

5 bonus points

Question 3 - Calculate a farm P balance

A confinement dairy farm has 500 cows each producing 20,000 lb milk. The farm has 90 acres in forage (alfalfa & corn silage) producing 12,000 lbs/acre/yr. No P fertilizer is used.

- a) Calculate how much purchased forage is required, and how much P is imported onto the farm (assume each cow consumes 10,000 lbs forage/year and forage = 0.3% P)

- b) Calculate how much P is exported as milk (assume milk = 0.1%P)

- c) Effluent from the cows is collected and spread over the farm. What is the P application rate (assume all the net imported P ends up as effluent P, with no leaching losses)?

- d) What would the soil P level be after 20 years (assume 9 lb/acre of applied P will increase soil P by 1 lb/acre, initial soil P = 22 lb/ac, no leaching losses)