Table 1. A Multiple-Treatment Weed Management Trial

				TREATMENT "A, C"				
COOPERATOR	CROP	PREVIOUS CROP	YIELD SIGNIFI-CANCE	DESCRIPTION	# BRDLF WEEDS	STAT.	TRT COSTS	$ BENEFIT
MUGGE	CORN	OATS/RED CLOVER		SPRING RYE ONLY	59.8	b	$35.71	
				SPRING RYE + FLAMER	20.3	b	$44.13	
	FACTORIAL:	RYE FACTOR	*	SPRING RYE	40.0	b	$39.92	
		FLAME FACTOR	*	FLAME	53.8	b	$31.29	

parasite ova, and the growing lambs may have gained some natural resistance by the end of the two trials.

And what about the **Tom and Irene Frantzen** trial with pigs? Unlike the sheep trials, in which whole pumpkin seeds and fresh Chenopodium plants were used, the trial with pigs utilized the extracted oil of the Chenopodium plant. The oil was mixed in a gruel along with castor oil at 4 ml per 100 lbs of body weight. Again, the day zero counts differed greatly between the Chenopodium group and the control (Figure 5). After that, you could imagine that the Chenopodium was doing its job – if you could ignore day 15. The spike in ova numbers on that date was due to a single type of parasite; the other species counts remained at low levels. If you have the creepy feeling that you're not sure what is real here, you aren't the only one.

In true PFI fashion, these cooperators have not admitted defeat. If more Chenopodium can be obtained, they want to repeat several of the experiments, but this time with tighter control of conditions and data collection. Individual animal weights and fecal samples will be obtained. This will not only allow a firmer verdict on these alternative treatments, it will indicate to us whether this kind of research can be successful on farms.

Weed Management

Successful weed management is usually the result of strategic thinking: "If hoeing doesn't work this year, I'll..." "If the spring turns dry, we'll..." **Paul and Karen Mugge**, Sutherland, must have set aside some time to think about strategy, because they designed a trial to compare two different weed control techniques – flame weeding and a cover crop. They put the trial together as a "2x2 factorial," so plots were: 1) flaming only; 2) cover crop only; 3) *both* cover crop and flame weeding; and 4) *neither* cover nor flaming (the control).

Paul Mugge describes adjustment of the flame cultivator.

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A Multiple-Treatment Weed Management Trial

TREATMENT "B, D"					
DESCRIPTION	# BRDLF WEEDS	STAT.	TRT COSTS	$ BENEFIT	OVERALL COMMENTS
FLAMER ONLY	87.3	ab	$27.08		CROP YIELD DATA NOT COLLECTED. ECONOMIC BENEFIT CAN'T BE CALCULATED.
CONTROL	174.3	a	$18.65		
NO RYE	130.8	a	$22.87		RYE FACTOR COST EVALUATED AT 1/2 FLAME COST LEVEL
NO FLAME	117.0	a	$27.18		FLAME COST EVLUATED AT 1/2 RYE COST LEVEL

Flame weeders are becoming increasingly popular, and Paul has demonstrated flaming at field days. Although more costly to use than a rotary hoe, a flame cultivator can save the day in springs when it's too wet to hoe effectively. Cover crops are often mentioned as weed management tools, but few farmers seed ground cover especially for weed control. Paul copied Richard Thompson of Boone, seeding rye in the early spring just on the ridge. The sweep on the corn planter later removed the rye.

This combination of a "cultural control" (cover crop) with a mechanical control (flaming) fits well on the Mugge farm

If you want the full discussion of either flame weeding or cover crops for weed control – well, come to a field day. Suffice it to say that both the rye and the flaming significantly reduced broadleaf weeds. (See Table 1, which presents weed numbers, not yields.) What's more, the two methods together resulted in the fewest weeds of all. This combination of a "cultural control" (cover crop) with a mechanical control (flaming) fits well on the Mugge farm, and it could be part of the strategy on many other farms.

Corn Variety Trials

PFI cooperators are evaluating open-pollinated corn varieties and varietal hybrids in cooperation with Walter Goldstein of the Michael Fields Agricultural Institute and with USDA and ISU corn breeders. Why go to all this trouble when hybrid corn is so successful? Because that success comes with a price, literally. Technology fees on hybrid seed continue to rise. Some producers are concerned that future consolidation in the industry might even limit choice of seed. These farmers reason that if they had seed that they could save and replant from year to year (unlike hybrid seed), then they wouldn't have to get top yields to remain profitable.

Most hybrids, also, are bred for yield not for nutrition. A project that begins in 2003 will seek to develop corn varieties high in specific nutrients. This corn would benefit livestock producers, especially if they could demonstrate its benefits to consumers. An example would be eggs with yellower yolks from increased vitamin A in the corn fed to chickens.

Walter Goldstein (r) discusses ear characteristics with Walt Ebert and Laura Krouse.

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