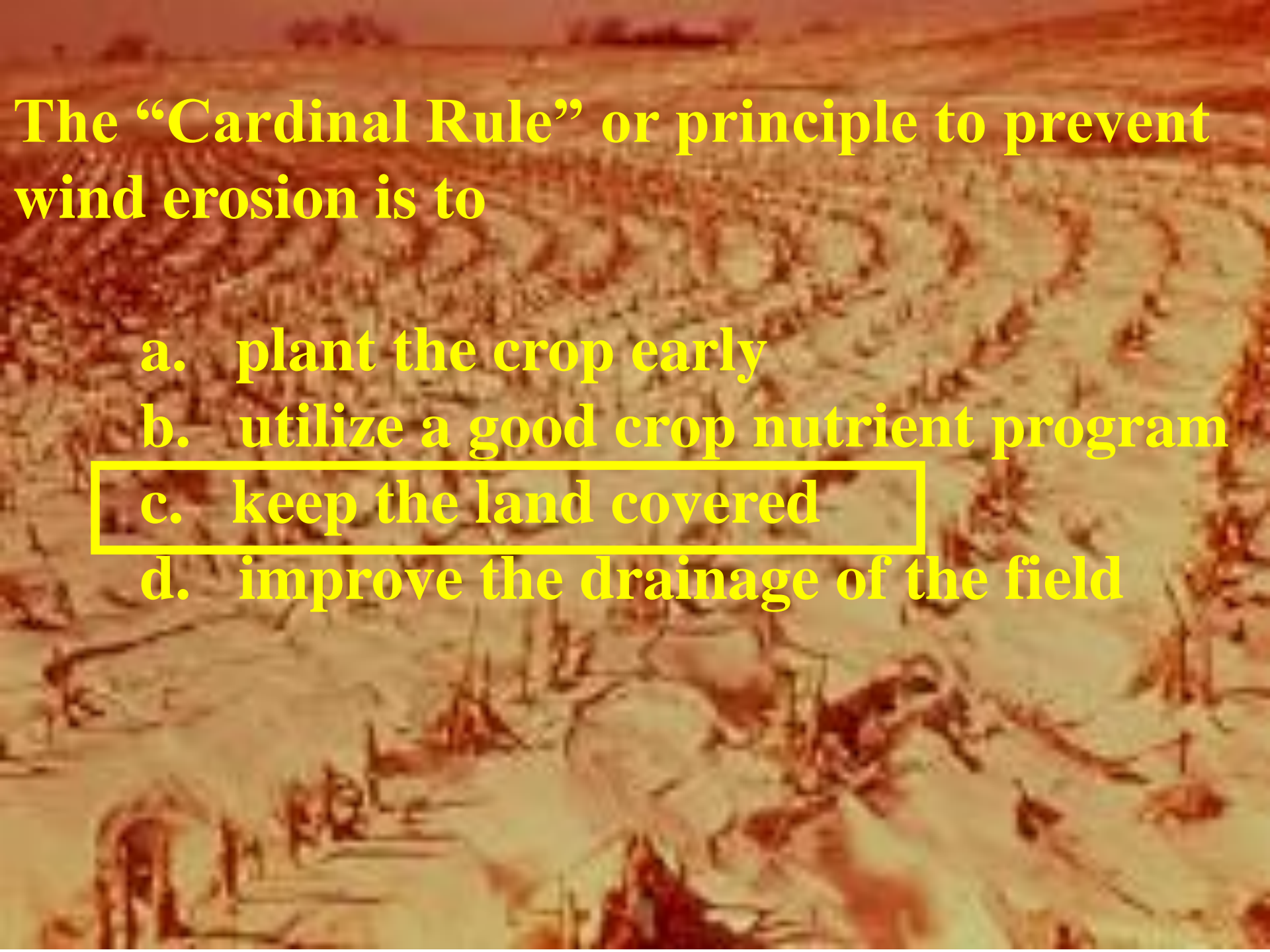
c. low surface residue cover

d. all of the above



The Revised Universal Soil Loss Equation (RUSLE) is used to estimate

- a. sheet erosion**
- b. rill erosion**
- c. ephemeral erosion**
- d. “a” and “b”**

An aerial photograph of a severely eroded, arid landscape. The ground is a mix of light tan and reddish-brown, with deep, winding gullies and numerous small, dark, irregular pits scattered across the surface. The overall texture is rough and fragmented, indicating significant soil loss due to wind erosion. Overlaid on this image is yellow text.

The “Cardinal Rule” or principle to prevent wind erosion is to

- a. plant the crop early**
- b. utilize a good crop nutrient program**
- c. keep the land covered**
- d. improve the drainage of the field**

When and how should the amount of residue be checked in the field to determine compliance with a residue management plan?

- a. after harvest of the crop as one drives over the field
- b. after harvest using a line transect
- c. after primary tillage in the spring while disking
- d. after planting using a line transect



Chisel plows incorporate surface residue while tilling the soil. To incorporate the minimum amount of residue

- a. sweeps could be used**
- b. ground speed could be increased**
- c. twisted shanks could be used**
- d. all of the above**





Which of the following would not affect the surface runoff potential of a herbicide?

a. water solubility of the herbicide

b. spray drift

c. half-life of the herbicide in soil

d. soil texture

A photograph of a rural landscape. In the foreground, there are green trees and a white house with a grey roof. A river flows through the middle ground, surrounded by green fields and trees. In the background, there are rolling hills covered in dense green forest under a cloudy sky.

**Under saturated flow conditions,
water will move faster through**

- a. clay soil**
- b. shale rock**
- c. silt loam soil**
- d. gravel**



Runoff and leaching will most likely occur in the Northeast USA during

a. March

b. July

c. September

d. January



The amount of soil water that leaches below the root zone will be highest in

a. silty clay loam soils

b. clay soils

c. compacted soils

d. coarse sand soils



The water table will be closest to the surface

- a. in a moderately well drained soil
- b. in a poorly drained soil
- c. in a sandy loam soil
- d. in the summer

A watershed, catchment, or drainage basin is

- a. a place where a water supply is stored**
- b. a land area where water drains to a common outlet**
- c. a land area that supplies water to New York City**
- d. the highest area in the landscape**



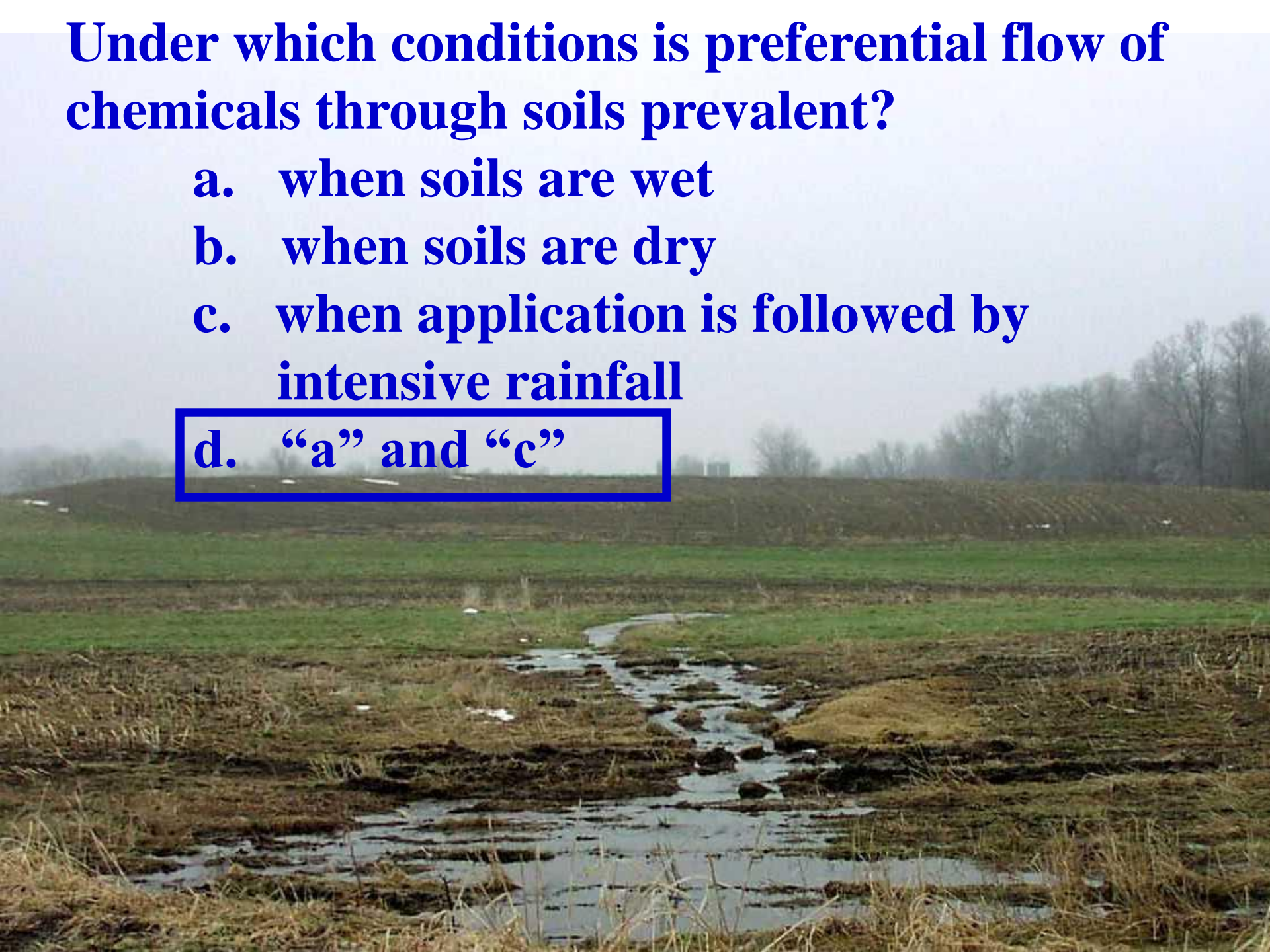


Which field operations cause more compaction damage?

- a. combine harvesting**
- b. spring tillage and planting**
- c. manure spreading**
- d. it depends, it is a function of vehicle weight characteristics and field conditions at the time of the field work**

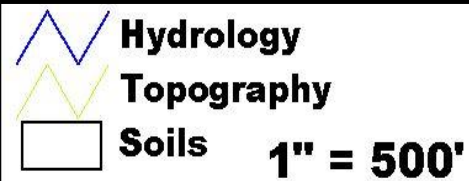
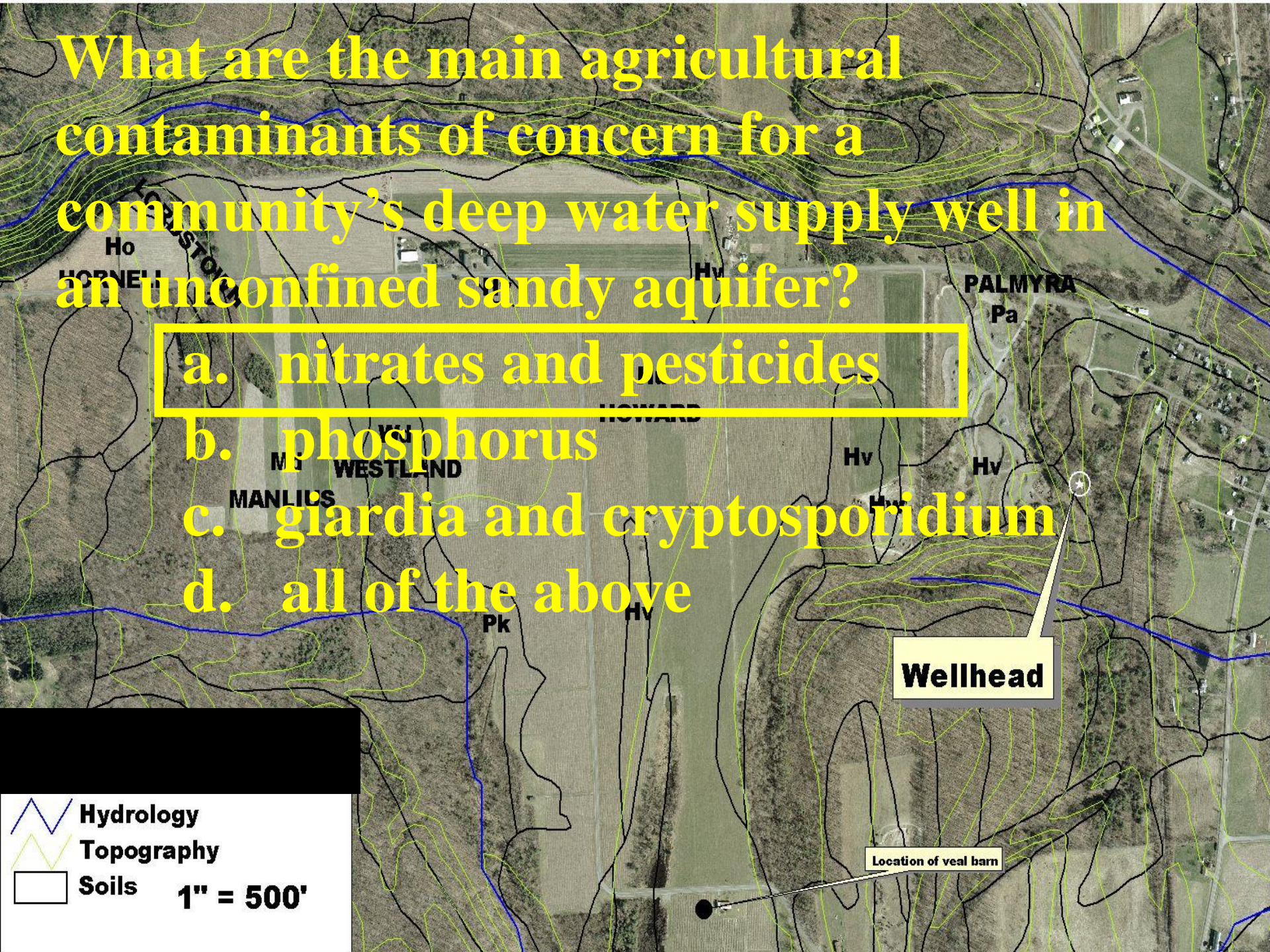
Under which conditions is preferential flow of chemicals through soils prevalent?

- a. when soils are wet
- b. when soils are dry
- c. when application is followed by intensive rainfall
- d. “a” and “c”



What are the main agricultural contaminants of concern for a community's deep water supply well in an unconfined sandy aquifer?

- a. nitrates and pesticides
- b. phosphorus
- c. giardia and cryptosporidium
- d. all of the above



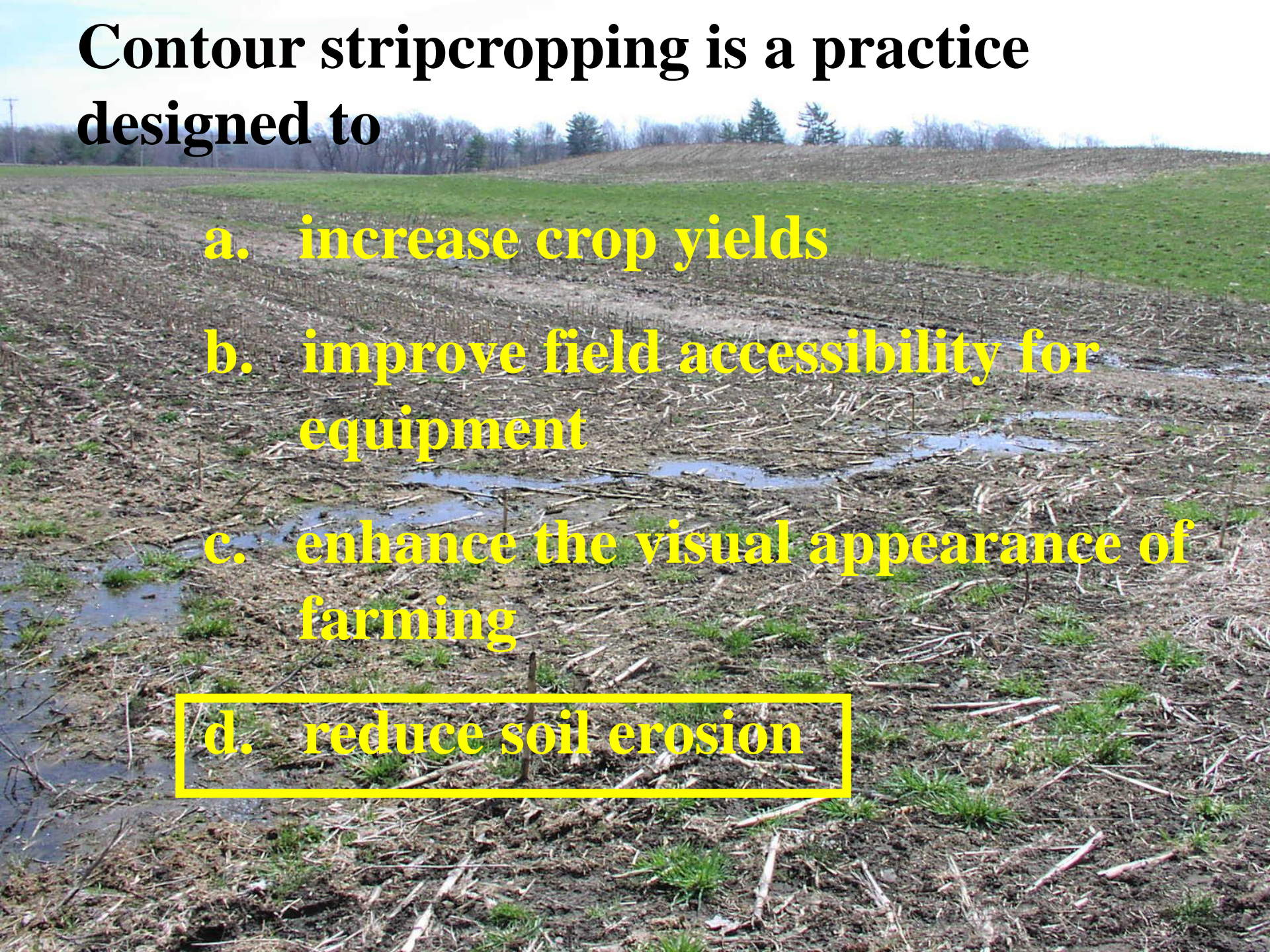


The benefit of using a cover crop is to

- a. increase soil organic matter levels**
- b. reduce the fertilizer requirements for the succeeding crop**
- c. reduce soil erosion**
- d. all of the above**

Contour stripcropping is a practice designed to

- a. increase crop yields
- b. improve field accessibility for equipment
- c. enhance the visual appearance of farming
- d. reduce soil erosion





Strip-tillage or Zone-tillage

- a. reduces soil erosion compared to moldboard plowing**
- b. increases residue cover compared to moldboard plowing**
- c. saves time and fuel compared to moldboard plowing**
- d. all of the above**



In the Northeast USA, biomass accumulation by cover crops is limited primarily by

a. soil pH

b. pest problems

c. the growing season in corn based rotations

d. soil drainage

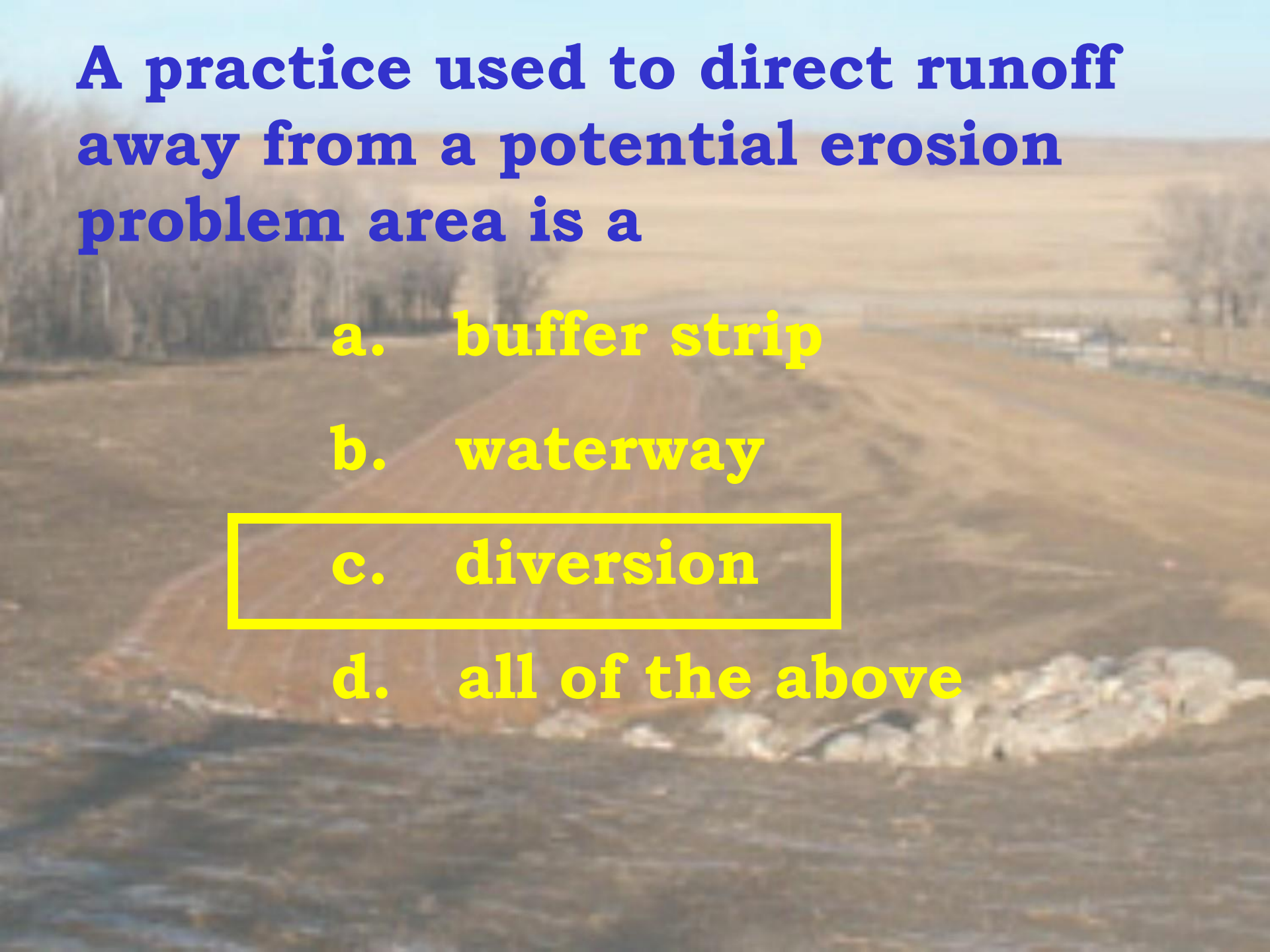
A practice used to direct runoff away from a potential erosion problem area is a

a. buffer strip

b. waterway

c. diversion

d. all of the above



The percentages of sand, silt, and clay in soil determines a soil's

- a. physical characteristics**
- b. class**
- c. texture**
- d. composition**

3 μm



**An acre furrow slice weighs
about**

a. 1,000,000 lbs

b. 500,000 lbs

c. 1,500,000 lbs

d. 2,000,000 lbs



Soil water is unavailable to a growing crop when

a. a soil reaches its field capacity

b. soil moisture levels drop below the wilting point

c. the soil relative humidity drops below 45%

d. the soil profile is totally saturated

A photograph of a soil profile. A measuring tape is placed vertically against the soil face, showing a scale from 0 to 12 inches. The soil is light brown and appears to be a loam. A blue dye has been applied to the soil, creating a vertical band of blue color that extends from the surface down to about 10 inches. The dye is more concentrated in the upper part of the band, around the 4 to 6 inch mark. The top of the soil profile is covered with green grass. At the bottom of the profile, there is a layer of loose, crumbly soil.

At least 80% of crop roots are found in which horizon?

a. A

b. E

c. B

d. C



Ephemeral gully erosion can be found

- a. where waterways were not properly constructed and seeded
- b. in fields with flat sandy loam soils
- c. in concentrated flow areas
- d. “a” and “c”

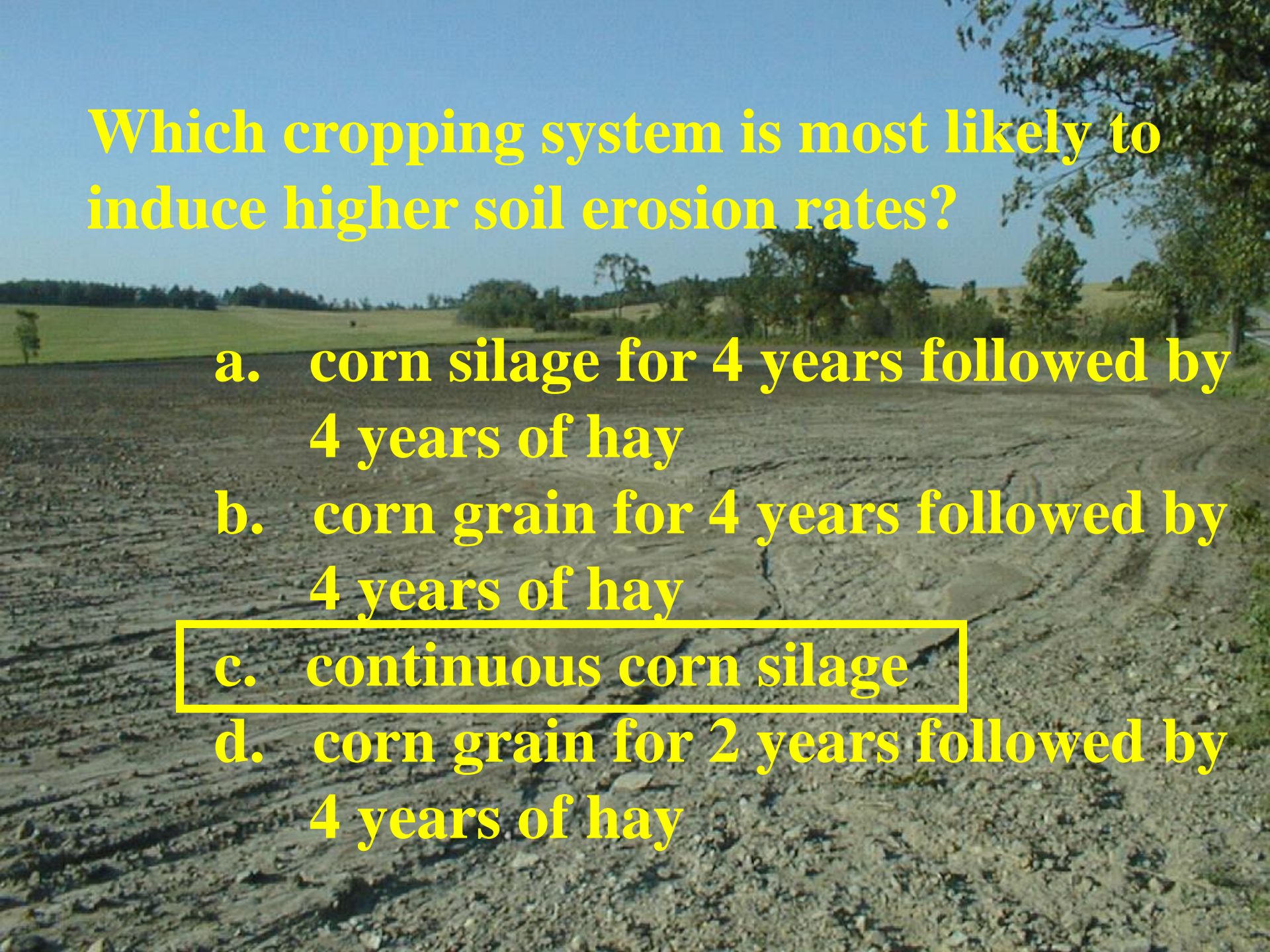
Tolerable soil loss means

- a. annual soil loss per acre the farmer can tolerate
- b. annual soil loss per acre that does not cause water quality impairments
- c. annual soil loss per acre that will not reduce the productivity of the soil
- d. all of the above



Which of the following soil types and conditions would have the highest erosion rate?

- a. gravelly fine sandy loam on 3 to 8 percent slopes
- b. silt loam soil on 0 to 3 percent slopes
- c. silty clay loam soil on 3 to 8 percent slopes
- d. muck soil, perfectly flat



Which cropping system is most likely to induce higher soil erosion rates?

- a. corn silage for 4 years followed by 4 years of hay**
- b. corn grain for 4 years followed by 4 years of hay**
- c. continuous corn silage**
- d. corn grain for 2 years followed by 4 years of hay**