

Hettinger Soybean Seeding Rate Study

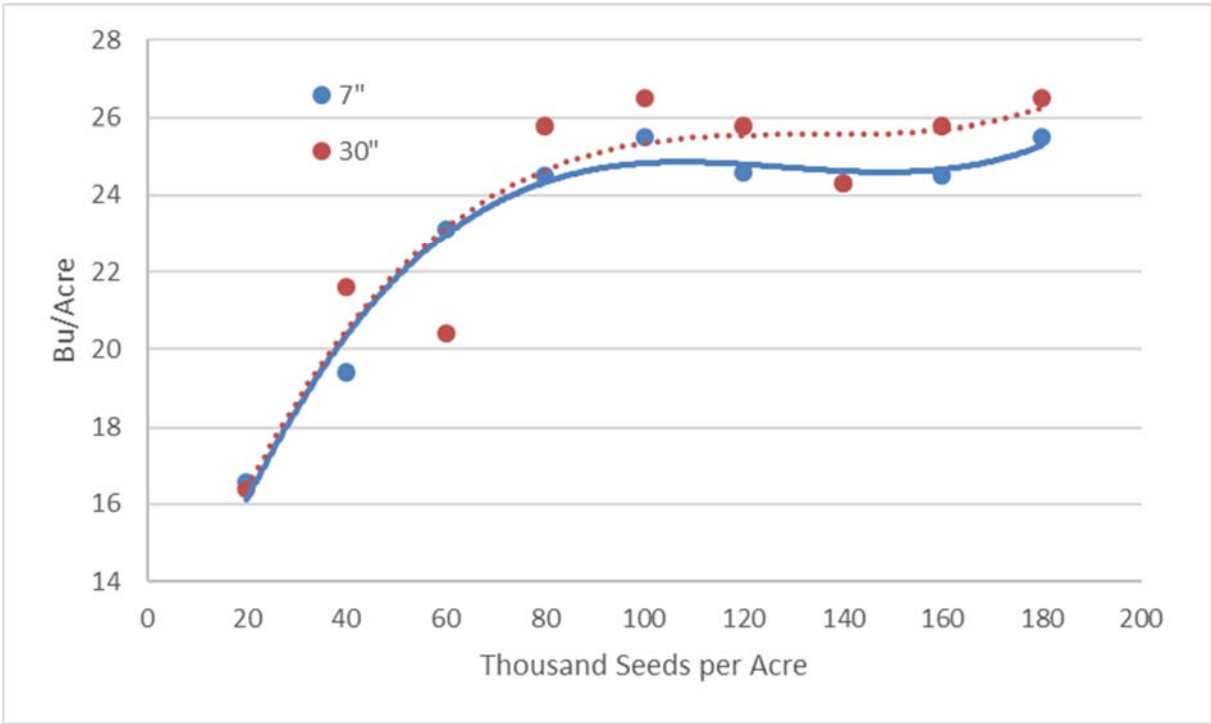
John Rickertsen & Michael Wells, Hettinger Research Extension Center, 2018 - 2020

Over the past decade soybean seeding rate recommendations in the corn-soybean belt have been reduced from 180,000 - 240,000 seeds per acre to 125,000 - 170,000. Much of this is due to increasing cost of soybean seed and soybeans tremendous ability to compensate for lower densities with increased branching and pod number. Yield per acre for soybeans remains relatively constant across population. This is because the number of seeds produced per plant is inversely related to the number of plants per acre. In general, numerous studies in the Midwest have shown 100,000 relatively uniformly spaced plants at harvest will produce the maximum economic return under most conditions. There have been many studies on soybean seeding rates in the Midwest, but there is little information on seeding rates for dryland soybeans in the semi-arid high plains.

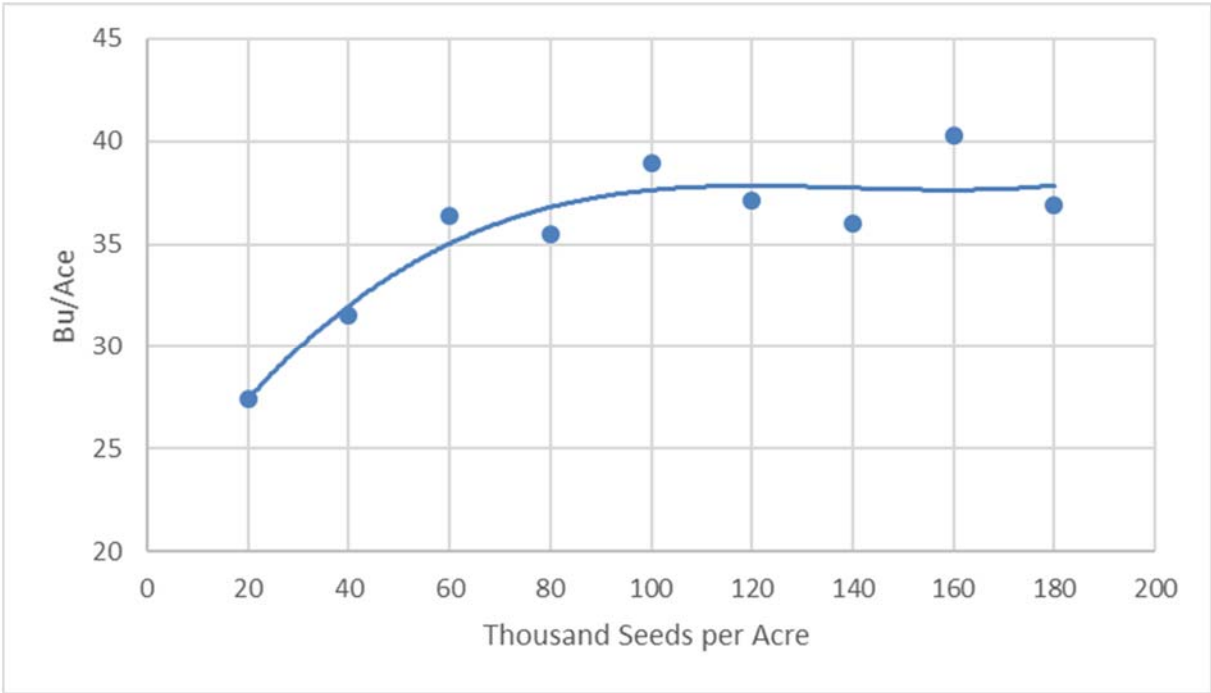
A study was initiated in 2018 with nine seeding rates, 20,000 to 180,000 in 20,000 increments in both drilled (7") and row (30") configurations at Hettinger, ND and just 30" rows at Mandan, ND. In 2020 the Hettinger trial was planted on May 19 and Mandan on May 20. The soybean variety ND19009GT was used at both locations. Trials were no-till planted with a 7 row 7" inch spacing plot drill equipped with Acra Plant ADU double disk openers and a two row plot planter equipped with John Deere 1700 row units on 30" inch spacing. Weed control was obtained by a pre-emergence herbicide application of BroadAxe and post-emergence application of glyphosate. The trials were harvested with a Kincaid 8XP small plot combine on September 16 at Hettinger and September 26 at Mandan. Data was recorded on flowering, height, maturity date, yield, test weight, seed protein and seed oil content.

The results showed that seeding rates of 100,000 – 180,000 were not significantly different in yield and even the extremely low rate of 20,000 yielded 65% of the 100,000 - 180,000 seeding rates. For seed protein and oil content, as seeding rate increased, oil content decreased and protein increased. At the very lowest populations, seed size increased and test weight decreased, but there was no significant difference in the 100,000 to 180,000 rates for seed size and no significant difference in 40,000 to 180,000 rates for test weight. In 2018 and 2020, there was no difference in yield between 7" and 30" rows, while in 2019, 7" rows yielded 5.5 Bu/Acre higher than 30" rows. Over the past three years the 120,000 seeds/acre rate has been the optimal seeding rate for southwest North Dakota.

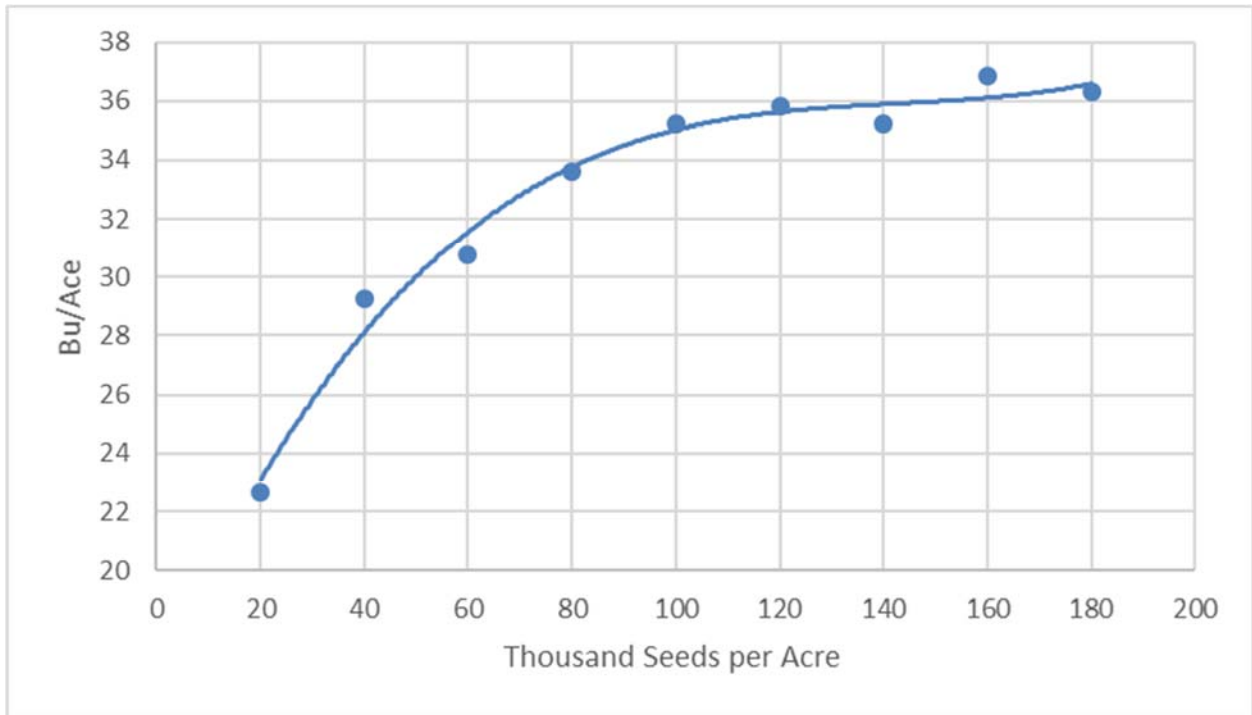
Soybean Seeding Rate Study Yields by Seeding Rate at Hettinger, ND in 2020.



Soybean Seeding Rate Study Yields by Seeding Rate at Mandan, ND in 2020.



Soybean Seeding Rate Study Yields by Seeding Rate Averaged Over All Trials, 2018 - 2020.



Soybean Seeding Rate Study Protein and Oil Content by Seeding Rate, Averaged Over All Trials, 2018 - 2020.

