

Strip Intercropping--Taking Advantage

Single and Double width strips allow for corn to "jump" from year to year on the Mugge farm. (this photo is from the Frantzen farm 1989)



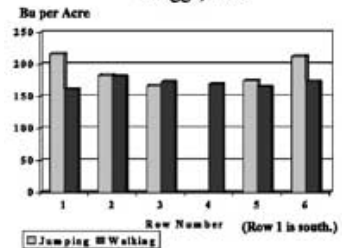
It has been nearly a decade since the rise in interest in strip intercropping, led in part by PFI. A reason many producers discontinued intercropping was the system's failure to consistently deliver the yield benefits inherent in that form of multiple cropping. One of the hidden drags on yields was rootworm larvae that migrated underground from strip to strip, a fact discovered by USDA/ARS entomologist Mike Ellsbury, working on the farm of PFI members **Paul and Karen Mugge**, Sutherland.

So if the rootworms are migrating, what do you do? Give 'em further to crawl! At least that was the plan when we set out two kinds of systems, "walking" and "jumping" strips, on the Mugge farm. In the traditional, walking strips, each crop moves over by a single strip every year. In the new jumping strips, corn moves one-and-a-half strips each year. The two systems were established in 1998, and '99 was the first year we could expect to see a difference - if any - between the two systems.

The border rows of the corn strips are where the big potential is in strip intercropping - yield potential because of the extra sunlight and damage potential because of rootworms visiting from the strip next door. So when the corn was threshed this fall, the yields told the story ([Table 11](#)). In the walking strips, border

Figure 5. Mugge yields in jumping and walking strips

Walking & Jumping Strips
Mugge, 1999



rows yielded no more than rows in the strip interiors. In the jumping strips, though, the border rows yielded on average nearly 40 bushels more than the strip interiors.

Stand counts suggest that plant population played an important part in the yields. All rows were planted at the same population. However in the walking strips border row stands trended lower than in strip interiors, while in the jumping strips the outside row populations were greater than in the strip interior. In the first instance, rootworms may have taken their toll on stand as well as crop growth; in the latter case, less competition in outside rows may have allowed a few more plants to survive and bear ears.

Entomologist Ellsbury will help end the speculation in 2000. He plans to place traps in the field to catch the adult rootworms where they emerge from the soil. If jumping strips prove to be the key to productivity, that will be important to their use on Iowa farms. Fitting them into practical systems will be the next challenge after that.

TABLE 11. Strip Intercropping, Row Yields and Stands – “Jumping” vs. “Walking” Strips

EAST- WEST STRIPS	MUGGE				
	“JUMPING”			“WALKING”	
ROW	YIELD	STAND		YIELD	STAND
	BU/ACRE	PLANTS/ ACRE		BU/ACRE	PLANTS/ ACRE
(\$)	(OATS)			(SOY)	
1	216.2	32,670		161.8	28,096
2	183.0	30,056		182.1	30,056
3	166.6	30,056		173.3	26,572
4	—	—		170.1	27,225
5	174.2	30,710		165.4	27,225
6	212.3	31,799		173.5	26,354
(N)	(SOY)			(SOY)	
STRIP AVG.:	190.5	31,058		171.0	27,588