Effect of Nitrogen Fertilization on Cranberry Fresh Fruit Keeping Quality

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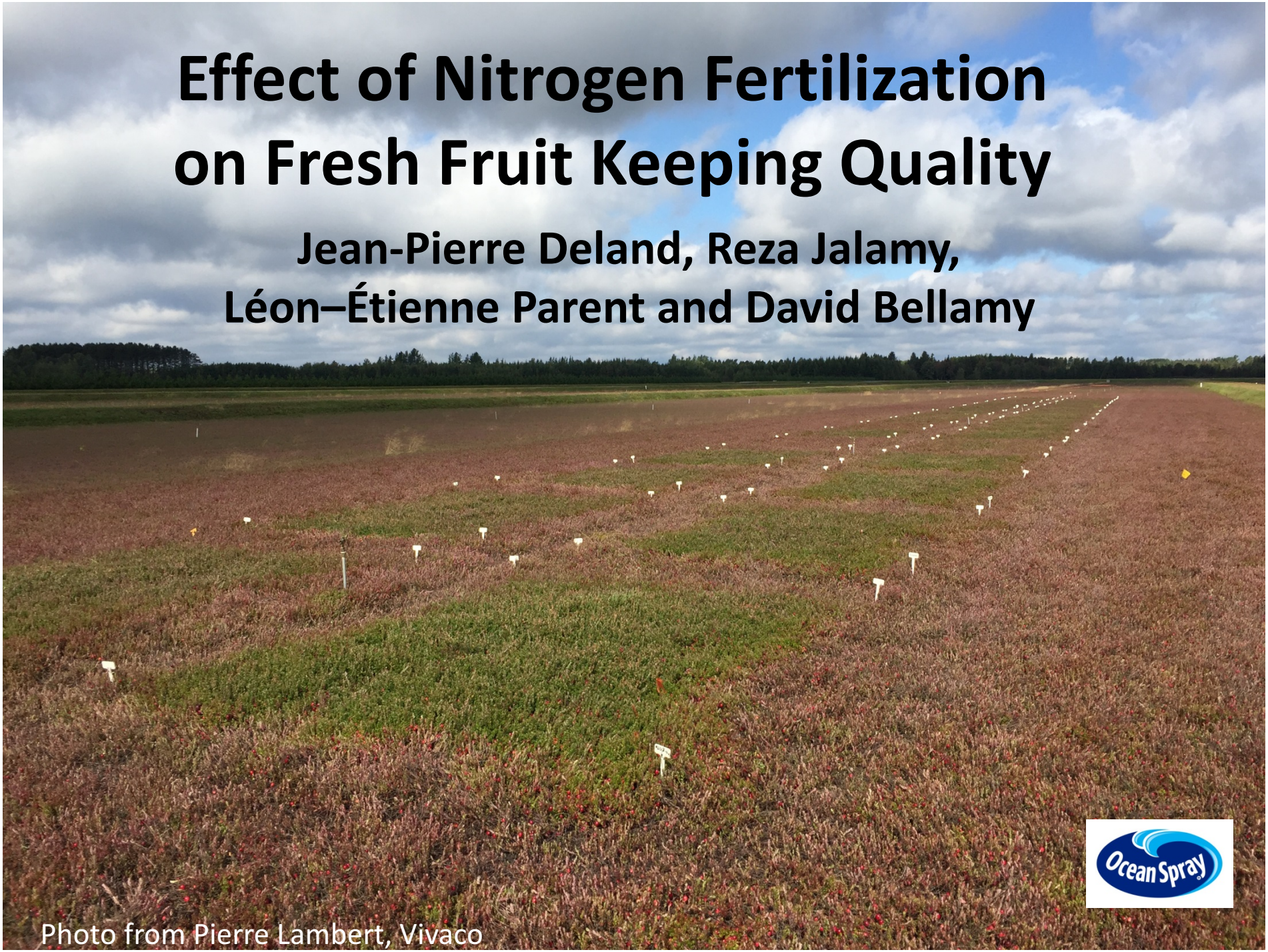

Photo from Pierre Lambert, Vivaco

Effect of N Fertilization on FF KQ

Protocol

- Fruits were harvested from Laval University experimental plots from a research project on cranberry fertilization.
- The treatments of interest for this trial were those fertilized with 0, 13, 27, 40 and 54 lbs N/acre (0, 15, 30, 45 and 60 kg N/ha). They received these amounts of nitrogen for the last three years.
- Each treatment was replicated twice on each of 3 conventional sites (Laurierville, Notre-Dame-de-Lourdes) and 1 organic site (Saint-Louis-de-Blandford)

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Protocol

- The nitrogen sources were ammonium sulfate (21-0-0) for the conventional sites and amino acid solutions in the organic farm (8-0-0 in 2015 and 6-1-1 in 2016).
- Each of these plots also received 30 lbs P_2O_5/acre, 85 lbs K_2O/acre, 10 lbs of Mg/acre,1.8 lbs Cu/acre and 0.9 lbs B/acre every year.
- Seven to eight-pound fruit samples were harvested with a hand rake from each plot between October 8th and 12$^{th.}$

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Protocol

- Five pounds of fruits from each sample were put in a cardboard box and kept at regular storage temperature (6˚C) for a period of 12 weeks.
- At harvest, and after 3, 6, 9 and 12 weeks, the fruit quality was evaluated. The defective fruits were classified as bruised, scarred, soft or decayed, injured by insects and undersized, were then counted and weighed.

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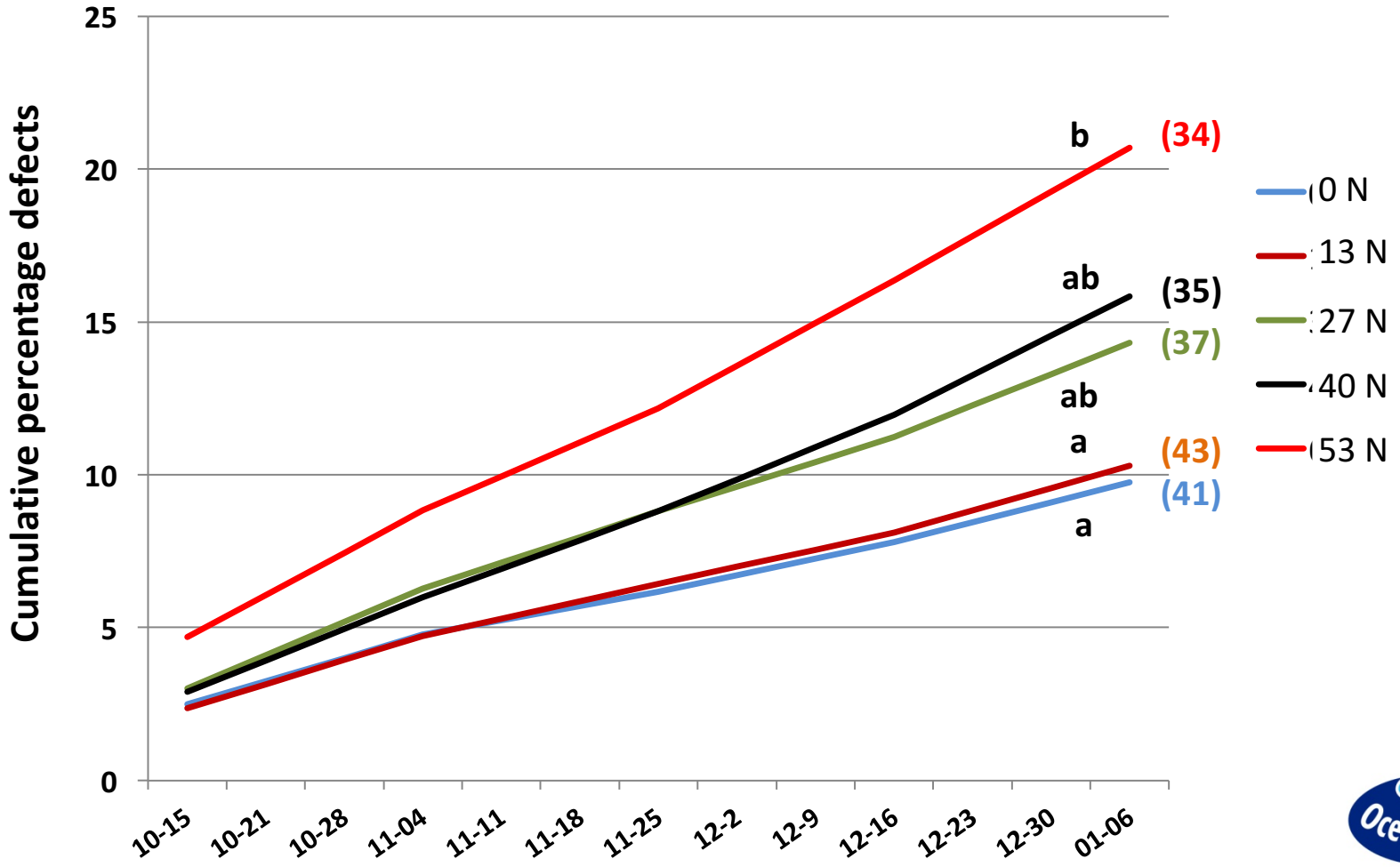
Results KQ Conventional



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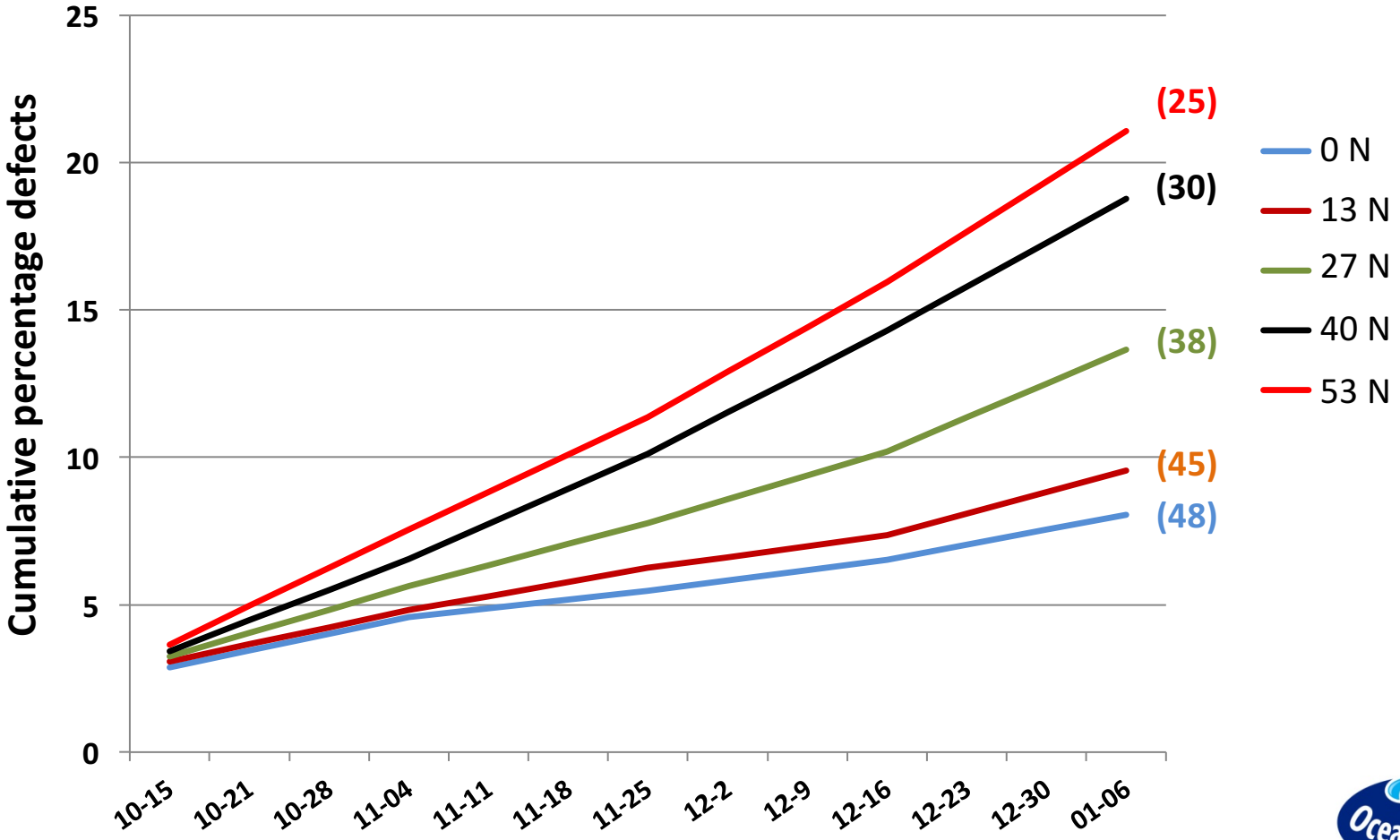
Results KQ Organic



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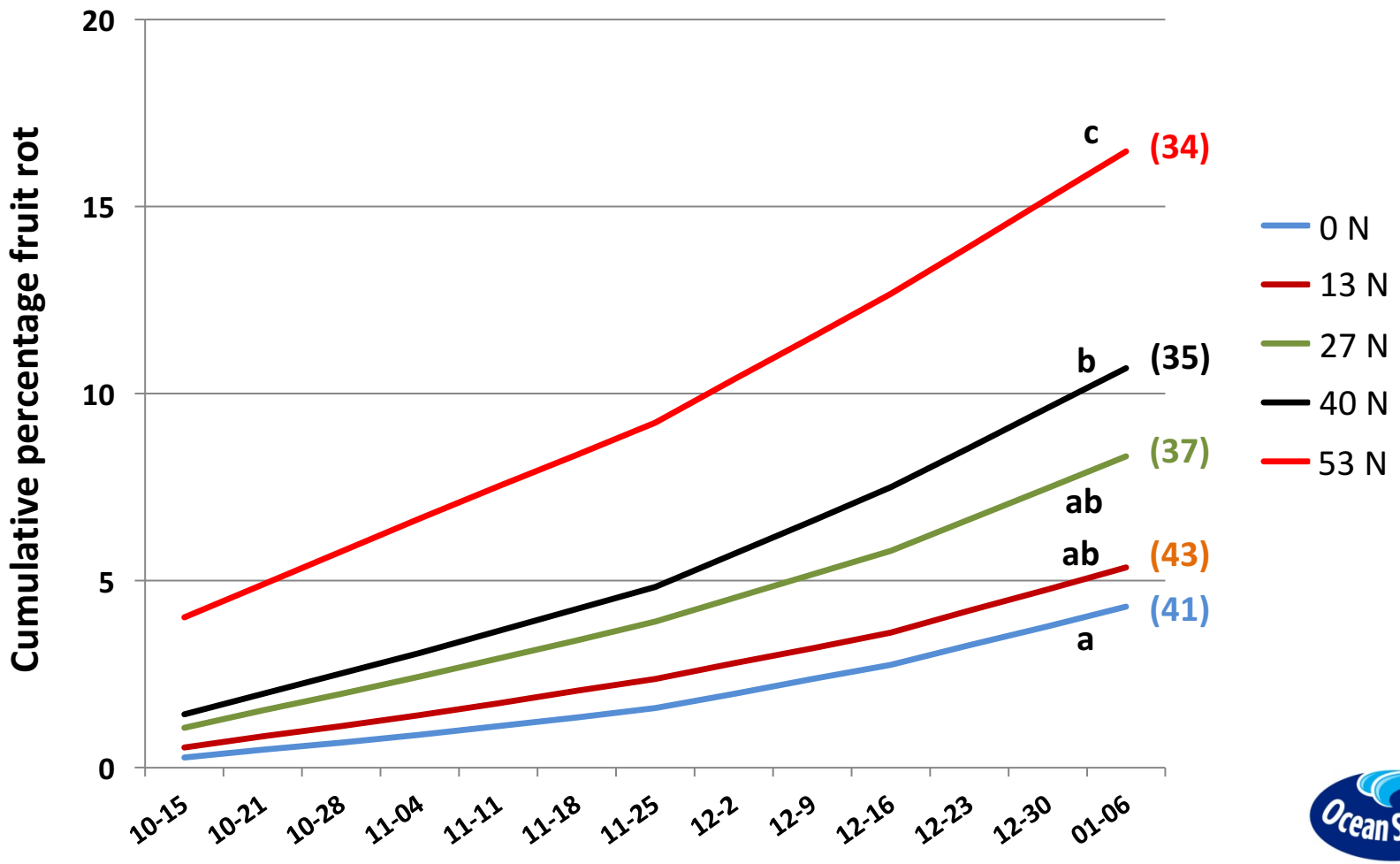
Results Fruit Rot Conventional



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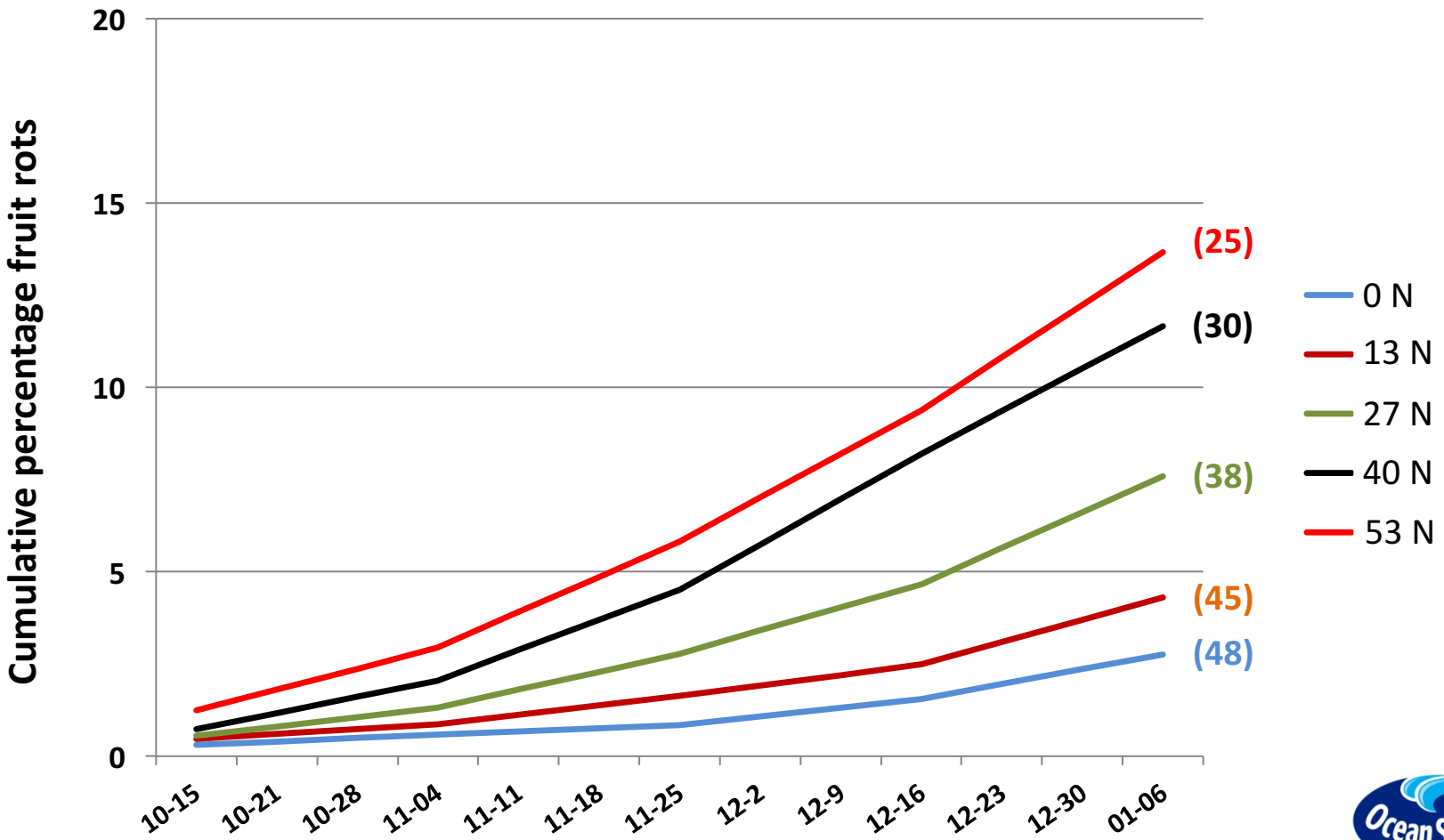
Results Fruit Rot Organic



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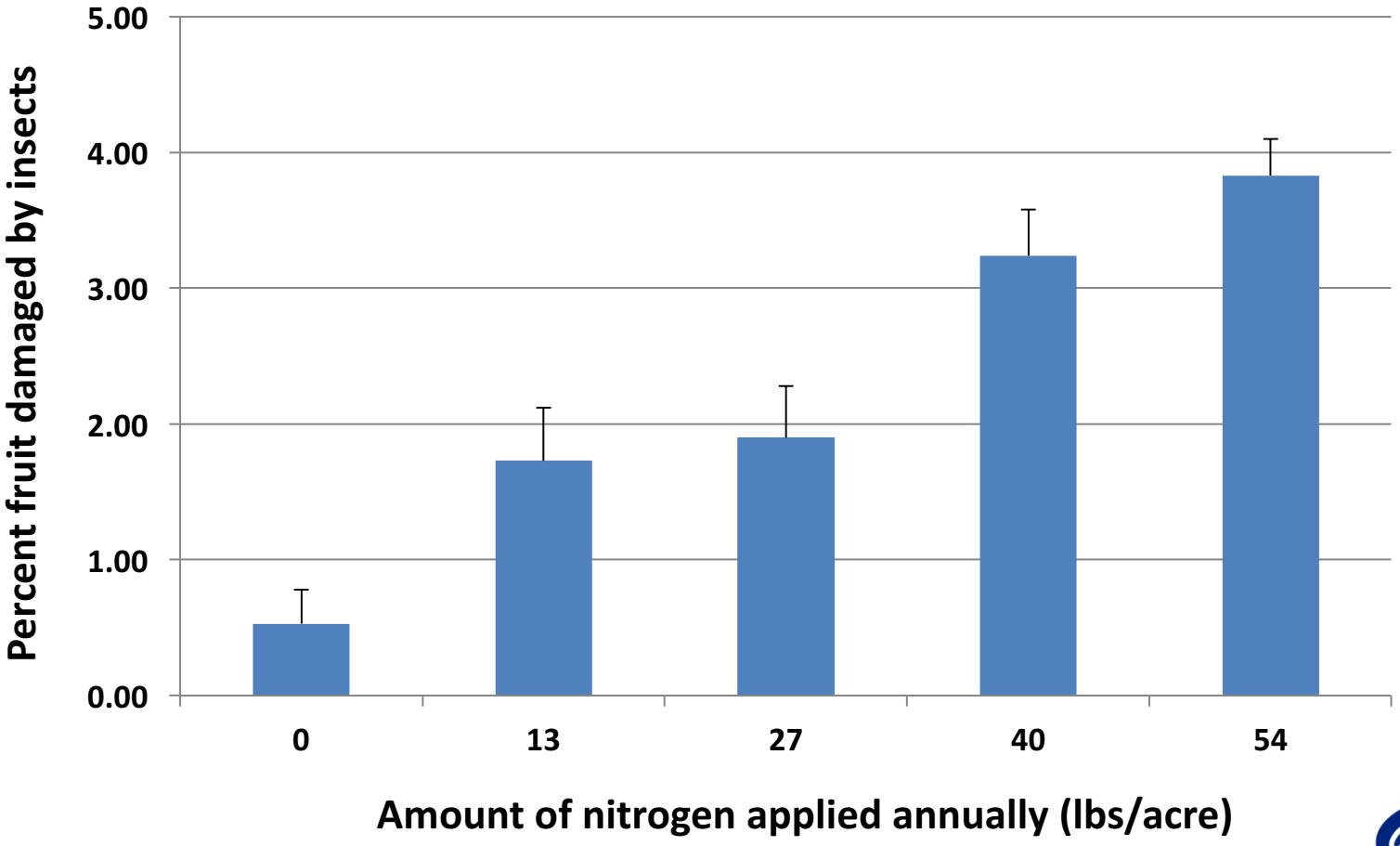
Results Insect Damage Organic



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Results Fruit color

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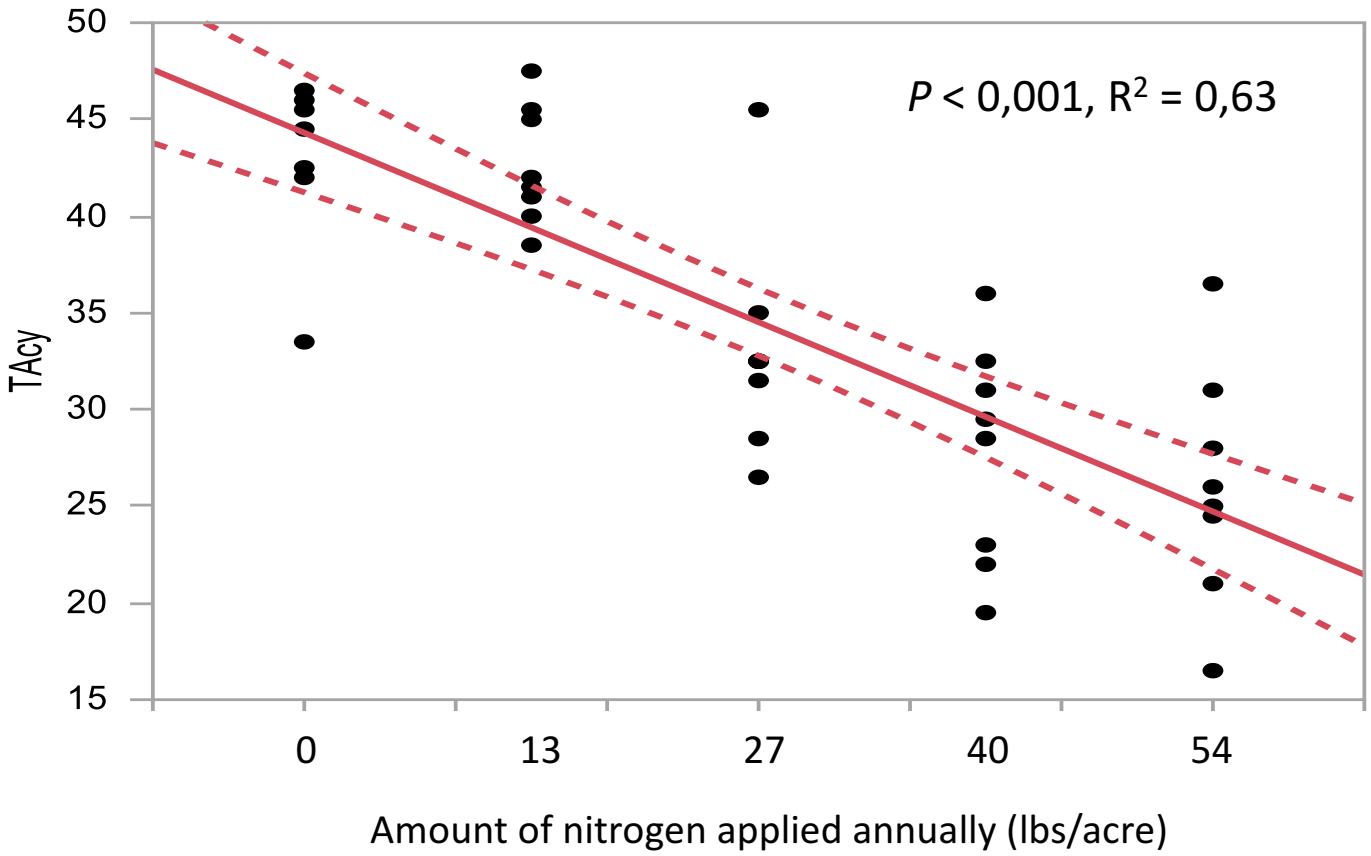

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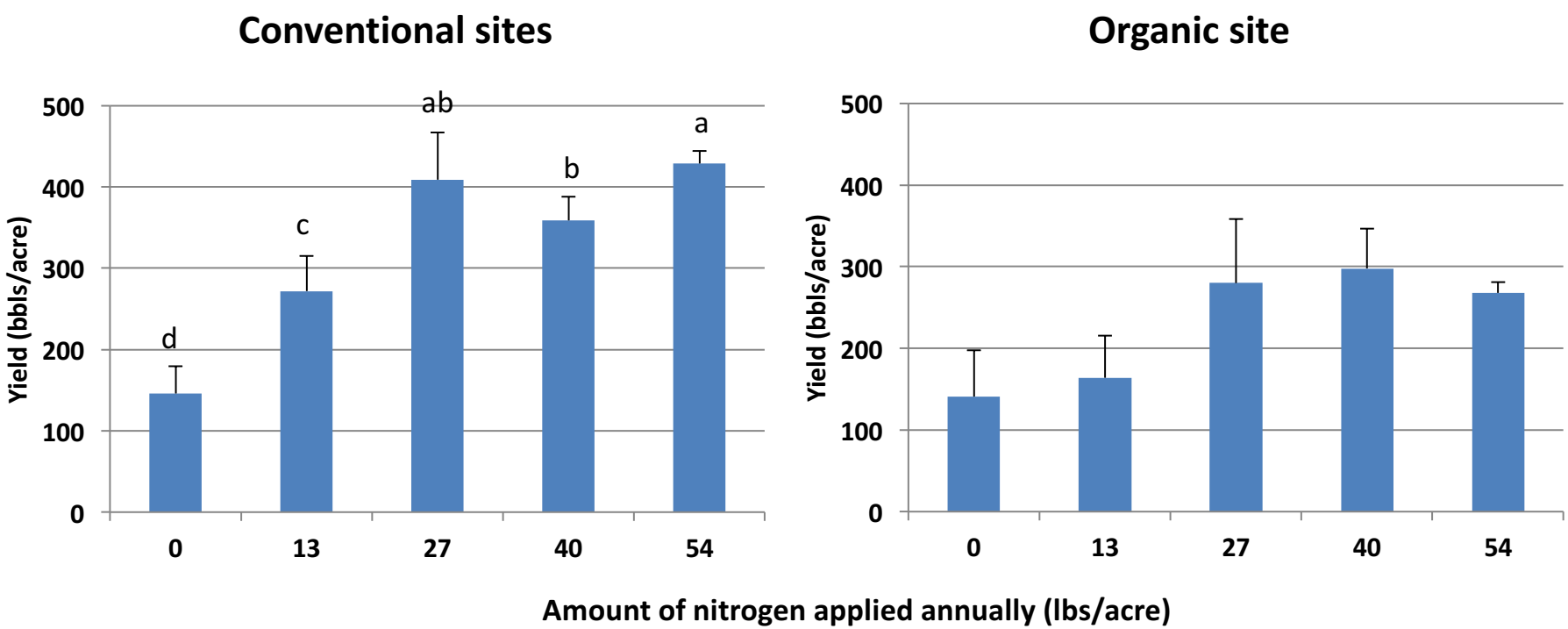
Results yield



Data from Reza Jalami

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Conclusion

- Nitrogen fertilization had an effect on fresh fruit keeping quality. As nitrogen fertilization increased, the keeping quality decreased.
- The main factor explaining the effect on keeping quality is fruit rot. As nitrogen fertilization increased, fruit rot increased.
- Nitrogen fertilization had an effect on fruit color uniformity and TAcy. As the nitrogen fertilization increased, the fruit color uniformity and TAcy decreased.

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Conclusion

- Nitrogen fertilization had an effect on yield. The increase in the nitrogen fertilization usually resulted in an increase in yield, with the biggest increase occurring up to a fertilization of 27 lbs of nitrogen/acre.
- Based on this project, considering the effect on quality and on yield of nitrogen fertilization of fresh fruits, an annual fertilization of 27 to 40 lbs of nitrogen/acre should be recommended on sandy soil in Quebec.