

R&D GREET Biofuels Quiz

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Answer these questions using R&D GREET 1, R&D GREET 2, a calculator, and your notes from the session. Bonus questions are extra credit.



GREAT PLAINS
INSTITUTE

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U.S. Department of
ENERGY

* Required

1. Name *

2. Email *

3. What is the default fraction (%) of blended ethanol in R&D GREET for an ethanol flex fuel vehicle (FFV)? *

85%

4. Define a counterfactual scenario. **Bonus question:** how are counterfactual scenarios used in R&D GREET?

Answers will vary* see slide 35 of the Intro slide deck.
Bonus question: answers will vary*

5. What are two methods nitrous oxide emissions related to synthetic or organic fertilizer applications are modeled in R&D GREET?

(1) Direct N₂O emissions in fields and (2) indirect N₂O emissions through leaching/runoff

6. What is the most prominent form of nitrogen modeled in R&D GREET? *

[see slide 21 of the Intro slide deck](#)

- Urea
- Ammonium Nitrate
- Ammonia Sulfate
- Urea-Ammonium Nitrate Solution
- Ammonia
- Diammonium Phosphate
- Monoammonium Phosphate

7. What moisture content of **red** macroalgae is assumed in R&D GREET? *

86%

8. What is the default combined heat and power (CHP) technology used for all waste-based renewable natural gas processing in R&D GREET? *

- Engine
- Micro Turbine
- Molten carbonate fuel-cell (MCFC)
- Phosphoric acid fuel-cell (PAFC)

9. How many grams of nitrous oxide are produced when nitrogen fertilizer is used as a fertilizer in corn farming above and below ground biomass per mmBtu of fuel consumed by default in R&D GREET? *

11.364 g N₂O/mmBtu

10. How many grams of greenhouse gases (GHGs) are emitted from the feedstock stage for soy oil-based glycerin production per mmBtu of glycerin throughput produced?

32 g CO₂e/mmBtu of glycerin

11. Model compression-ignition direct injection internal combustion engine light-duty car fueled by 100% biodiesel produced from soybeans in R&D GREET. What are the well-to-wheels emissions in both g CO₂e/MJ and g CO₂e/mile? *

117 g CO₂e/mile and 31 g CO₂e/MJ

12. Model compression-ignition direct injection internal combustion engine light-duty car fueled by 100% biodiesel produced from **used cooking oil (UCO)** in R&D GREET. What are the well-to-wheels GHG emissions in both g CO₂e/MJ and g CO₂e/mile? *

71 g CO₂e/mile and 19 g CO₂e/MJ

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