**MEC3040 Module 7 HW: Biodiesel feedstock materials & production**

**7.1: Biodiesel feedstock: oil & seed crops**

1. Choosing biodiesel crops.

(a) What three factors do you think are most critical when choosing and oil seed crop?

(b) How can growth of oil crops negatively impact the environment? Give examples.

(c) Could local use of biodiesel oil feedstocks limit environmental damage caused by growing these crops? How and why?

2. What percent of annual liquid petroleum use in the US is global production of biodiesel?

3. How much of a dent in US petroleum fuel use could we make by using biodiesel?

**7.2: Cultivation, harvesting & oil extraction in New England**

4. How much of the cost of producing biodiesel is the cost of the oil feedstock?

5. What’s the advantage of making biodiesel using triacylglycerols with long fatty acid chains?

6. How is oil removed from oil-seed?

**7.X: Making biodiesel: transesterification**

7. What are the chemical similarities and differences between petro-diesel and biodiesel?

8. Describe the reactants and products, and the stoichiometry, of the transesterification reaction that is used to make biodiesel.

9. What is the purpose of the evaporator in biodiesel processing?

10. Why is the transesterification reaction heated? Would the reaction occur without heating?

11. Once separated from glycerol biodiesel is washed with water or acidic water. Why? What is the wash step removing?