WESTERN COORDINATING COMMITTEE PETITION

NUMBER: WCC-11

TITLE: TURFGRASS RESEARCH

DURATION: 1 October 1999 - 30 September 2004

DESCRIPTION AND JUSTIFICATION: The Turfgrass Research Committee was formed in 1972 to coordinate turfgrass research efforts specific to the Western United States. The WCC-11 members conduct research intended to help facilitate positive response to changing demographics and increasing resource limitations. Limited potable water sources for increasing populations is one example of economic and physical resource considerations and constraints. The committee has been very successful in assuring the complementarity of research by individuals of diverse specialities, working under the varied environmental conditions of the region. The WCC-11 accomplishments show active and positive influence on the Western Region of the United States, nationally and internationally.

OBJECTIVES: The primary objectives of WCC-11 are to coordinate:
1. Improved water use and management practices. Decreasing water supplies and increased use of nonpotable water requires continuing emphasis on research to develop new management systems and new turfgrass cultivars to provide the benefits of turfgrass, despite water limitations. Research coordinated in AZ, CA, CO, NE, NV, TX, UT, and WA continues to deal with the demands on limited water supplies. Research on the effects of water and soil on nutrient and pesticide fate is continuing in WA and NE. Salinity effects on turfgrasses are being investigated in AZ, CA, CO, GU, NV, and TX. Reclaimed water use is continuing to be investigated in AZ and CA as urban areas are required to utilize a prescribed volume of reclaimed water over a specific time period.

2. Development of efficient cultural and maintenance practices for use in an integrated plant management (IPM) system. Newly developed cultivars show adaptation to specific environments in NTEP tests conducted by WCC-11 members. Cultivar adaptation, mowing, optimum water, fertility, and pesticide requirements are tested in all states under diverse environmental conditions that make it imperative for the WCC-11 to continue to share collected information. Pest management using IPM techniques within the turfgrass system is being investigated in CA, GU, NE, OR, and WA.

3. Breeding and genetic improvement for adapted cultivars. Environmentally adapted cultivars minimize resources and efforts required for maintenance. Research continues on use of native grasses. Grass breeding efforts coordinated with physiological studies of stress mechanisms continue in TX, NE, AZ, UT, and WA. AZ, CA, CO, NE, NM, and TX are screening and breeding grasses for use in arid and saline environments. Regional cooperation continues to test new cultivars to define the areas of adaptation and information for cultivar release. Seed production potential of improved cultivars continues to be evaluated in WA, NE, OR, and ID.

4. Stress tolerance research using cultural and genetic manipulation. Investigation of mechanisms that influence resistance to such stresses as heat, cold and drought will include study of osmotic adjustment, leaf moisture conservation attributes, and root extension for both moisture stress tolerance and avoidance in AZ, CA, CO, NE and TX with cooperative exchange of research results being disseminated to other WCC-11 members, in particular the breeders for use in genetic improvement. Traffic impacts on turfgrass are being investigated in AZ, CA, NE, WA and TX.

EXPECTED OUTCOMES:
The annual meeting of the WCC-11 is an effective, well-proven means for interaction among scientists who are separated by large geographic distances, with turfgrass research programs having diverse research emphases. The annual WCC-11 meeting is an essential method for exchange and review of ongoing research, to prevent duplication of efforts and thus maximize use of limited research funds. Turfgrass researchers are housed in Agronomy, Crop and Soil Sciences, Entomology, Horticulture, Plant Physiology, Plant Science, and Plant Pathology departments in academic institutions and professional societies. The WCC-11 meeting fosters cooperative research efforts and shared ideas that would be difficult to achieve without the varied disciplines present. The WCC-11 has active participation from private researchers and interacts with other regional groups, such as the NCR-192. Coauthored publications and cultivar releases have been direct products of the WCC-11 for Turfgrass Research. The challenges that face the Western States emphasize the importance of collaboration, interaction and cooperation of the WCC-11 members to maximize research efforts. We therefore respectfully request that the Western Directors renew the WCC-11 from 1 October 1999 to 30 September 2004.

EDUCATIONAL PLAN:
Teaching programs include strong undergraduate and graduate training to prepare students for both industry and academic positions. Information is disseminated via WCC-11 members through both extension education and resident teaching programs. Programs include, but are not limited to, extension bulletins, newsletters, trade journals, refereed journals, TV programs, radio programs, newspaper columns, field days, videotape, master gardeners, state, national, and international turf conferences, and internet home pages. As computer resources grow, WCC-11 will be dispersing more information via internet and long distance learning.

OPERATIONAL STRUCTURE: Administrative Advisor: Steve Wallner; 2000 Chair: D. Floyd NTEP Rep.: T. Koski; Past Chair: D. Kopec; Historian: G. Stahake; 1999 Secretary: R. Gaussoin

SIGNATURES:

Administrative Advisor — Date: 6-17-99

Chair, Western Directors Association — Date

WCC-11 Accomplishments:

Accomplishments for the period 1995-1998 by WCC-11 member institutions are described here, as they relate to the Coordinating Committee objectives.

To coordinate research on turfgrass water use and turf irrigation practices. As sources of potable water continue to dwindle in the western US, there is a continuing emphasis on research to examine the use non-potable water and to better understand the management of turfgrass areas with reduced irrigation inputs. Research coordinated in CA, AZ, UT, CO, NE, NV, and TX continues efforts to refine irrigation management in relation to other turfgrass management practices. Irrigation (crop) coefficients have been refined for grasses used in CO, CA, AZ, and NV. Considerable work is looking at the use of effluent water for turf irrigation, including effects on turfgrass tolerance, soil nutrient levels, and salinity buildup (CA, AZ, and CO). The use of other non-potable, saline water sources for turfgrass irrigation is currently being examined in CA, AZ, NV, and CO. Attempts at determining total landscape (trees and turf) water requirements are under way in NV and CO and irrigation effects on pesticide and/or nutrient leaching/runoff are ongoing at CA, TX, and Washington.

To coordinate development of efficient cultural and maintenance practices for use in integrated pest management (IPM) systems. All member institutions conduct research that could be placed under this objective. Specifically, TX, CO, NE, and CA are examining the use of biocontrol agents or allelochemicals for insect or weed management. The use of seawater for weed control in salinity tolerant turfgrass is being evaluated at Guam. Most states conduct turfgrass variety trials under the coordination of the National Turfgrass Evaluation (NTEP) program, enabling regional identification of cultivar susceptibility or resistance to insect and disease pests. Research at a number of states has examined the use of plant growth regulators (PGRs) in turf management for mowing reduction (CO), water management (CO), turf management under shade (TX and CO), and for weed control (Guam).

To coordinate breeding, genetic improvement, and selection of species and cultivars that could reduce resource inputs and management efforts. A number of programs are actively engaged in the testing and development of non-traditional grasses for turfgrass use, including work with seashore paspalum (AZ), inland saltgrass (AZ and CO), Texas bluegrass (TX), vetiver grass (Guam), annual bluegrass (CO and WA), blue grama (CO), wheatgrass (UT and CO), and kikuyugrass (CA). All member institutions participate, at some level, in the National Turfgrass Evaluation Program. This program allows for local or regional identification of the best-adapted cultivars, as well as identification of cultivars, which are less tolerant of cold, heat, or drought stress. Major breeding efforts are ongoing for buffalograss (NE and CA), zoysiagrass (TX), creeping bentgrass (TX), saltgrass (AZ and CO), blue grama (CO), and Texas bluegrass (TX), and wheatgrass (UT and CO). Identification of ploidy levels in buffalograss has allowed researchers to better identify cultivars likely to possess cold hardiness (NE, UT, and CO). Research in turfgrass seed production is found at WA, OR, and NE. The development of glyphosate-resistant buffalograss cultivars is being pursued at NE. Breeding efforts at TX are coordinated with pathologists and entomologists to identify and incorporate resistance mechanisms for insect feeding and disease resistance in zoysiagrass and creeping bentgrass.

To coordinate stress tolerance research using cultural programs or genetic manipulation.
A number of projects are examining the effects of saline water and soil on turfgrass stress tolerance, including attempts to elucidate mechanisms of salinity tolerance (AZ, CA, and CO). The management of turf under the shady conditions of urban environments and in retractable dome stadiums is being examined at CA and CO. A project at AZ hopes to determine the heritability of salt gland density, which might allow turf breeders to more effectively develop and screen selections for potential salinity tolerance.

Members of the WCC-11 group join with private industry consultants, researchers, and plant breeders in open and interactive discussions and planning. Regional programs, research papers, and cultivar releases are frequently joint-authored by university and private industry participants. Members of WCC-11 also foster cooperation with other regional groups, including NCR-192 and SERA-IEG 16.

Participant List

WCC-11 Turfgrass Research

Participants	% Research	% Extension	% Teaching
Arizona			
Ken Marcum	80		20
David Kopec		100	
California-Davis			
Lin Wu	75		25
Ali Harivandi		100	
California-Riverside			
Victor Gibeault		100	
Stephen Cockerham[1]			
Colorado			
Tony Koski	20	70	10
Yaling Qian	80		20
Harrison Hughes	10		
Guam			
Greg Wiecko	60	30	10
Nebraska			
Roch Gaussoin	25	75	
Garald Horst	75		25
Terrance Riordan	65	15	20
Robert Sherman	70	30	
John Watkins	10	40	
Frederick Baxendale	25	75	
Robert Klucas	10		
Oregon			
Tom Cook[2]		20	80
Don Floyd[1]			
Texas			
R. H. White	50		50
Gene Taylor		100	
John Sloan	100		
James McAfee		100	
Phillip Colbaugh	100		
Robert Crocker	100		
James Read	100		
James Reinert	100		
M. C. Engelke	100		
Utah			
Paul Johnson	60	15	25
Rich Koenig	15	75	10
Blair Waldron		100	
Washington			
Gwen Stahnke		81	19
Eric Miltner	100		
Gary Chastagner	85	15	
Paul Bockman		100	
William Johnston	60		40

[1] Cooperator
[2] 2000 Chair