

Late Summer Planted High Glucosinolate Mustard Cover Crops to Reduce Soil Borne Pathogens

J.M. Jemison, Jr., University of Maine

Introduction

Soil borne pathogens reduce the value of tablestock and specialty potatoes. Common scab (*Streptomyces scabies*), black scurf (*Rhizoctonia solanii*), and others may be reduced with high glucosinolate mustard (HGM) cover crops. Trials have been conducted over three years to assess effect of late summer planted cover crops on potato yield and skin quality.

Project Objectives

- Assess effect of planting date of late summer planted HGM on yield
- Assess effects of HGM cover crops on potato yield and skin quality following year



Figure 1. Potato Production in Maine

Methods

- Conducted planting date and variety trials in Stillwater Maine in 2010 - 2012
- Planted 7/29, 8/15, 9/1, 9/15 - 2010
- Planted 8/15, 8/24, and 9/2 - 2011
- Planted 8/2, 8/18, and 9/2 - 2012
- Varieties evaluated: Ida/Pacific-gold (3 yrs), Oriental 61, Caliente 119 and 199 and oats - 2011 and 2012
- Measured crop and weed biomass
- Conducted three on-farm HGM trials
- Mowed/disked cover crop biomass
- Potatoes: harvested 15 ft rows - rated skin disease on 25 potatoes per plot



Figure 2. Mustard cover crops - 2012



Figure 3. Carola and Yukon Gold - 2013



Figure 4. On-farm trial - Houlton Maine

Planting Date and Yield

- Production maximized by planting HGM cover crops in early August
- Planting in later August, dry matter yields dropped by half (< 2000 lbs/ac).
- Yield significantly decreased in each planting date at Rogers Farm - 2012.
- Key finding: maximize biomass plant HGM as early as possible in late summer

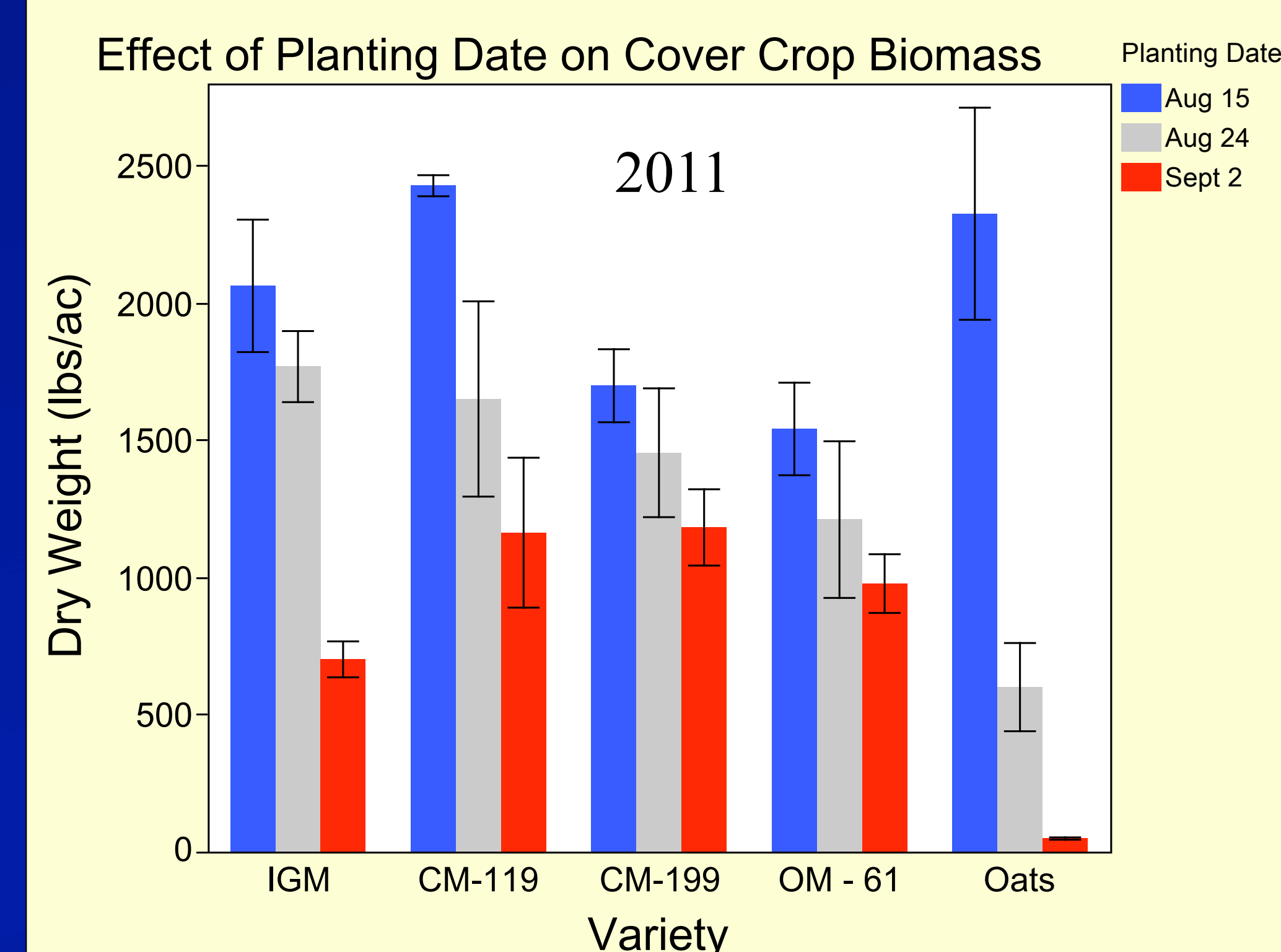


Figure 5. Location and planting date effect on HGM yield at Stillwater, Maine - 2011

Stillwater Maine - 2012

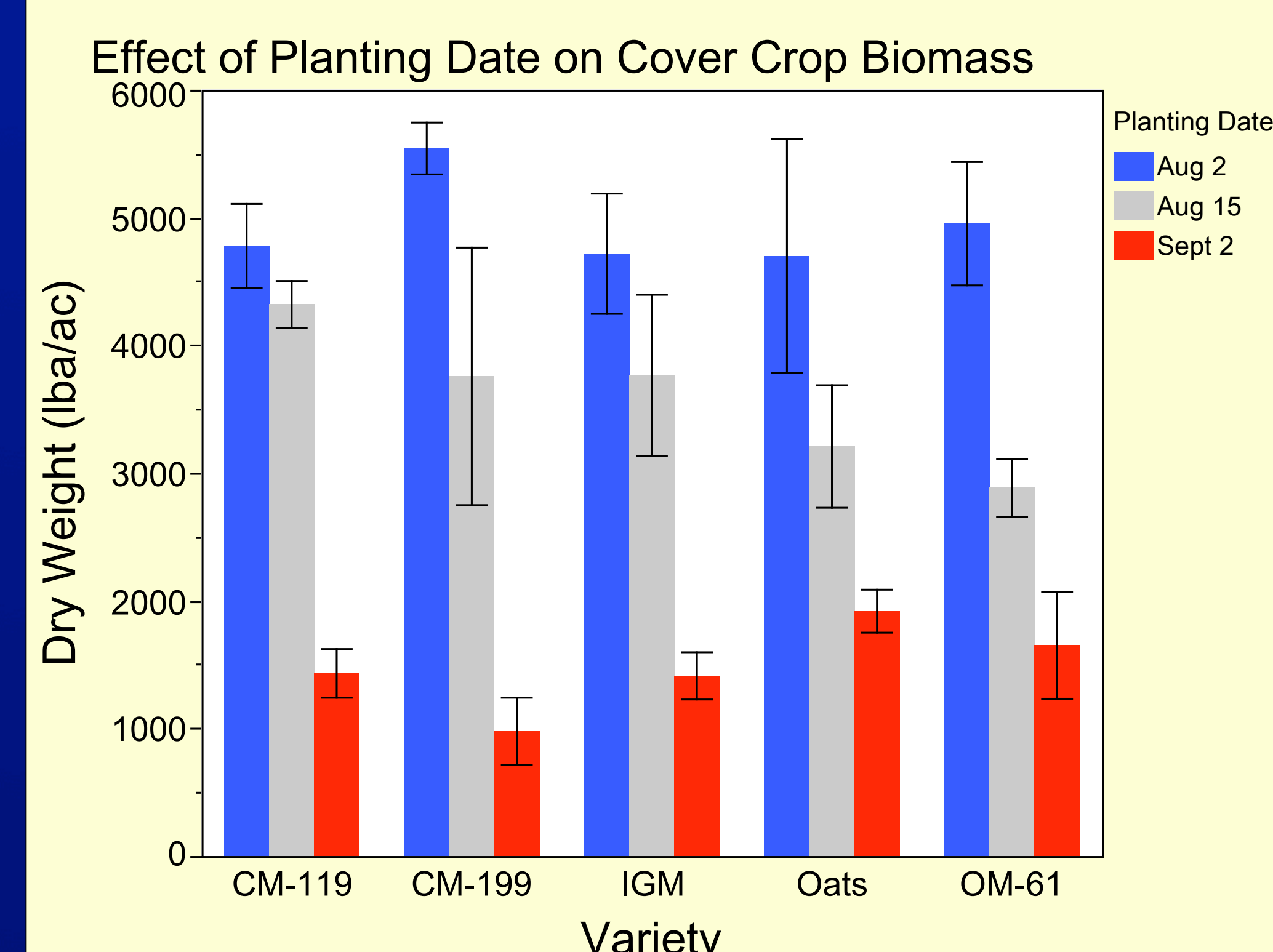
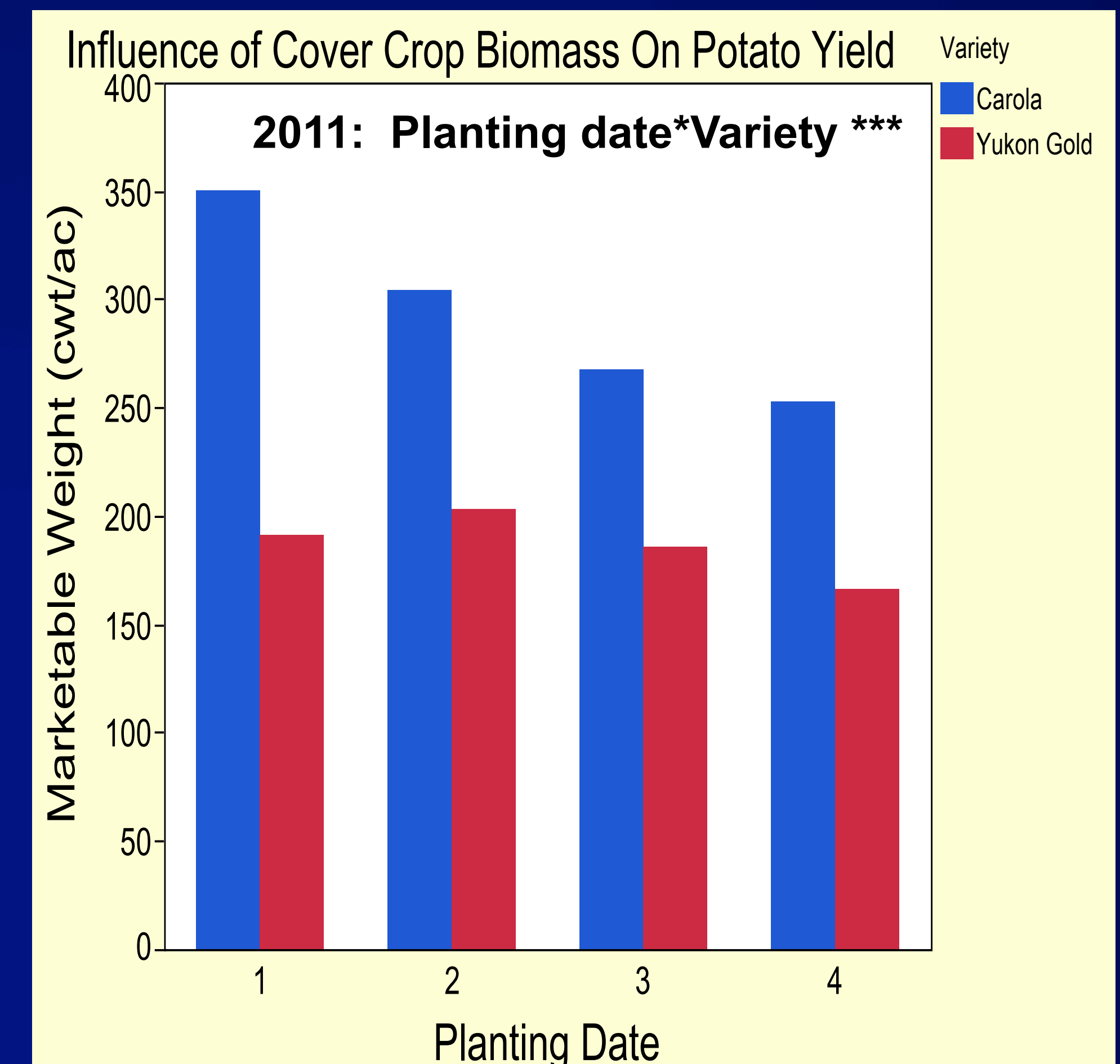


Figure 6. Influence of planting date on cover crop yield at Rogers Farm - Stillwater, Maine

Effect on Potato Yield

- Higher cover crop biomass led to significant var*planting date in 2011, but no effect 2012.
- 2012 potato yields were half that of 2011



Effect on Skin Quality - 2011

- Common scab and black scurf very low due in part to low water stress in 2011
- Potatoes grown after HGM, common scab was half that of control, but control had less than 0.5% affected skin disease symptoms
- No difference in black scurf - Control and HGM less than 0.5% skin disease

Effect on Skin Quality - 2012

- Common Scab and Rhizoctonia very low again in 2012 - less than 1% surface area - not economically significant

Conclusion

- Planting date influenced DM yield of late-planted cover crops
 - Plant as early as possible
- Mixed HGM biomass effect on yield
 - 2011: Carola yes / Y.Gold - no
 - 2012: No effect noted
- HGM showed little influence on skin quality due to overall low incidence of scab and black scurf on potatoes in 2011 and 2012