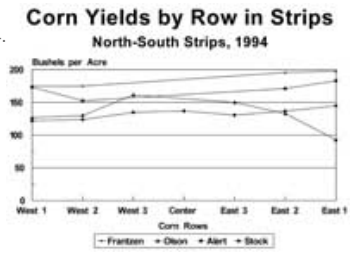
Narrow Strip Intercropping

Narrow strip intercropping is a complex system requiring careful management. Maybe we should think of it as a finely tuned sports car. It's a roadster that can really perform on a good road. But it isn't built for rough ground or muddy lanes. We know, for example, that in stress years, there has not been the hoped for "overyielding" in the outside rows of the corn strips. 1994 appeared to be the smooth highway that farmers had been waiting for, but there were new lessons around the bend.

There is a potential "biological efficiency" built into narrow strips. It has to do with the borders between strips. That is where neighboring crops can use resources like light, fertility, and soil moisture in complementary ways. This doesn't automatically happen, but crops that use these resources at different times of the season often make good neighbors in strip intercropping. Oats, for instance, are harvested in July, leaving extra resources for neighboring row crops. Corn and soybeans are potentially competitive, but in past years, increased corn yields have not come at the expense of soybean yields in most PFI trials.

Figure 8. Narrow strip intercropping corn yields in north-south strips, 1994. Top (left)--Frantzen. 2nd (L)--Alert. 3rd (L)--Olson. Bottom (L)--Stock

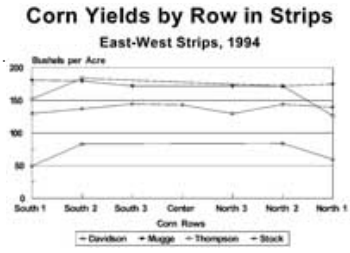


University and farmer researchers have seen that in stress years, the yield benefits of strip intercropping are less evident, as competition between crops dominates over the complementary use of resources. So 1994, which was generally a good year for crops, should have been a great year for narrow strip intercropping. In fact, some cooperators did see the yield benefits in corn (Table 7). The largest yield benefit was nearly 27 bushels, in one of **Doug Alert and Margaret Smith's** trials. They optimize their strips, using higher corn populations and fertilizer rates than in the whole-field blocks. And their strips are in a three-year rotation, while the rest of the field is in a corn-soybean rotation.

In other trials narrow strip intercropping did not fare so well. Observations in the field point the finger at weeds. The grass got out of hand in some stripped crops. Why was it worse in strips than in the whole-field blocks? Corn in strips lets in more light. This appeared to stimulate grass in some strips. And in some cases weed pressure had built up from two years in which weather prevented a second cultivation. Where trials got into trouble, the corn strip edges were the place with the most light, the lowest stands of corn, and the most grass.

What is the take-home

Figure 9. Narrow strip intercropping corn yields in east-west strips. Top (left)--Mugge. 2nd (L)--Thompson. 3rd (L)--Stock. Bottom (L)--Davidson.



lesson? It may be "back to basics" - not necessarily in the sense of a return to conventional farming practices, but in the recognition that narrow strip intercropping is a very management intensive system. It is a system that is less forgiving of slips in weed management, and perhaps in fertility and tillage as well. It's that high-performance roadster that likes a smooth road.

Table 8 and Figures 8 and 9 also show corn yields in narrow strip intercropping, but these are hand-harvest yields row by row. They differ from the machine harvests shown in Table 7 both by the method and because they represent only a small part of the field, while the combine yields reflect the system as a whole. The effect of low stand and grass in some strip borders is evident, but a trend found in 1993 also stands out. This is the tendency for the east edges of north-south strips to yield better than the west edges. Corn on the east borders of strips receives the greatest part of its light in the morning, when moisture stress is reduced. Corn on the west edges of strips receives the full light of afternoon, and stress may prevent it from taking full advantage of this light.