

Evaluate the Potential of Mung Bean Production in Southern Manitoba

DJ Bing¹, Al Sloan², Don Beauchesne¹, Lorna Lundberg¹

¹AAFC Lacombe Research Centre, 6000 C and E Trail, Lacombe, AB T4L 1W1; ²AAFC Morden Research Station, Unit 100-101, Route 100, Morden, MB R6M 1Y5.

This project is to evaluate the possibility of mung bean production in southern Manitoba. Our studies in early years showed that certain mung bean germplasm lines had potential in Morden area. In 2010 and 2011 we grew the six best genotypes selected from our early exploratory studies in Morden. The main findings in these studies are summarized in this article.

Materials and Methods

Six mung bean genotypes (Table 1) were grown at AAFC Morden Research Station in 2010 and 2011. The experimental design was a randomized complete block with three replications and two dates of seeding. The 1st seeding date in 2010 was May 17, and the 2nd seeding date was May 26. In 2011, the same two seeding dates in 2010 were used, but the plots seeded on May 17 had very poor plant emergence due to cool soil. So, we had another seeding on June 6. Thus, in 2011 May 16 was considered as the 1st seeding date, and June 6 as the 2nd seeding date. The seeding depth was 1.5 cm. Each plot was 1.2 m wide and 6 m long, consisting of 4 rows with 30 cm row space. The seeding rate was 45 viable seeds m⁻². No rhizobia inoculums were applied to the plots. The soil type was clay loam. The plots utilized natural rain fall during the entire season. Hand-weeding and the herbicide Poast Ultra were applied to control weeds. The number of days from seeding to the onset of flowering (DTF) was recorded as a reference of maturity. Crop desiccant Reglone was applied to assist with plant dry-down when top pods turned brown to black. Plots were harvested on September 28 in 2010 and September 16 in 2011. Plots were directly combined using a plot combine.

Results and discussion

Plant development and adaptability. All six genotypes adapted to the local conditions for plant emergence and growth. They started to flower 61 to 67 days from the seeding date. All genotypes produced mature seeds (Fig. 1).

Seed yield. Yield of the six genotypes was very different (Table 1). The highest yielding genotype was CH0619 with the yield of 1924 kg ha⁻¹, and the lowest yielding one was CH0609 with the yield of 1152 kg ha⁻¹.

Seed weight. The genotypes were also very different in seed weight. The genotype with the largest seed size was CH0616 with a thousand seed weight (TSW) of 69 g, while the genotype with the smallest seed size was CH0601, having the TSW of 39 g.

Relationships among yield, seed size and maturity. It was interesting to note the three highest yielding genotypes also had the largest seed size, suggesting the seed size was a significant component of seed yield. Another interesting observation was that the three highest yielding genotypes also had reached the flowering earliest. Since early flowering is usually an indication of early maturity early maturing genotypes were better adapted to south Manitoba.

Impact of seeding date on yield. Over the two years, 1st seeding date had the higher yield than the 2nd seeding except for CH0611 that did not have significant difference between the two seeding dates. Thus, planting as early as possible in the spring should be recommended for getting higher yield. However, it should also be reminded that time of planting is very critical. Planting too early may cause thin plant stands as we have demonstrated in 2011, where the planting on May 17 had very poor emergence.

Other observations. No severe diseases or abnormalities prohibiting the mung bean production in this area were observed in any year. However, different leaf coloration (Fig. 3) and rust-rust like symptoms (Fig. 4) were observed. The nature and the causes for these symptoms have yet to be identified.

Conclusion

Our studies have demonstrated that mung bean can be successfully grown in southern Manitoba. Furthermore, we have identified a few genotypes that may be grown as commercial varieties or used as breeding materials. More studies, including how to produce high quality mung bean in southern Manitoba, and development of mung bean market are needed for mung beans to become a crop in this region.

Acknowledgment

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Table 1. Yield, thousand seed weight (TSW), days to flowering (DTF) of six mung bean genotypes grown in Morden in 2010 and 2011

Genotype	Yield (kg/ha)	TSW (g)	DTF (d)
CH0601	1393	39.0	63
CH0606	1559	42.0	67
CH0609	1152	42.0	66
CH0611	1708	54.0	62
CH0616	1828	69.0	61
CH0619	1924	63.0	62



Figure 1. Mature mung beans grown in Morden in 2011.

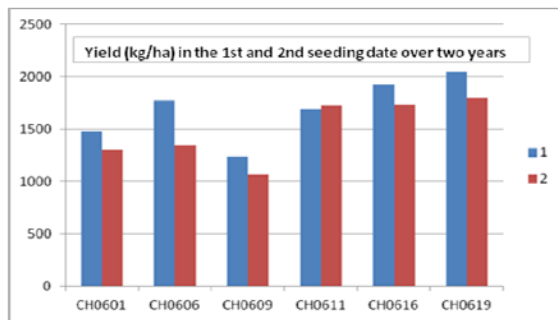


Figure 2. Yield of the six mung bean genotypes planted on seeding date 1 and seeding date 2 in 2010 and 2011.



Figure 3. Abnormality of leaves observed in both 2010 and 2011.



Figure 4. Rust-like leaf discoloration observed in 2010.