National cranberry cooperative essay sample

Problems with NCC

• Overtime costs

• Truck waiting

• Wet harvesting becoming more common than dry harvesting

• Even more overtime and truck waiting problems in the future

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Process flow chart

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Bottleneck and overtime hours

• On peak days can expect 18, 879 bbls

• Wet berries → 0. 7*18, 879 = 13, 215 bbls/day

• Wet berry process time → total bbls/dryer capacity → 13, 215 bbls/600 bbls/hr = 22 hours

• Dry berries process time → 5, 664 bbls/600 bbls/hr = 9. 44 hours • Buying an extra dryer for $60, 000 increases dryer capacity from 600 to 800 bbls/hr

• New wet berries process time → 13, 215/800 = 16. 5 hours

• New dry berries process time → 5, 664/400 = 14. 2 hours

• Reduces bottleneck by 22-16. 5 = 5. 5 hours

• Saves 5. 5 hours of overtime on peak days

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What if we added another dryer?

• Dryer processing capacity increases to 1000 bbls/day

• Wet berries process time → 13, 215/1000 = 13. 2 hours

• Dry berries process time → 13. 2 hours + (5, 664-13. 2*200)/1200 = 15. 9 hours

• The dry berry processing time becomes new bottleneck

• Limits benefit of second dryer 16. 2-15. 9 = 0. 3 hours reduction in process time

• Need to increase separator capacity to realize full 3 hour reduction in process time from a 2nd dryer

• Second dryer not worth the investment

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How does alleviating dryer bottleneck impact truck waiting times?

• Inventory builds up in bins at a rate of 18, 879 bbls*0. 7/12 hours – 600 bbls/hour = 501 bbls/hour

• When last truck arrives at 7pm

• There is 501 bbls/hr*12 hours = 6, 012 barrels of inventory must be processed

• Bins can only hold 3, 200 bbls

• 6, 012-3, 200 = 2, 812 bbls must remain in trucks

• 2, 812 bbls/75 bbls/truck = 38 trucks sit idle

• By adding extra dryer they can process 800 bbls/hr

• Inventory build up is reduced to 18, 879*0. 7/12 – 800 = 301 bbls/hr • 301*12 hrs = 3, 612bbls of inventory remaining

• Bins hold 3, 200

• 3, 612-3, 200 = 412 bbls remaining in trucks

• Only 412/75 = 6 trucks remaining idle compared to 38

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Increasing max no. of wet bins should alleviate remaining idle time

• One bin holds 250 bbls

• Adding 2 bins increases holding capacity by 500 bbls which is more than enough to hold remaining 415 bbls of inventory build up calculated in previous slide

• Truck idle time at the dumper completely eliminated

• By buying one extra dryer and converting two dry bins to wet bins

• Dryer reduces bulk of overtime cost (approximately 25% reduction) • Remaining overtime cost can be eliminated by scheduling

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Questions?

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