

Hairy Vetch and Rye Seeding Rates

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Hairy vetch seed is relatively expensive. To reduce grower seed costs, it is necessary to quantify the density response of the hairy vetch and winter rye mixture. To determine the contribution of nitrogen and weed control for various density combinations of rye and hairy vetch, an experiment employing a central composite design was initiated in the summer of 1989. This experiment was set up to examine the interaction of 5 densities of rye, 5 densities of hairy vetch, and 5 rates of nitrogen. The vetch and rye were planted in August of 1989 while the nitrogen was applied as a side dress application in the early summer of 1990.

Biomass samples were taken from all plots in the fall of 1989, separated into hairy vetch and rye, dried, and weighed. There was a linear increase in biomass for both hairy vetch and rye with an increase in their respective seeding rates (Figures 8 and 9). Increasing seeding rate of rye resulted in a linear decrease in biomass of the hairy vetch component (Figure 8). Similarly, increasing hairy vetch seeding rate decreased biomass of the rye component (Figure 9). However, increasing seeding rate of either cover crop species resulted in a linear increase in total biomass (hairy vetch and rye) (Figure 10).

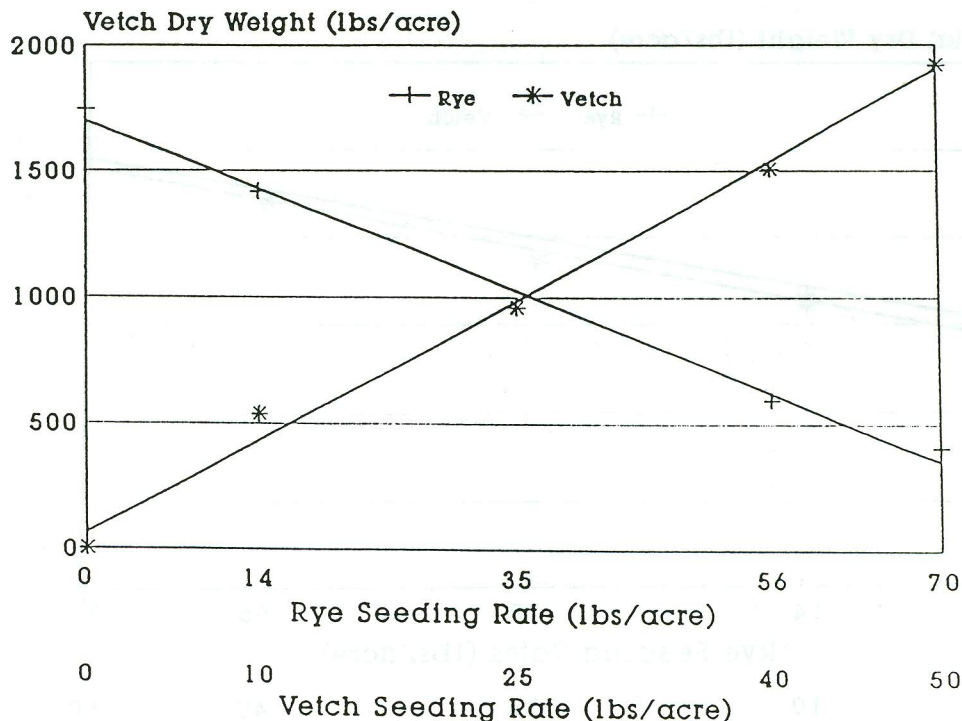


Figure 8. Hairy vetch above-ground biomass as it varies according to rye and vetch seeding rates.

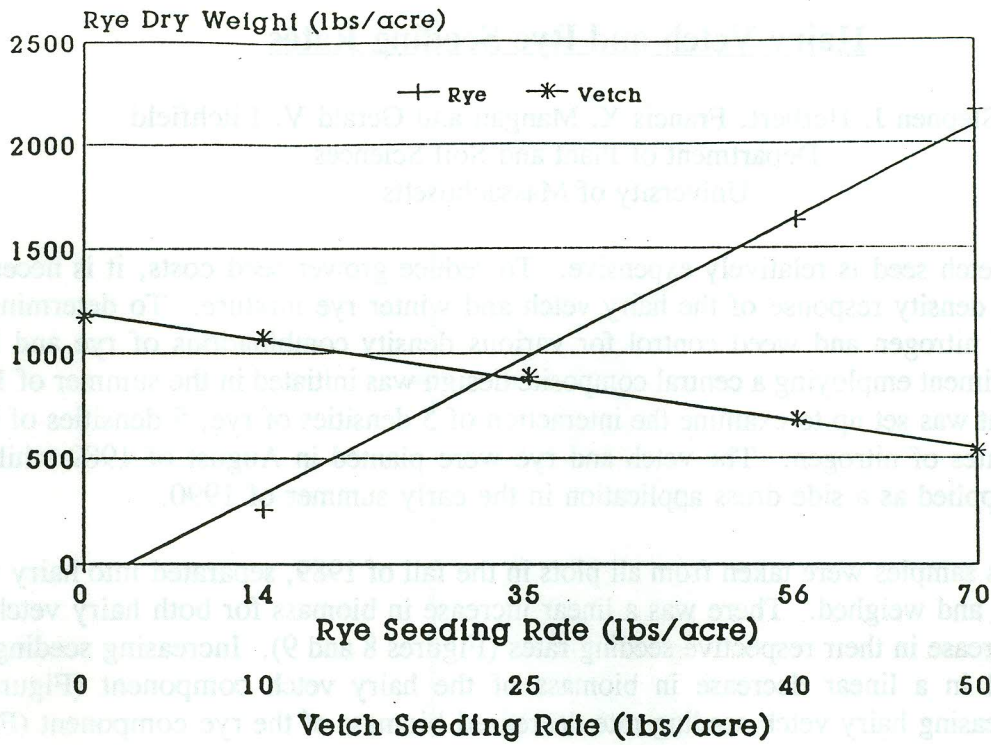


Figure 9. Winter rye above-ground fall biomass according to winter rye and hairy vetch seeding rates.

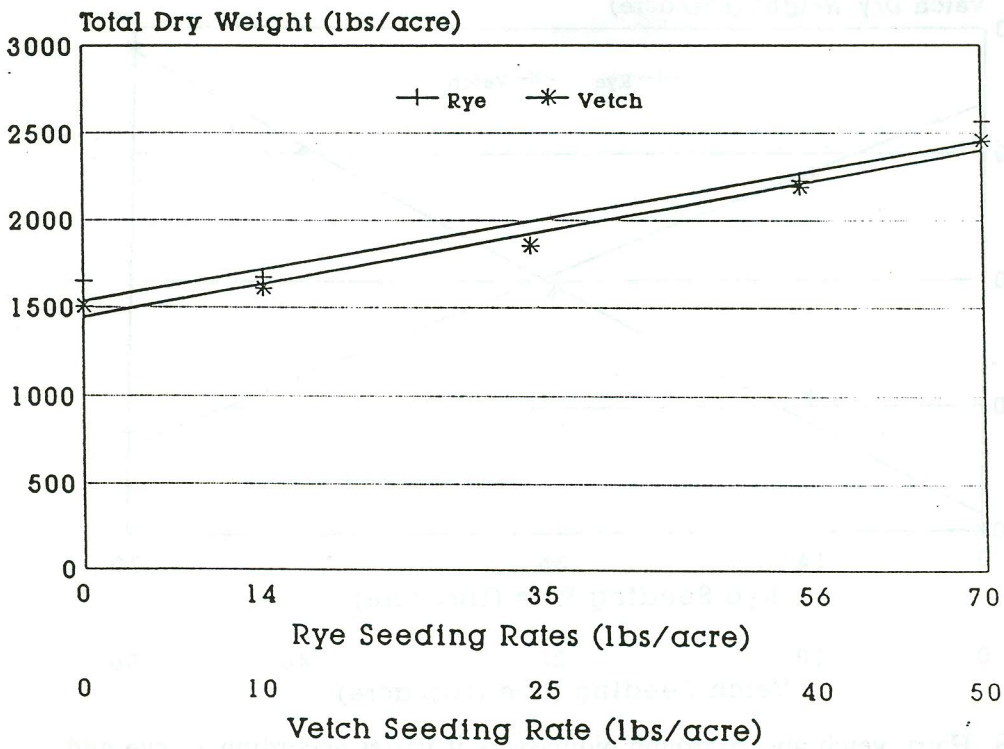


Figure 10. Total above-ground fall biomass according to the rye and vetch seeding rates.

Results of biomass samples taken from all plots in the spring, immediately prior to cultivation and planting on June 3, 1990, are shown in Figures 11 and 12. Hairy vetch contribution to total biomass increased as seeding rate increased from 0 to 25 lbs vetch seed/acre. No increase in hairy vetch biomass occurred with vetch seeding rates above 25 lbs/acre. Increasing rye seeding rate from 0 to 35 lbs/acre decreased hairy vetch biomass, but the rate above 35 lbs/acre (to 70 lbs/acre) did not cause any further reduction in hairy vetch biomass. Increasing rye seeding rate when planted with a medium hairy vetch seeding rate (25 lbs/acre) resulted in a linear decrease in total cover crop biomass. These results suggested that both rye and hairy vetch seeding rates should be reduced below the randomly recommended rates of 56 lbs/acre rye and 40 lbs hairy vetch, for optimum production of hairy vetch and total biomass when both species are growing as a mixture.

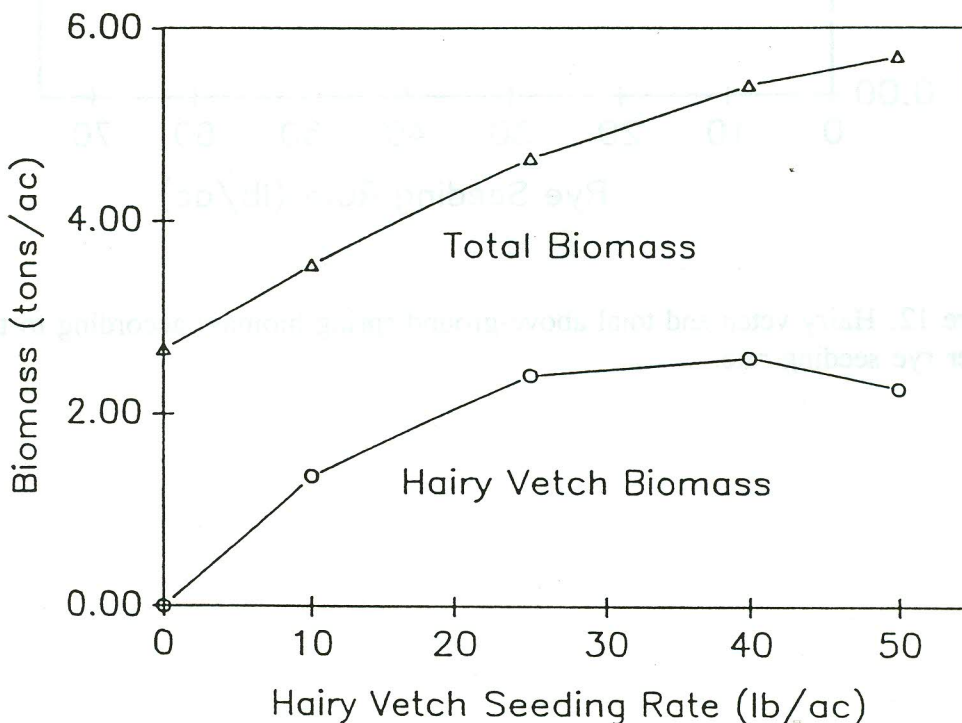


Figure 11. Hairy vetch and total above-ground spring biomass according to the hairy vetch seeding rate.

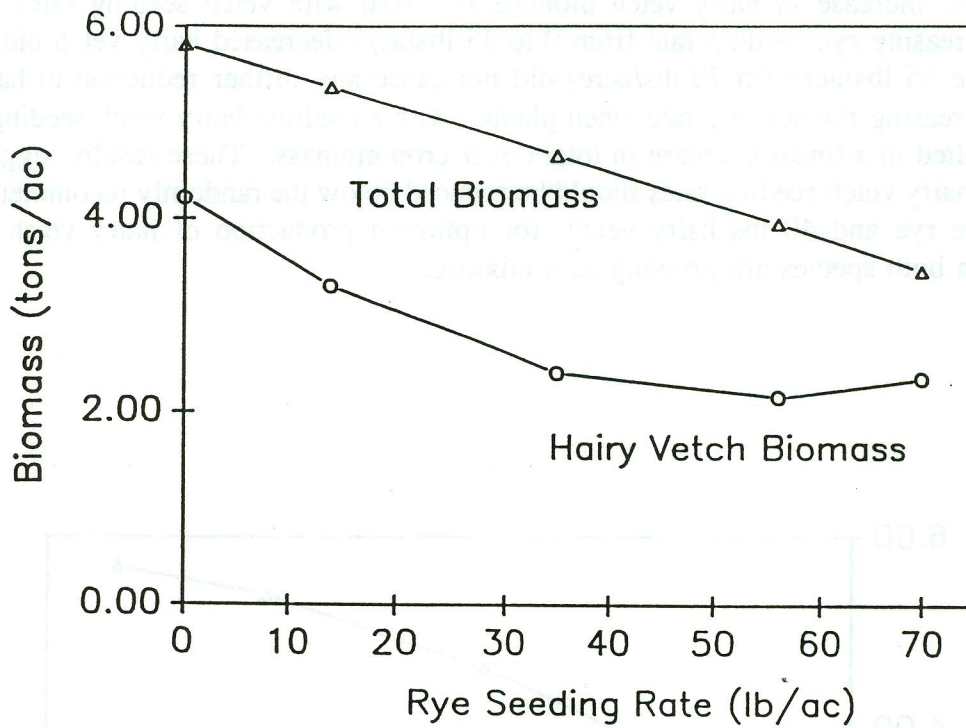


Figure 12. Hairy vetch and total above-ground spring biomass according to the winter rye seeding rate.