## Mike Ibenez Crop Farmer

## A.

## Option

Expected Value of Profit

Harvest Now

40,000

Wait to Harvest / No Wax Treatment

66,000

Wait to Harvest / Use Wax Treatment at $0 cost

106,200

The above table represents the calculated outcomes of the profit earned from each possible outcome at the end of the tree. If Mr. Ibenez will harvest the crop now he will earn a profit of $40,000, but he will be risking more profit he could earn if he goes for treating and harvest later as there is only a 50% chance for a storm to occur or not. In this case, he is safe from the effects of storms and there is no chance of dusting and crop reduction, as no treatment has been done, besides no additional costs for treatment would be added.

### B.

As Mr. Ibenez is willing to play with odds by using essential value criteria the profit margin in this approach is better compared to the previous one but there is no guarantee that there would be no storm as there is only a 50% chance for a storm to occur or not. So if a storm doesn’t occur profit margin is better compared to stormy conditions. But if a storm occurs the profit margin will reduce by $6,000 as profit yield is only $60,000 in no storm condition. With no treatment, lettuce crop is prone to destruction by strong winds and dust which will make them inedible but with treatment, there is the possibility that crop yield remain 100%, and crop will remain protected.

## C.

The total profit outcome earned from this approach is $106,200. If the storm doesn’t occur so after treatment there is a 100% chance of yield that dust or wind isn’t going to affect the crops and there is a 70% probability for this condition to occur. Profit at this node will be $86,000. If a storm occurs and dust doesn’t affect the crop so there is a chance of an 80% yield, 20% of the crop will be reduced by wind or dust, the likelihood of this condition to occur is just 30% and profit earned in this case is $28,800. So collective profit earned would be $112,800. If no storm occurs then the profit earned would be $56,400 if a storm occurs then the margin would be $49,800 so collective profit is going to be $106,200. Because with 100% yield when treatment completely works the margin is going to be $120,000 but likely hood of this to occur is only 40%, on the other hand when treatment partially works there is only a 60% chance for that condition to occur, but there are 3 more scenarios to this situation, firstly with 90% yield there is only 30% chance for this to occur but revenue will be $35,640, while 75% yield will earn $29,700. With a 50% yield, the profit would be $19,800 when all of these conditions occur with a 33% chance only.

With treatment there are only 2 events that can occur which are storm or no storm, if it is stormy weather so treatment has less chance which means the profit margin is only $42,000 while with the storm is $49,800 with profit so it’s likely in no storm condition Mr. Ibenez cannot afford treatment.

## Conclusion

The most suitable option for Mr. Ibenez would be treated as the tree diagram indicates, after excluding losses the profit margin is greatest compared to any other branch and in that case, no storm conditions are preferable as it has better yield chances and margin is comparatively high i.e. $54,600 compared to $49,800 in stormy conditions. While negotiating with the treatment company he needs to keep in mind that the cost needs to be as low as possible, he should ask for sample testing with certification for the chemicals they used. For a long-period contracts can be signed which will help him get better rates to keep the cost low and profit margin greater.