

Economic assessment to the cranberry industry in the southern half of Grayland, WA resulting from coastal erosion and subsequent tidal inundation.

Kim Patten, Extension Professor
Washington State University Long Beach Research and Extension Unit.
pattenk@wsu.edu

Background: The damage to the local cranberry industry that would result from coastal erosion at Washaway Beach is difficult to assess without knowing the extent and duration of saltwater flooding that would occur with tidal inundation. Research in this area is limited to short term damage to cranberry beds from flood waters in New Jersey following hurricane Sandy, and winter road salt damage in Massachusetts. None of these studies reflect the sodium levels that would occur from sustained tidal inundation with seawater. In all likelihood the sodium levels would exceed toxic thresholds and kill any cranberry bed that was inundated. The data and analysis used below are for such a major erosion-inundation event.

Data assessment:

- ~ Total acres farmed in Grayland – 800 ac
- ~ Total acres farmed that could be easily tidally inundated with coastal erosion – 350 ac
- ~ % of acres dry harvested for fresh fruit - 75%
- ~ % of acres wet harvested for processed - 25%
- Crop damage that would occur with tidally inundation
 - Sustained submersion to salt water > 3-5 days – likely 100% plant death
 - Temporary submersion to salt water < 2-6 hours – likely 100 % crop loss for current season, and some longer term damage that would take 1-2 years for complete recovery.
- Average yield and return for fresh fruit 15,000 lbs/ac @ \$0.75/ lb^a
- Average yield and return for processed fruit – 10,000 lbs/ac @ \$0.35/lbs^b
- ~ Annual crop loss to fresh fruit beds with tidal inundation - \$2,953,000^c
- ~ Annual crop loss to processed fruit beds with tidal inundation - \$262,000^d
- Total annual crop loss ~ \$3.2 million/yr
- Annual total loss to local economy (using multiplier effect of 1.6^e) ~ \$5 million/yr
- Intangible secondary long-term impacts due to sustained tidal inundation ~ \$1million+
 - Property value and tax base for the county (ground would not be farmable in the foreseeable future as it would cost too much to remediate and replant cranberries – i.e. permanent loss)^f
 - Loss of critical mass of the industry making it economically infeasible for Ocean Spray to continue in the region.^g

Conclusion: The permanent loss of the cranberry beds in the southern half of Grayland resulting from a severe erosion event and salt water intrusion would likely result in a direct loss to the local economy of \$3 to 5 million/yr. Other intangible economic losses would also be associated with this damage. These are more difficult to estimate, but would be several \$ millions.

^a Fresh fruit beds are dry picked and are the better beds in Grayland. Growers can only send high quality fruit for fresh. They tend to manage those better very well.

^b Processed fruit tend to be off of beds that don't meet standard (lots of weeds for example).

^c $(350 \times 350 \times 0.25 \times 10,000 \times 0.35)$

^d $(0.75 \times 15,000 \times 0.75)$

^e Multiplier take in account the indirect effects on the local economy, like local purchases. The choice of a multiplier can vary depending on which standards are used. 1.6 is fairly conservative.

^f Cranberry ground has no other use (non-buildable and not suitable for any other crops). It reverts to willow-tussock-shrub wetland with 2 to 6 years. This is taxed at a much lower level than a producing cranberry farm and has almost no resale value.

^g Washington cranberry farms are small and inefficient compared to other growing areas, where one large grower can produce more than all of Washington growers combined. This makes the Grayland and Long Beach two most costly regions for Ocean Spray operate a Cooperative. If the growing area in Grayland is reduced by 1/3 or more, there is concern that the critical mass of acres need to sustain the Ocean Spray Cooperative in Washington would be compromised.

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