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Turfgrass Breeding and Evaluation
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Plant Science Department, New Jersey Agricultural
Experiment Station, Cook College

William A. Meyer, Jennifer M. Johnson-Cicalese, James Murphy, Michael Richardson, James White, Dirk Smith, Ronald Bara, Melissa Mohr, Rachael Roux, Christine Kubik, Pedro Perdomo, Stacy Bonos, Joseph Clark, William K. Dickson, Barbara Smith, and Reed Funk.

1. Dr. William A. Meyer was assigned leadership of the newly invigorated turfgrass breeding program in April 1996.

2. Over 8,500 new seeded turfgrass evaluation plots, over 20,000 clonal evaluation plots, and over eleven acres of spaced-plant nurseries were established in 1996.

3. Promising turfgrass germplasm and associated endophytes were collected from Poland, Austria, Switzerland, Germany, New Jersey, Connecticut, New York, and Oregon. Increased emphasis was placed on collecting creeping, colonial, dryland, and velvet bentgrasses.

4. Germplasm developed at the New Jersey Agricultural Experiment Station was used in a number of new turfgrass varieties including Palmer III, Premier II, Catalina, Wizard, and Divine perennial ryegrasses; Genesis, Tarheel, Renegade, Jaguar 3, Grande, Barlexas, SR-8210, Gazelle, and Duster tall fescues; Treasure Chewings fescue; and Nordic hard fescue.

5. Studies were initiated to develop a more rapid method of screening for resistance to the stripe smut disease.

6. Kentucky bluegrasses with good field resistance to current races of stripe rust are being evaluated for other useful characteristics.

7. A seedling screening technique has proven successful in identifying promising hybrids in large populations obtained from crossing highly apomictic Kentucky bluegrasses.

8. Moderate wear treatments on newly established turfs have been effective in identifying fescues and perennial ryegrasses with improved resistance to net blotch and leaf spot diseases.

9. Chinch bugs caused severe damage to endophyte-free strong creeping and Chewings fescues, whereas, half-sib progenies of the same fine fescues containing endophytes showed enhanced resistance in both field and laboratory tests. Petri-dish preference tests, using first-instar chinch bugs were used to compare E+ fine fescue combinations with the E- counterparts. A significantly higher percentage of nymphs was found on the E- tillers for four of the five comparisons. These studies demonstrated for the first time in strong creeping red fescue endophyte enhanced chinch bug resistance.

10. Population improvement programs continue to show progress in the genetic improvement of perennial ryegrasses, tall fescues, Chewings fescues, hard fescues, strong creeping red fescues, and creeping bentgrass. Similar population improvement programs have been initiated on recent collections of colonial, dryland, and velvet bentgrass.

11. Continued progress is being made in identifying and developing Kentucky bluegrasses with improved performance under severe summer stress and also at reduced maintenance.

## Publications - 1996


1. Hurley, R.H., V.G. Lehman, J.A. Murphy, and C.R. Funk. 1996. Registration of Yorktown III perennial ryegrass. Crop Sci. 36:465-46.

2. Murphy, J.A., C.R. Funk, W.K, Dickson, D.A. Smith, R.F. Bara, and M.E. Secks. 1996. Performance of fine fescue cultivars and selections in New Jersey turf trials. Rutgers Turfgrass Proceedings 27:49-68.

3. Murphy, J.A., R.F. Bara, W.K. Dickson, D.A. Smith, and C.R. Funk. 1996. Performance of Kentucky bluegrass cultivars and selections in New Jersey turf trials. Rutgers Turfgrass Proceedings 27:69-116.

4. Murphy, J.A., M.E. Secks, R.F. Bara. W.K. Dickson, D.A. Smith, and C.R. Funk. 1996. Performance of perennial ryegrass cultivars and selections in New Jersey turf trials. Rutgers Turfgrass Proceedings 27:117-128.

5. Murphy, J.A., R.F. Bara, W.K. Dickson, M.E. Secks, D.A. Smith, and C.R. Funk. 1996. Performance of tall fescue cultivars and selections in New Jersey turf trials. Rutgers Turfgrass Proceedings 27:129-146.

6. Secks, M.E., J.A. Murphy and J. Johnson-Cicalese. 1996. *Acremonium* endophyte-enhanced resistance to hairy chinch bugs in Chewings fescue and strong creeping red fescue. Agronomy Abstracts 1996:152.

Personnel Involved in the Turfgrass Breeding Program at Rutgers

| | | Percent time |
|---|---|---|
| **Faculty** | | |
| William A. Meyer | Turfgrass Breeder | 70 |
| Reed Funk | Turfgrass Breeder | 70 |
| James Murphy | NTEP | 10 |
| Michael Richardson | Endophytes, Zoysia | 70 |
| James White | Endophytes | 20 |
| Faith Belanger | Biotechnology | 20 |
| Bruce Clarke | Pathology | 5 |
| **Post doctoral** | | |
| Jennifer Johnson-Cicalese | Entomology | 50 |
| **Technicians** | | |
| Ronald Bara | Turfgrass Breeding | 100 |
| Dirk Smith | Turfgrass Breeding | 100 |
| **Farm employees** | | |
| Bill Dickson | Farm Supervisor | 10 |
| Joseph Clarke | Technician | 5 |
| George Ziemienski | Farm Supervisor | 50 |
| Michael Reynolds | Technician | 50 |
| Jim Schumacher | Seasonal Employee | 50 |
| John Lepucki | Seasonal Employee | 50 |
| **Graduate students** | | |
| Christine Kubik | Turfgrass Breeding | 100 |
| Stacy Bonos | Stress Physiology | 50 |
| **Office personnel** | | |
| Barbara Smith | Secretary | 33 |
| Phyllis Lepucki | Administrative assistant | 5 |

| | Percent time |
|---|---|
| Seasonal employees | |
| Melissa Mohr | 100 |
| Rachael Roux | 100 |
| Bridget Meyer | 100 |
| Zack Stewart | 100 |
| Roger Lee | 100 |
| Marco Valdivia | 100 |
| Pedro Perdomo | 20 |

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|---|---|
| Total expenditures | |
| Salaries and overhead | $ 539,000 |
| Hourly labor | 80,000 |
| Facilities | 200,000 |
| Operating budget & equipment | 300,000 |
| Total | $1,119,000 |