

SOUTHERN REGION SMALL FRUIT CONSORTIUM RESEARCH PROPOSAL

Progress Report for 2002 Grant

TITLE Evaluation of Southern Highbush Blueberry Plants Derived from Tissue Culture and Conventional Rooted Cuttings

INVESTIGATORS

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OBJECTIVE

The objective of this multi-state project is to evaluate field performance of southern highbush blueberry plants derived from tissue culture and by traditional rooted cuttings.

JUSTIFICATION

Southern highbush blueberries are widely grown in North Carolina and Georgia due to their high quality, early season fruit. Many new cultivars have been introduced in the last few years, and growers have great interest in obtaining sufficient quantities of these new releases. Propagation by traditional rooted cuttings (RC) has typically been used to build stocks of newly released cultivars, yet, the process requires considerable time. Recently, tissue culture (TC) has been employed to generate substantial numbers of clean, disease-free blueberry plants in a short amount of time. However, questions remain as to how TC and RC plants compare in field performance. Grout et al. (1986) reported that TC-derived plants of the northern highbush cultivar 'Northblue' had an enhanced branching framework, especially during the early years following establishment. The increased branching typically resulted in greater flower bud numbers per plant for the TC plants when compared to plants propagated by leaf-bud cuttings. El-Shiekh et al. (1996) later examined longer term consequences of TC versus RC plantings from the previous study of Grout et al. (1986). The later study indicated that effects of propagation methods on yield and growth habit of 'Northblue' were limited to early years, but could remain longer in colder areas with shorter growing seasons. Additional studies on blueberries, especially vigorous southern highbush cultivars are very limited. To this end, research is needed to examine how southern highbush plants derived from TC and RC methods perform under diverse field conditions in the Southeast. The information would be especially useful to growers in making decisions over which plant type to use for their operations.

METHODOLOGIES

One site each in North Carolina and Georgia that is suitable for southern highbush production has been identified and is ready for planting in the 2002-2003 dormant season. Since the actual funding for the grant did not start until after the 2002 planting season, we had to special order plants for the 2003 growing season. TC and RC plants of similar sizes have been produced for the project this growing season by Fall Creek Nursery, Lowell, OR and will be ready for delivery in January 2003. The cultivars Star and O'neal will be common to both GA and NC, and a third cultivar will also be grown at each site ('Jubilee' for GA and 'Duke' for NC). We will receive 25 plants of each cultivar and plant type at each location. These plants will be planted in a RCB design with 3 to 5 replications. Data collected for each plant type and cultivar for the first two years will include lateral and basal branch numbers, flower bud numbers, fruit set, vigor ratings, and fruit quality assessment. If possible, yield data will be collected in years 2 thru 4.

RESULTS AND CONCLUSIONS

No results have been obtained yet due to the long term nature of this project. Establishment of plots will take place the first year, and data will then be collected for 2 to 4 additional years.

IMPACT STATEMENT

Again, the project is just getting underway, so it is difficult to report actual impact. However, there has been great interest expressed by farmers, commercial nurseries, and extension specialists in the future results from this study. They have been made aware that this project is underway, and in fact, one commercial nursery donated plant material for the project. There is essentially no comparative information available in the Southeast on TC vs. RC plants. The findings from this multi-state study will equip the industry for making better decisions concerning the usage of TC plants. If TC plants prove to be acceptable, then this offers the potential for more rapid propagation of large numbers of newly released cultivars.

LIST OF REFERENCES

- El-Shiekh, A., D.K. Wildung, J.J. Luby, K.L. Sargent, and P.E. Read. 1996. Long-term effects of propagation by tissue culture or softwood single-node cuttings on growth habit, yield, and berry weight of 'Northblue' blueberry. *J. Amer. Soc. Hort. Sci.* 121: 339-342.
- Grout, J.M., P.E. Read, and D.K. Wildung. 1986. Influence of tissue culture and leaf-bud propagation on the growth habit of 'Northblue' blueberry. *J. Amer. Soc. Hort. Sci.* 111: 372-375.