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Corn Hybrid Selection

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Growing Season Update

The 2008 production year has been one of the coolest on record. Growing degree unit accumulation is tracking about 300 GDUs behind schedule. Temperature drives the vegetative (V) developmental stages of the corn life cycle, but has less influence during the reproductive (R) developmental stages (Table 1). The number of days from silking (R1) to maturity (R6) ranges from 55 to 60 days. A farmer benchmark to gauge the season is "To be dented by Labor Day." About 26-28 days remain for the crop to mature.

Selecting Corn Hybrids for 2009

Past hybrid trials indicate that the average yield difference between the highest and lowest yielding corn hybrid in a trial is 70 bu/A. Your challenge is to predict performance the next growing season. Depending upon how you select hybrids, yield gains up to 12 bu/A can be achieved over an "average" hybrid.

When choosing hybrids for the next growing season:

1. Select hybrids using multi-location average data (Figure 1). Consider single location results with extreme caution.
2. Evaluate consistency over years and other trials. Be wary of hybrids that are not top performers in all trials (Figure 1).

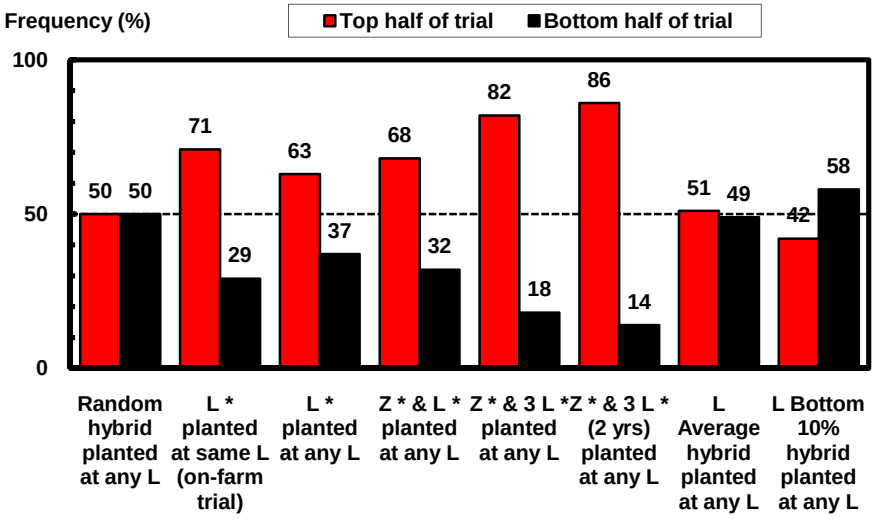

Figure 1. Next year's performance of a hybrid using various selection strategies. Simulated using UW Hybrid Trial Results 1973-1998 (L=Location, Z=Zone)

Table 1. Relationship between corn kernel growth stage and development.

		Growing Degree Units (GDUs) to Maturity		Percent of Maximum Yield		Moisture Content (%)	
Stage	Calendar Days to Maturity	Southern Wisconsin	Northern Wisconsin	Grain	Whole Plant	Grain	Whole Plant
R1- Silk	55-60	1100-1200	950-1050	0	50-55	---	80-85
R2 - Blister	45-50	875-975	800-900	0-10	55-60	85-95	80-85
R3 - Milk	37-42	750-850	700-800	15-25	60-65	75-85	77-82
R4 - Dough	31-36	600-700	550-650	30-50	65-75	60-80	75-80
R5 - Dent	26-28	425-525	400-500	60-75	75-85	50-55	70-75
R5.5 - 50% Kernel milk	10-15	200-300	175-275	90-95	100	35-40	65-70
R6 - Maturity	0	0	0	100	95-100	25-35	55-65

3. Buy the traits you need (Tables 2, 3 and 4). Traits protect yield, they do not add to yield. Can you grow corn the "old-fashioned" way?
    a. Rotation
    b. Weed control
    c. European Corn Borer
4. Every hybrid must "stand on its own" for performance (Table 4).

Remember that you don't know what weather conditions (rainfall, temperature) will be like next year. Therefore, the most reliable way to predict hybrid performance next year on your farm is to consider past performance over a wide range of locations and climatic conditions.

Table 5. Relative performance among corn hybrid "Families" compared to the normal line grown in the same trial

Family	Specialty Trait	N	Grain yield	Grain moisture	Lodging
			Bu/A	%	%
A12	DBT418	6	1	1	2
A12	Mon810	6	20	1	-3
A12	MonGA21	25	2	0	-1
B99	Mon810	3	15	3	-2
B99	Mon810+T25	3	-2	1	-1
C284	Mon810	24	17	1	-1
C284	Mon810+IT	6	-3	0	-1

Table 2. Economic advantage ($/A) of Hybrid A or (Hybrid B).
Seed price difference = $0 bag: A = $150, (B) = $150.

Yield advantage		Corn Price ($/bu)						
Hybrids	(bu/A)	$1.00	$2.00	$3.00	$4.00	$5.00	$6.00	$7.00
	(14)	($14)	($28)	($42)	($56)	($70)	($84)	($98)
	(12)	($12)	($24)	($36)	($48)	($60)	($72)	($84)
	(10)	($10)	($20)	($30)	($40)	($50)	($60)	($70)
A < (B)	(8)	($8)	($16)	($24)	($32)	($40)	($48)	($56)
	(6)	($6)	($12)	($18)	($24)	($30)	($36)	($42)
	(4)	($4)	($8)	($12)	($16)	($20)	($24)	($28)
	(2)	($2)	($4)	($6)	($8)	($10)	($12)	($14)
A = (B)	0	$0	$0	$0	$0	$0	$0	$0
	2	$2	$4	$6	$8	$10	$12	$14
	4	$4	$8	$12	$16	$20	$24	$28
	6	$6	$12	$18	$24	$30	$36	$42
A > (B)	8	$8	$16	$24	$32	$40	$48	$56
	10	$10	$20	$30	$40	$50	$60	$70
	12	$12	$24	$36	$48	$60	$72	$84
	14	$14	$28	$42	$56	$70	$84	$98

Table 3. Economic advantage ($/A) of Hybrid A or (Hybrid B).
Seed price difference = $50 bag: A = $150, (B) = $200

Yield advantage		Corn Price ($/bu)						
Hybrids	(bu/A)	$1.00	$2.00	$3.00	$4.00	$5.00	$6.00	$7.00
	(14)	$8	($6)	($20)	($34)	($48)	($62)	($76)
	(12)	$10	($2)	($14)	($26)	($38)	($50)	($62)
	(10)	$12	$2	($8)	($18)	($28)	($38)	($48)
A < (B)	(8)	$14	$6	($2)	($10)	($18)	($26)	($34)
	(6)	$16	$10	$4	($2)	($8)	($14)	($20)
	(4)	$18	$14	$10	$6	$2	($2)	($6)
	(2)	$20	$18	$16	$14	$12	$10	$8
A = (B)	0	$22	$22	$22	$22	$22	$22	$22
	2	$24	$26	$28	$30	$32	$34	$36
	4	$26	$30	$34	$38	$42	$46	$50
	6	$28	$34	$40	$46	$52	$58	$64
A > (B)	8	$30	$38	$46	$54	$62	$70	$78
	10	$32	$42	$52	$62	$72	$82	$92
	12	$34	$46	$58	$70	$82	$94	$106
	14	$36	$50	$64	$78	$92	$106	$120

Table 4. Economic Advantage ($/A) of Hybrid A or (Hybrid B).
Seed price difference = $100 bag: A = $150, (B) = $250.

Yield advantage		Corn Price ($/bu)						
Hybrids	(bu/A)	$1.00	$2.00	$3.00	$4.00	$5.00	$6.00	$7.00
	(14)	$30	$16	$2	($12)	($26)	($40)	($54)
	(12)	$32	$20	$8	($4)	($16)	($28)	($40)
	(10)	$34	$24	$14	$4	($6)	($16)	($26)
A < (B)	(8)	$36	$28	$20	$12	$4	($4)	($12)
	(6)	$38	$32	$26	$20	$14	$8	$2
	(4)	$40	$36	$32	$28	$24	$20	$16
	(2)	$42	$40	$38	$36	$34	$32	$30
A = (B)	0	$44	$44	$44	$44	$44	$44	$44
	2	$46	$48	$50	$52	$54	$56	$58
	4	$48	$52	$56	$60	$64	$68	$72
	6	$50	$56	$62	$68	$74	$80	$86
A > (B)	8	$52	$60	$68	$76	$84	$92	$100
	10	$54	$64	$74	$84	$94	$104	$114
	12	$56	$68	$80	$92	$104	$116	$128
	14	$58	$72	$86	$100	$114	$128	$142