

New Model for Sunflower Variety Testing in Colorado

Increasing collaboration among CSU
extension and crops testing personnel,
Colorado Sunflower Administrative
Committee, producers, seed companies, and
industry

Problem

- Colorado sunflower producers may not be making the fullest use of reliable, unbiased, and research-based sunflower performance trial results to make better sunflower variety decisions
- Producers not benefiting rapidly and fully from genetic advances made by sunflower breeding programs
- Lower than possible return on investment on sunflower research for the university and seed companies
- Varieties in trials (entered by seed companies) may not include most popular varieties reducing potential use by producers for performance comparison and better hybrid selection
- Large number of entries in some trials, few entries in other trial locations
- Not the same entries in all trial locations reducing value of trial location's geographic dispersion for making better variety decisions for different Colorado environments

Potential Economic Impact of Dynamic Sunflower Variety Testing

- Potential Return on investment equals Increase in value by genetic advance divided by cost of trials
 - Annual value of CO production ~\$30M
 - Value genetics 2%/yr x \$30M = ~\$600K/yr
 - Total cost of 8 trials ~30K
 - Return on investment = \$600K/\$30K =
~2000% !

Potential Seed Company Seed Sales Value for 100% of the Colorado Market

- Dryland acreage ~150,000 acres
- Irrigated acreage ~15,000 acres
(2X dryland seeding rate = ~30,000 acres)
- Producer cost for seeding all CO
sunflower acreage ~\$20/ac x 180,000
= ~\$3.6M for 100% of market

Why University Trials?

- **Reliable** – year-in and year-out university plans and conducts variety trials, provides results, educates producers using best available plot equipment, experimental design and analysis, and modern results presentation
- **Unbiased** – any company can enter as many entries as desired in any trial – all entries are randomized and replicated – blind data analysis for yield, oil content, and field observations

Why University Trials? (2)

- **Results are part of the public record**
 - Access 24/7 current year and past 10 yr
 - Copies kept in CSU Ag Exp Stn & library
 - Results can be used for other research
 - edible oil, biodiesel, carbon sequestration..,

Why University Trials? (3)

- **More than just variety trials**
 - Sunflower pest observations & control
 - Agronomic observations: planting rate and date, stand establishment, hail, drought & heat tolerance, herbicide effectiveness and weed control, freeze and wind tolerance, harvestability
 - Give producers access to Coop Extension specialists
 - Window to world sunflower improvement efforts and technology transfer

Why University Trials? (4)

- **Provide seed companies with unbiased results**
 - less expensive method to screen experimental lines in multiple agronomic and market environments
 - Results help define superior releases for yield and oil content independent of company personnel
 - Help companies avoid 'fatal flaws' not identified in earlier generation trials- stand establishment under difficult conditions, drought tolerance, harvest consideration, stalk strength, etc.

New Model for Variety Testing

- New collaboration with the Colorado Sunflower Administrative Committee (CSAC)
 - Will identify most widely grown hybrids to enter in university trials
 - 10 oil hybrids in dryland (2) and irrigated trials (2)
 - 5 confection hybrids for dryland and irrigated trials
 - Will ask companies to enter hybrids identified and pay for half of the entry fee (\$150/trial)
 - Will solicit additional research funds from companies and processors – unbiased support to university
 - Will host post-harvest meeting(s) to present research trial results to sunflower producers (like the post-harvest Colorado wheat variety decision meetings) and involve seed company and processor participation

New Model for Variety Testing (2)

CSU Involvement and Initiatives

- Continue current traditional trial practices
 - Plan, solicit entries, package seed, plant trials, Make observations, harvest, analyze results & report results
- Will participate in annual sunflower variety decision meetings, present trial results, and assist producers with interpretation of results for making better variety decisions

New Model for Variety Testing (3)

Expected Benefits of New Model

- Colorado sunflower producers will make fuller use of reliable, unbiased, and research-based sunflower performance trial results to make better sunflower variety decisions
- Producers will benefit more rapidly and fully from genetic advances made by sunflower breeding programs
- The return on investment on sunflower research for the university and seed companies will be improved
- Varieties in trials will include most planted varieties for use by producers for performance comparison and better hybrid selection
- The number of entries in most trials will be more equivalent
- Many of the same entries in all trial locations for making better variety decisions for different Colorado environments