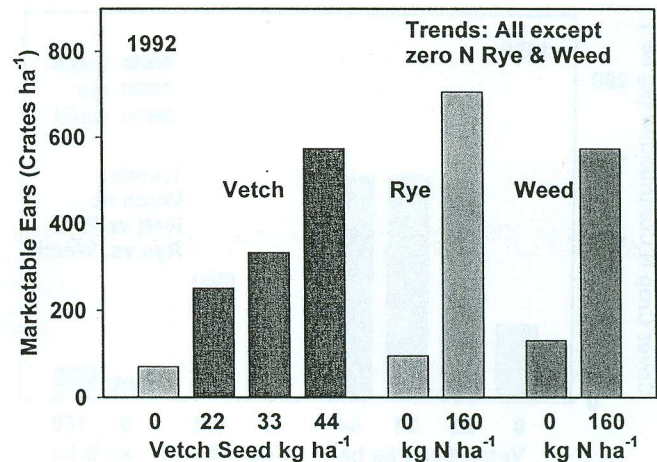
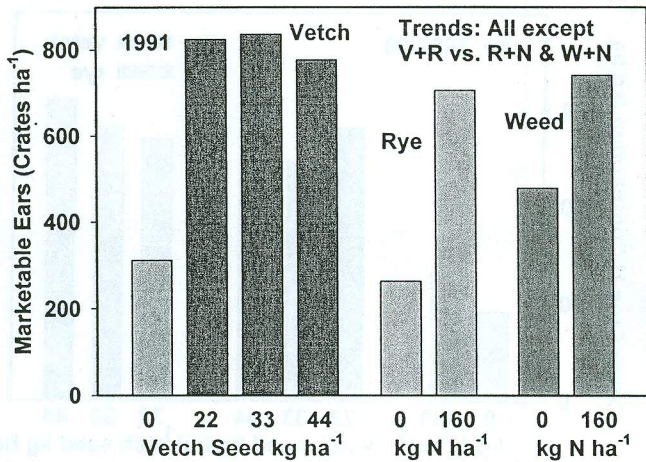


Yield of Sweet Corn in Long-term Cover Crops Systems

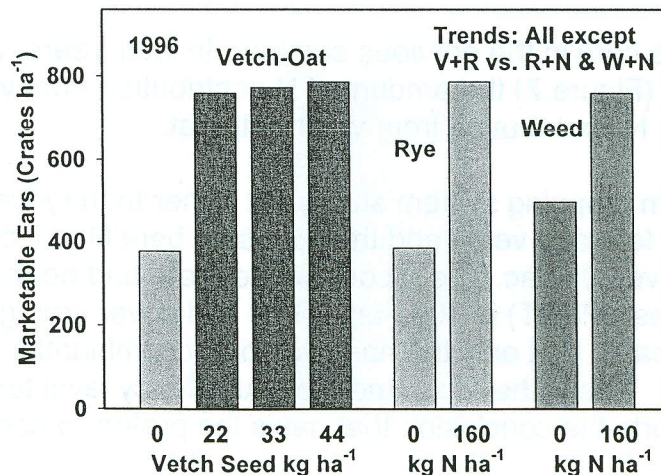
Stephen J. Herbert
 Dept. of Plant and Soil Sciences

Planting cover crops such as rye, vetch, or combinations of these cover crops can improve overall nitrogen management on corn fields and also prevent soil erosion. In the previous report biomass production and N contribution from cover crops was discussed. In this report corn yield changes over the time period of this long-term cropping system study is presented for the first, second, and sixth to eighth years.

Corn yield measurements were taken at harvest maturity for sweet corn. Marketable ear number is most often used as a unit of measure for yield of sweet corn. Five dozen ears or approximately 19 kg equals one crate.



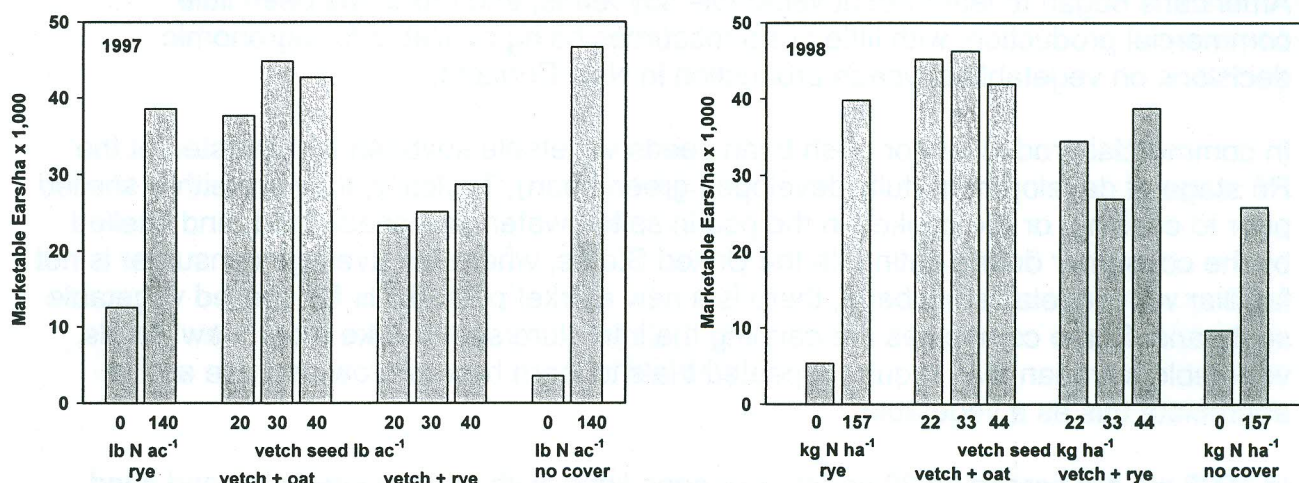
Figures 1 and 2. Yield of marketable ears in the first and second years of the long-term cropping system study.



Figures 3. Yield of marketable ears in the sixth year of the long-term cropping system study.

Marketable ear number showed (Figures 1 and 2) are for the first and second years when vetch was planted with rye. In the first year yield of ears from vetch plots was high, and was as good or better than the yield from N fertilized plots. Vetch plots with rye received no N fertilizer. However, the ear yield was much reduced the second year in response to the lower N contribution from the vetch-rye cover crops for this year. In the sixth year, after rye with vetch had been replaced by oat, the ear yield of vetch plots was again similar to N fertilized plots (Figure 3).

In seventh and eighth years (and subsequent years) measurements of vetch with oat and vetch with rye were compared (figures 4 and 5). The rye plots had been maintained as rye with vetch since the first year when two seeding dates of sweet corn were compared. Generally, sweet corn yield from vetch-oat plots was greater than or equal to plots with rye alone and no cover crop when these plots had a sidedressed application of 140 lb N/ac to the corn.



Figures 4 and 5. Yield of marketable ears in the seventh and eighth years of the long-term cropping system study.

There was no significant increase in sweet corn yield with an increase in seeding rate of hairy vetch above 20 lb/ac when vetch was planted with rye the first year (Figure 1) and for any year when vetch was planted with oat. As discussed in the previous report oat winter kills and offers no competition to vetch growth in the spring. Vetch-oat cover crop systems gave higher yield than vetch-rye systems. Unfertilized rye alone and no cover crop plots, produced low ear yields and individual ear size was reduced. Addition of fertilizer N produced a much higher marketable ear yield and gives an indication of the magnitude of the N contributed from vetch and utilized by the sweet corn crop.

In choosing cover crops it is recommended that rye only be planted with vetch when soil N level from previous fertilization or crop residues is expected to be low. If there is likely to be carryover N then oat should be used in vetch companion planting. A seeding rate of 20 lb/ac seems adequate for sufficient growth and N contribution from hairy vetch.

(Several graduate students in Dept. of Plant and Soil Sciences have contribute to these long-term cover crop studies and there contributions are acknowledged.)