IRRIGATION PAYS IN PROTECTING VEGETABLE CROP REVENUES IN THE NORTHEAST U.S.

An Economic Case Study | Intervale Community Farm | September 2017

Climate records show that the Northeast is experiencing more rainfall

However, much of the additional precipitation is occurring as heavy events, leaving intervening periods of hot and dry weather. With this extreme and variable wet weather taking its toll on farms, a key question is:

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Andy Jones, ICF farm manager, thinks it does. Andy manages the Intervale Community Farm (ICF), which is one of Vermont's oldest and largest community supported agriculture (CSA) farms. Andy has built a reputation as a leading organic vegetable grower in the Northeast. He explains, "On a 100-year floodplain, ICF soils have long been recognized as productive farmland, albeit subject to flooding. The irony is that much of the farm is composed of sandy soils, which drain well but need to be irrigated during dry periods." The impacts of climate change in the Northeast have meant an increase in extreme weather events including heavy downpours and extended dry, hot periods throughout the growing season.

The economic costs and benefits of irrigation at ICF were calculated using Andy's records from 2006 to 2016. To estimate irrigation needs in the years when data was not available, Cornell University's Climate Smart Farming (CSF) Water Deficit Calculator was used to model when plant stress was likely to occur.

FARM	INTERVALE COMMUNITY FARM
TYPE	CERTIFIED ORGANIC VEGETABLE FARM
LOCATION	WINOOSKI FLOODPLAIN, BURLINGTON, VT
SIZE	25 ACRES UNDER CULTIVATION IN 2017
IN BUSINESS SINCE	1990
FARM MANAGER	ANDY JONES

Intervale Community Farm Irrigation Partial Budget in 2016 dollars

(average $/acre/year)

This analysis (on back) shows that irrigation is profitable despite on-going infrastructure costs and variable summer weather. Overall, the cumulative net benefits per irrigated acre over 11 years was $33,121, and total farm benefits over all irrigated acres over 11 years were just over $500,000.

The benefits of avoided crop loss were greater than the costs of irrigation in all but one year. When considering risk management, this means that if ICF can protect at least 3.5% of its crop revenues with irrigation, it will cover its costs of irrigation. Without irrigation, even in an average precipitation year, ICF would su□er diminished yields and quality without supplemental water. A range of irrigation scenarios and net benefits was also assessed in order to identify thresholds of when irrigation is needed the most and the least.

If all the years were "dry", total farm benefits due to irrigation would have exceeded $800,000 and even if all years were considered "wet", total farm benefits still would have been almost $70,000. Therefore, the benefits of having irrigation exceed its costs at ICF even if every year is on average "wet" given that rainfall does not always coincide with crop production needs. The main reason is that wet years still have dry periods during critical crop growth stages when irrigation provides significant benefits.

ICF’s decision to invest in drip and spray irrigation over the past 16 years has been sound

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