Wisconsin - Increased Corn Silage Protein with Intercropped Lablab Bean

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Protein supplements for livestock are costly. In recent research in southern WI, lablab bean grown with corn increased forage CP concentration over monoculture corn without compromising forage yield or potential milk production/ac. Corn was intercropped with each of three climbing beans: lablab, velvet, and scarlet runner; or grown in monoculture at Arlington and Lancaster, WI. Corn was sown ~ May 1 in 2004 and 2005 and thinned to either 22,000 (low density) or 33,000 (normal density) plants/ac. Beans were sown in rows 3" to one side of the corn rows at 33,000 plants/ac 2 or 4 weeks after corn planting.

Table 1. *Corn/climbing bean forage yield and quality averaged over two southern Wisconsin sites, two years, two corn populations, and two bean planting dates.*

Bean Mix Treatment	Total Yield	Bean Content	CP	NDF	NDFD	Milk/Ton	Milk/Ac
	Ton DM/ac	%	%	%	%NDF	lb/ton	lb/ac
Corn alone	8.5	0	6.1	37	55	3,620	30,990
Lablab bean/ corn mix	8.7	11	6.9	38	55	3,560	31,260
Scarlet runner bean/corn mix	8.5	5	6.4	37	55	3,620	30,630
Velvet bean/ corn mix	8.3	10	7.1	39	53	3,480	29,110

Key Results (Table 1):

- Averaged over four environments, mixture forage DM yields were similar.
- Lablab and velvet increased CP concentration by ~15%, but fiber and digestibility were compromised compared to monoculture corn.
- Lablab bean/corn and monoculture corn had similar milk production potential/ac.
- Planting beans 2 vs. 4 weeks after corn increased yields of velvet bean and scarlet runner bean mixtures with corn ~0.5 ton DM/ac.
- Scarlet runner bean was damaged by white mold and potato leafhoppers.
- Velvet bean mixed with corn reduced milk production potential/ton and milk production/ac.
- The dollar value of CP produced by intercropping lablab bean with corn was estimated at $36/ac based on 2006 protein supplement costs.

Results show lablab grown with corn has the greatest potential to increase CP concentration over monoculture corn without comprising forage yield or milk/ac, and thus potentially increasing corn silage crop value in the northern US. The additional costs of bean seed, machinery, and labor must be less than $36/ac for the lablab bean/corn mixture to be a profitable alternative to monoculture corn.