How Efficient are Higher Yields? (A09-hatfield102022-Oral)

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Abstract:

Higher yields bring the assumption of increased inputs. One of the major limitations in our knowledge base about high yields is understanding how current production systems respond to various inputs, e.g., light, water, nutrients. Use these measures of efficiency provides a uniform baseline to which we can compare different management systems and amount of inputs. Comparing input efficiencies from cropping systems 20 years ago and today reveals that our efficiency has increased by 40-50%. Light and water have not increased as inputs yet they show the largest change in efficiency. Nutrient use has increased as well. High yields are more efficient production systems; however, we have not defined the limits of this response in current agronomic systems. Using efficiency measures as guides for assessment of agronomic systems rather than crop yield provides a more realistic view of crop management and the changes over time.

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