

Corn Talk News
**RESEARCH
UPDATE**



**TILLAGE AND
CROP ROTATION
EFFECTS ON
CORN YIELDS**

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A recent study published in the Journal of Production Agriculture by M. G. Lund, P. R. Carter and E. S. Oplinger evaluated the effects of two tillage systems, no-till and moldboard plowing and crop rotations (continuous cropping, corn/soybean, wheat/soybean/corn, and soybean/wheat/corn) on the growth and yield of corn wheat and soybeans.

The study showed that continuous cropping reduced yields of corn by 10 percent and soybean by 15 percent compared to when the crops were in rotation.

Generally, yield reductions due to continuous cropping were greatest under no-till. The effects of rotation and tillage were less consistent on wheat as the effect varied from none in one year to a 36 percent reduction in another. With wheat, the tillage influence on the rotation effect was less consistent — in some years the tilled plots were most affected and in another year when Septoria and leaf rust diseases were severe, no-till treatments were more affected by continuous cropping.

Corn yields were similar in each of the three rotation sequences except for no-till corn

after wheat, where yields were reduced by 6 percent. The authors suggest that the same allelopathic factors that reduce yields of corn following rye may cause the yield reductions following wheat, since the early season corn was about 8 inches shorter than the no-till corn following soybeans. In this study, the straw from the wheat was not baled or removed and this may have increased the potential for allelopathic effects.

This study did not show any difference in soybean yields for a one or two year rotation. Some previous research has shown a benefit from increasing the time between soybeans in the rotation to more than just one year, but the authors suggest it may need to be more than two years as they had in this study to be significant.

In summary, the study did not show any consistent improvement in corn and soybean yields by going to a three-year rotation including wheat.

In Pennsylvania, the advantages of wheat in a rotation may be greater than in this study for several reasons: 1) In southeast Pennsylvania, wheat yields are not reduced by late planting following corn and soybeans as much as they are in Wisconsin; 2) In some areas, soybeans can be double cropped with the wheat, adding to the profitability of the wheat; and 3) control of perennial weeds in no-till programs can be successful following wheat harvest.

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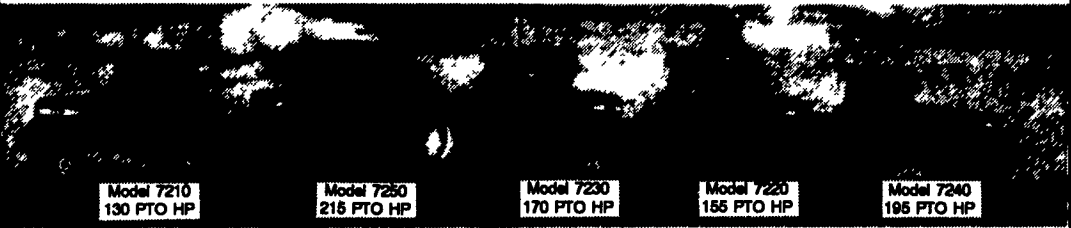


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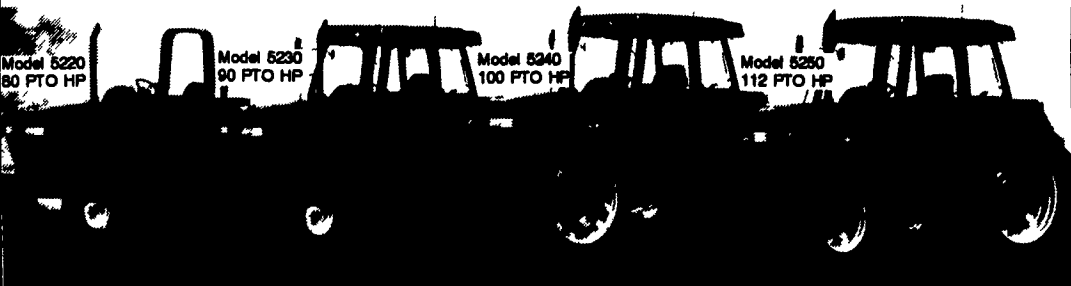
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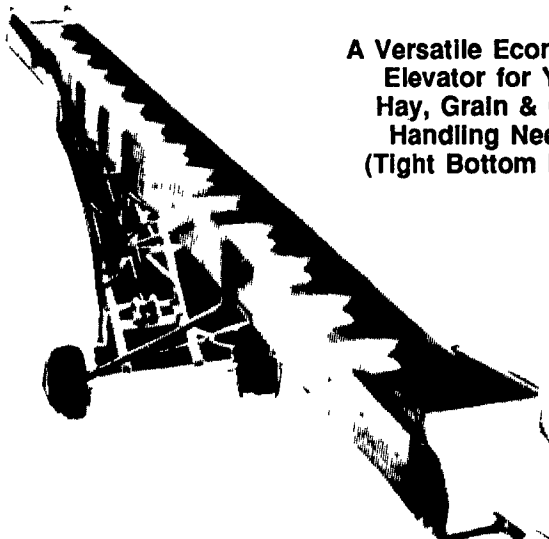
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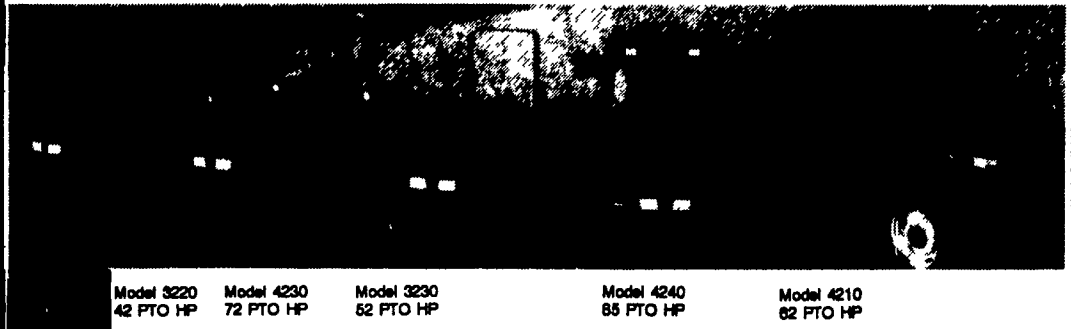


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