Problem Set 9 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PAI 723

1) We are comparing two proposals for use of decentralized climate funds in Senegal. These are funds available to help local communities fund public goods that will help them adapt to anticipated climate change. One community has proposed the following two proposals and we have to select one. The time horizon and our planning horizon is four years: t=0,1,2,3.

 **Community seed storage**  The seed storage facility will cost 80,000 dollars to construct in year zero and will cost 25,000 dollars to operate in years 1, 2, and 3. Currently seed damaged in storage at farmers’ houses requires farmers to buy seeds in the planting season that in aggregate cost 60,000 dollars for the community per year. The benefit is that if the facility is built these seed purchases will not be necessary as seed damage in storage will be eliminated in years 1,2, and 3.

**Dry season market garden.** Senegal has an 8 month long season when it does not rain. To grow things you need a well and a fence to keep out grazing animals. We could drill a well and put up a fence around a field that is not currently used for cultivation for 50,000 dollars in year zero. The anticipated costs of upkeep of the garden are 10,000 dollars per year in years 1,2, and 3. The new revenues from sales of things produced in the garden expected in years 1,2, and 3 are 30,000 per year.

a) Which is the better option if the discount rate is 10%?

b) If my estimate of the garden revenue is 5,000 higher (35,000 per year in years 1,2,and 3) is the choice made in part (a) still the best option?



