

**Publications by NC State University Cooperative Tree Improvement Program
Scientists, Students, & Associates**

Compiled from Cooperative Annual Reports (1957-2022)

2022

- Isik, F. 2022. Genomic prediction of complex trait in perennial plants, a forest-tree case. Chapter 18 in: *Methods in Molecular Biology series*. Ahmadi, N. and J. Bartolome (Eds). Springer Nature (in press).
- Shalizi, MN, K. Payn, and F. Isik. 2022. Genetic linkage between the training and selection sets impacts the predictive ability of SNP markers in a cloned population of *Pinus taeda* L. *Tree Genetics & Genomes* 18:4. <https://doi.org/10.1007/s11295-021-01532-9>.
- Walker, T.D., W.P. Cumbie, and F. Isik. 2022. Single-step genomic analysis increases the accuracy of within-family selection in a clonally replicated population of *Pinus taeda* L. *For. Sci.* Published online <https://doi.org/10.1093/forsci/fxab054>

2021

- Alan, M and F. Isik. 2021. Genetic relationships between terminal shoot length, number of flushes and height in a 4-year-old progeny test of *Pinus brutia* Ten. *Annals of Forest Science*, 78(2). <https://doi.org/10.1007/s13595-021-01040-9>
- Caballero, M., E. Lauer, J. Bennett, S. Zaman, S. McEvoy, J. Acosta, C. Jackson, L. Townsend, A. Eckert, R.W. Whetten, C. Loopstra, J. Holliday, M. Mandal, J.L. Wegrzyn, and F. Isik. 2021. Toward genomic selection in *Pinus taeda*: Integrating resources to support array design in a complex conifer genome. *Appl. In Plant Sci.* <https://doi.org/10.1002/aps3.11439>
- Chan J.M. and F. Isik. 2021. Genetic variation in frost tolerance, *Uromycladium acacia* rust resistance, and growth in an *Acacia mearnsii* population. *For. Sci.* 67(5):574–586. <https://doi.org/10.1093/forsci/fxab032>
- Gräns, D., F. Isik, R.C. Purnell, I.M. Peszlen, and S.E. McKeand. 2021. Genetic variation and the effect of herbicide and fertilization treatments on wood quality traits in loblolly pine. *For. Sci.* 67(5):564–573. <https://doi.org/10.1093/forsci/fxab026>
- Jackson C., N. Christie, M. Reynolds, C. Marais, Y Tii-kuzu, M. Caballero, T. Kampman, E. Visser, S. Naidoo, D. Kain, R. Whetten, F. Isik, J. Wegrzyn, G. Hodge, J. Acosta, and A. Myburg. 2021. A genome-wide SNP genotyping resource for tropical pine tree species. *Mol. Ecol. Resour.*: 1–16. <https://doi.org/10.1111/1755-0998.13484>
- Lauer, E, J. Holland, and F. Isik. 2021. Prediction ability of genome-wide markers in *Pinus taeda* L. within and between population is affected by relatedness to the training population and trait genetic architecture. *G3 Genes| Genomes| Genetics*. <https://doi.org/10.1093/g3journal/jkab405>
- Lauer, E, and F. Isik. 2021. Major QTL confer race-nonspecific resistance in the co-evolved *Cronartium quercuum* f. sp. *fusiforme*–*Pinus taeda* pathosystem. *Heredity*: 1-12. <https://doi.org/10.1038/s41437-021-00451-8>
- Lauer, E., A. Sims, S. McKeand, and F. Isik. 2021. Genetic parameters and genotype-by-environment interactions in regional progeny tests of *Pinus taeda* L. in the southern USA. *For. Sci.* 67(1):60-71. <https://doi.org/10.1093/forsci/fxa035>
- Lu, Y., K.G. Payn, P. Pandey, J.J. Acosta, A.J. Heine, T.D. Walker, and S. Young. 2021. Hyperspectral imaging with cost-sensitive learning for high-throughput screening of loblolly pine (*Pinus taeda* L.) seedlings for freeze tolerance. *Transactions of the ASABE* 64(6): 2045-2059. <https://doi.org/10.13031/trans.14708>

- Lu, Y., T.D. Walker, J.J. Acosta, S. Young, P. Pandey, A.J. Heine, and K.G. Payn. 2021. Prediction of freeze damage and minimum winter temperature of the seed source of loblolly pine seedlings using hyperspectral imaging. *For. Sci.* 67(3): 321–334.
<https://doi.org/10.1093/forsci/fxab003>
- Matallana-Ramirez, L.P., R.W. Whetten, G.M. Sanchez and K.G. Payn. 2021. Breeding for climate change resilience: a case study of loblolly pine (*Pinus taeda* L.) in North America. *Frontiers in Plant Sci.* <https://doi.org/10.3389/fpls.2021.606908>
- Maynor, J.A., F. Isik, T.D. Walker, R.W. Whetten, A.J. Heine, K.G. Payn, and S.E. McKeand. 2021. Provenance and family variation in biomass potential of loblolly pine in the Piedmont of North Carolina. *For. Sci.* 67(3):312–320. <https://doi.org/10.1093/forsci/fxaa056>
- McKeand, S.E., K.G. Payn, A.J. Heine, R.C. Abt. 2021. Economic significance of continued improvement of loblolly pine genetics and its efficient deployment to landowners in the southern United States. *J. For.* 119(1):62-72. <https://doi.org/10.1093/jofore/fvaa044>
- Mphahlele MM, F. Isik., G.R. Hodge, and A.A. Myburg. 2021. Genomic breeding for diameter growth and tolerance to *Leptocybe* gall wasp and Botryosphaeria/Teratosphaeria fungal disease complex in *Eucalyptus grandis*. *Frontiers in Plant Science*. 12:228.
<https://doi.org/10.3389/fpls.2021.638969>
- Pandey, P., K.G. Payn, Y. Lu, A.J. Heine, T.D. Walker, J.J. Acosta, and S. Young, 2021. Hyperspectral imaging combined with machine learning for the detection of fusiform rust disease incidence in loblolly pine seedlings. *Remote Sens.* 13:3595.
<https://doi.org/10.3390/rs13183595>
- Shalizi MN, W.P. Cumbie and F. Isik. 2021. Genomic prediction for fusiform rust disease incidence in a large cloned population of *Pinus taeda*. *G3 Genes| Genomes| Genetics*.
<https://doi.org/10.1093/g3journal/jkab235>
- Xu J., U.B. Nielsen, F. Isik, M. Jensen, and O.K. Hansen. 2021. Genetic variation and inheritance of susceptibility to *Neonectria neomacrospora* and Christmas tree traits in a progeny test of Nordmann fir. *Annals of Forest Science*. 78(1):1-5.
<https://doi.org/10.1007/s13595-021-01039-2>
- 2020**
- Calleja-Rodriguez, A., J. Pan, T. Funda, Z. Chen, J. Baison, F. Isik, S. Abrahamsson, and H.X. Wu. 2020. Evaluation of the efficiency of genomic versus pedigree predictions for growth and wood quality traits in Scots pine. *BMC Genomics* 21:796. <https://doi.org/10.1186/s12864-020-07188-4>
- Frey, G.E., T. Durmus, E.O. Sills, F. Isik, and M.M. Comer. 2020. Potential alternative tree species as substrates for forest farming of log-grown shiitake mushrooms in the southeastern United States. *HortTechnology* 30(6):741-744. <https://doi.org/10.21273/HORTTECH04721-20>
- Hansen O.K., K. Lamour, R. Whetten, J. Xu, A. Cuenca, M.S. Islam, and U.B. Nielsen. 2020. Ad hoc breeding of a genetically depauperate landrace of noble fir (*Abies procera* Rehder) using SNP genotyping via high-throughput targeted sequencing. *Tree Genetics & Genomes* 16(5):63. <https://doi.org/10.1007/s11295-020-01460-0>
- Heine, A.J, T.D. Walker, S.E. McKeand, J.B. Jett, and F. Isik. 2020. Pollination bag type has a significant impact on cone survival in mass production of controlled pollinated seeds in loblolly pine. *For. Sci.* 66(5):589–599. <https://doi.org/10.1093/forsci/fxaa013>

- Kurt, Y., L. Matallana-Ramirez, W. Kohlway, R. Whetten, and L.J. Frampton. 2020. A fast, flexible and inexpensive protocol for DNA and RNA extraction for forest trees. *Forest Systems* 29(2):e018. <https://doi.org/10.5424/fs/2020292-16730>
- Mphahlele, M. M., F. Isik, M.M. Mostert-O'Neill, S.M. Reynolds, G.R. Hodge, and A.A. Myburg. 2020 Expected benefits of genomic selection for growth and wood quality traits in *Eucalyptus grandis*. *Tree Genetics & Genomes* 16(4):49. <https://doi.org/10.1007/s11295-020-01443-1>
- Pais A.L., R.W. Whetten, and Q-Y. Xiang. 2020. Population structure, landscape genomics, and genetic signatures of adaptation to exotic disease pressure in *Cornus florida* L. – insights from GWAS and GBS data. *Journal of Systematics and Evolution*, 58(5):546-570
<https://doi.org/10.1111/jse.12592>
- Shalizi, M.N., S.A. Gezan, S.E. McKeand, J. Sherrill, W.P. Cumbie, R. Whetten, and F. Isik. 2020. Correspondence between breeding values of the same *Pinus taeda* L. genotypes from clonal trials and half-sib seedling progeny trials. *For. Sci.* 66(5):600–611.
<https://doi.org/10.1093/forsci/fxa016>
- Walker, T.D., B.P. Bullock, B.C. Smith, and S.E. McKeand. 2020. Modeling self-thinning patterns in loblolly pine with provenance and family effects. *For. Sci.* 66(6):712-725.
<https://doi.org/10.1093/forsci/fxaa030>
- 2019**
- Chan, J. M. and F. Isik. 2019. Genetic variation in resistance to *Uromyctadium acaciae* fungus, growth, gummosis and stem form in *Acacia mearnsii* populations. *Tree Genetics & Genomes* 15(3): 35. <https://doi.org/10.1007/s11295-019-1341-x>
- DeWitt, N., M. Guedira, E. Lauer, M. Sarinelli, P. Tyagi, D. Fu, Q. Hao, J.P. Murphy, D. Marshall, A. Akhunova, K. Jordan, E. Akhunov, and G. Brown-Guedira. 2019. Sequence-based mapping identifies a candidate transcription repressor underlying awn suppression at the *B1* locus in wheat. *New Phytologist* 225(1):326-339. <https://doi.org/10.1111/nph.16152>
- Isik, F. and S.E. McKeand. 2019. Fourth cycle breeding and testing strategy for *Pinus taeda* in the NC State University Cooperative Tree Improvement Program. *Tree Genetics & Genomes* 15:70 <https://doi.org/10.1007/s11295-019-1377-y>
- McKeand, S.E. 2019. The evolution of a seedling market for genetically improved loblolly pine in the southern United States. *J. For.* 117 (3): 293-301. <https://doi.org/10.1093/jofore/fvz006>
- Shalizi, M.N. and F. Isik. 2019. Genetic parameter estimates and GxE interaction in a large cloned population of *Pinus taeda* L. *Tree Genetics & Genomes* (2019) 15: 46.
<https://doi.org/10.1007/s11295-019-1352-7>
- Walker, T.D., F. Isik, and S.E. McKeand. 2019. Genetic variation in acoustic time of flight and drill resistance of juvenile wood in a large loblolly pine breeding population. *For. Sci.* 65(4):469–482 <https://doi.org/10.1093/forsci/fxz002>
- 2018**
- Čepel J., J. Stejskal, Z. Lhotáková, D. Holá, J. Korecký, M. Lstibůrek, I. Tomášková, M. Kočová, O. Rothová, M. Palovska, J. Hejtmánek, A. Krejzkova, S. Gezan, R. Whetten, and J. Albrechtová. 2018. Heritable variation in needle spectral reflectance of Scots pine (*Pinus sylvestris* L.) peaks in red edge. *Remote Sensing of Environment* 219: 89-98.
<https://doi.org/10.1016/j.rse.2018.10.001>
- Grattapaglia, D., O.B. Silva-Junior, R.T. Resende, E.P. Cappa, B.S. Müller, B. Tan, F. Isik, B. Ratcliffe, and Y.A. El-Kassaby. 2018. Quantitative genetics and genomics converge to

accelerate forest tree breeding. *Frontiers in Plant Science* 9:1693.

<https://doi.org/10.3389/fpls.2018.01693>

Hamlin, J., R.A. Sniezko, F. Isik, D.P. Savin, A. Kegley, S. Long, R. Danchok. 2018. Genetic variation in height and white pine blister rust resistance in sugar pine (*Pinus lambertiana*) - 15-year field trial results of three six-parent half dialers from three breeding zones. In: Schoettle, A.W., R.A. Sniezko, and J.T Kliejunas, eds. Proc. IUFRO Joint Conf.: Genetics of five-needle pines, rusts of forest trees, and Strobosphere. June 15-20, 2014 Fort Collins, CO. Proc. RMRS-P-76. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station. p. 100.

https://www.fs.fed.us/rm/pubs_series/rmrs/proc/rmrs_p076/rmrs_p076_100.pdf

Walker, T.D. and S.E. McKeand. 2018. Fusiform rust hazard mapping for loblolly pine in the southeastern United States using progeny test data. *J. For.* 116(2): 117-122.
<https://doi.org/10.5849/JOF-2017-070>

Wang, J.P., M.L. Matthews, C.M. Williams, R. Shi, C. Yang, S. Tunlaya-Anukit, H-C. Chen, Q. Li, J. Liu, C-Y. Lin, P. Naik, Y-H. Sun, P.L. Loziuk, T-F. Yeh, H. Kim, E. Gjersing, T. Shollenberger, C.M. Shuford, J. Song, Z. Miller, Y-Y. Huang, C.W. Edmunds, B. Liu, Y. Sun, Y-C. J. Lin, W. Li, H. Chen, I. Peszlen, J.J. Ducoste, J. Ralph, H-M. Chang, D.C. Muddiman, M.F. Davis, C. Smith, F. Isik, R. Sederoff, and V.L. Chiang. 2018. Improving wood properties for wood utilization through multi-omics integration in lignin biosynthesis. *Nature Communications*. 9:1579. <https://doi.org/10.1038/s41467-018-03863-z>

2017

Duran, R., F. Isik, J. Zapata-Valenzuela, C. Balocchi, and S. Valenzuela. 2017. Genomic predictions of breeding values in a cloned *Eucalyptus globulus* population in Chile. *Tree Genetics & Genomes*, 13(4).

Farjat, A.E., A.K. Chamblee, F. Isik, R.W. Whetten, and S.E. McKeand. 2017. Variation among loblolly pine seed sources across diverse environments in the southeastern United States. *For. Sci.* 63(1): 39-48.

Farjat, A.E., B.J. Reich, J. Guinness, R.W. Whetten, S.E. McKeand, and F. Isik. 2017. Optimal seed deployment under climate change using spatial models: application to loblolly pine in the southeastern US. *Journal of the American Statistical Association*. 112 (519): 909-920. DOI: 10.1080/01621459.2017.1292179

Holliday, J.A, S.N. Aitken, J.E.K. Cooke, B. Fady, S.C. Gonzalez-Martinez, M. Heuertz, J.P. Jaramillo-Correa, C. Lexer, M. Staton, R.W. Whetten, C. Plomion. 2017. Advances in ecological genomics in forest trees and applications to genetic resources conservation and breeding. *Molecular Ecology*. 26(3):706-717.

Isik, F, J. Holland, and C. Maltecca. 2017. *Genetic Data Analysis for Plant and Animal Breeding*. Springer International Publishing. 400p.

Kohlway, W.H., R.W. Whetten, D.M. Benson and J. Frampton. 2017. Response of Turkish and Trojan fir to *Phytophthora cinnamomi* and *P. cryptogea*, *Scandinavian Journal of Forest Research*, DOI: 10.1080/02827581.2017.1280076

McKeand, S. 2017. Making sense of the genetics market. *Forest Landowner* 76 (5): 14-19.

McKeand, S. 2017. Shopping for genetically improved loblolly pine seedlings? Look at the data first! *South Carolina Forestry*. The 2017 Annual Magazine of the Forestry Association of SC. p. 86-89.

Pais, A.L., R.W. Whetten, Q-Y. Xiang. 2017. Ecological genomics of local adaptation in *Cornus florida* L. by genotyping by sequencing. *Ecology and Evolution* 7(1):441-465.

Spitzer, J., F. Isik, R.W. Whetten, A.E. Farjat, and S.E. McKeand. 2017. Correspondence of loblolly pine response for fusiform rust disease from local and wide-ranging tests in the southern United States. For. Sci. 63(5):496–503. <https://doi.org/10.5849/FS-2016-093R1>.

2016

- Bartholomé J, Bink MC, van Heerwaarden J, Chancerel E, Boury C, Lesur I, Isik F, Bouffier L, Plomion C. 2016. Linkage and association mapping for two major traits used in the maritime pine breeding program: height growth and stem straightness. PLoS One. Nov 2;11(11):e0165323.
- Bartholome, J., J. Van Heerwaarden, F. Isik, C. Boury, M. Vidal, C. Plomion, and L. Bouffier. 2016. Performance of genomic prediction within and across generations in maritime pine. BMC Genomics, 17.
- Čepel J., D. Holá, J. Stejskal, J. Korecký, M. Kočová, Z. Lhotáková, I. Tomášková, M. Palovská, O. Rothová, R.W. Whetten, J. Kaňák, J. Albrechtová, and M. Lstibůrek. 2016. Genetic variability and heritability of chlorophyll *a* fluorescence parameters in Scots pine (*Pinus sylvestris* L.). Tree Physiology 36(7): 883-895.
- Gräns, D., F. Isik, R.C. Purnell, and S. McKeand. 2016. Genetic variation in response to herbicide and fertilization treatments for growth and form traits in loblolly pine. For. Sci. 62(6): 633-640.
- Isik, F., J. Bartholomé, A. Farjat, E. Chancerel, A. Raffin, L. Sanchez, C. Plomion, L. Bouffier. 2016. Genomic selection in maritime pine. Plant Science 242:108-119
- Kurt, Y., J. Frampton, F. Isik, C. Landgren, and G. Chastagner. 2016. Variation in needle and cone characteristics and seed germination ability of *Abies bornmuelleriana* and *Abies equitrojani* populations from Turkey. Turkish Journal of Agriculture and Forestry 40:169-176.
- Plomion, C., J. Bartholomé, I. Lesur, C. Boury, I. Rodríguez-Quilón, H. Lagraulet, F. Ehrenmann et al. 2016. High-density SNP assay development for genetic analysis in maritime pine (*Pinus pinaster*). Molecular Ecology Resources 16 (2): 574-587.

- Xiong, J., S.E. McKeand, F.T. Isik, Jill Wegrzyn, D.B. Neale, Z-B Zeng, L. da Costa e Silva, and R.W. Whetten. 2016. Quantitative trait loci influencing stem defects in an outbred pedigree of loblolly pine. BMC Genetics 17:138. DOI 10.1186/s12863-016-0446-6
- Wang, J.P., S. Tunlay-Anukit, R. Shi, T.F. Yeh, L. Chuang, F. Isik, and P.P. Naik. 2016. A proteomic-based quantitative analysis of the relationship between monolignol biosynthetic protein abundance and lignin content using transgenic *Populus trichocarpa*. Recent Advances in Polyphenol Research, 5, 89.

2015

- Amerson H.V., C. D., T.L. Kubisiak, E.G. Kuhlman, and S.A. Garcia. 2015. Identification of nine pathotype-specific genes conferring resistance to fusiform rust in loblolly pine (*Pinus taeda* L.). Forests 6(8): 2739-2761. doi:10.3390/f6082739
- Egbäck, S., B.P. Bullock, F. Isik, and S. McKeand. 2015. Height-diameter relationships for different genetic planting stock of loblolly pine at age six. For. Sci. 61(3): 424-428. <http://dx.doi.org/10.5849/forsci.14-015>
- Farjat, A.E., F. Isik, B.J. Reich, R.W. Whetten, and S.E. McKeand. 2015. Modeling climate change effects on the height growth of loblolly pine. For. Sci. 61 (4, 5): 703-715. <http://dx.doi.org/10.5849/forsci.14-075>
- Ford, G.A., S.E. McKeand, J.B. Jett, and F. Isik. 2015. Effects of inbreeding on growth and quality traits in loblolly pine. For. Sci. 61(3): 579-585. <http://dx.doi.org/10.5849/forsci.13-185>

- Isik, F., Kumar, S., Martínez-García, P. J., Iwata, H., & Yamamoto, T. 2015. Chapter three-Acceleration of forest and fruit tree domestication by genomic selection. *Advances in Botanical Research* 74: 93-124.
- Kim, T.J., B.P. Bullock, and S.E. McKeand. 2015. Spatial autocorrelation among different levels of genetic control and spacings in loblolly pine. *For. Sci.* 61(3): 438-444.
<http://dx.doi.org/10.5849/forsci.14-034>
- McKeand, S. 2015. The success of tree breeding in the southern US. Editorial in: *BioResources* 10(1): 1-2.
- Qi Z.C., Y. Yu, X. Liu, A. Pais, T. Ranney, R.W. Whetten, and Q.Y Xiang. 2015. Phylogenomics of *Fothergilla* (Hamamelidaceae) by RAD-tag based GBS: insights into species origin and effects of software pipelines. *Journal of Systematics and Evolution* 53(5): 432-477.
- Wood, E.R., B.P. Bullock, F. Isik, and S.E. McKeand. 2015. Variation in stem taper and growth traits in a clonal trial of loblolly pine. *For. Sci.* 61(1): 76-82.
<http://dx.doi.org/10.5849/forsci.12-068>
- Zapata-Valenzuela, J., F. Ogut, A. Kegley, W.P. Cumbie, F. Isik, B. Li, and S.E. McKeand. 2015. Seedling evaluation of Atlantic Coastal and Piedmont sources of *Pinus taeda* L. and their hybrids for cold hardiness. *For. Sci.* 61(1): 169-175. <http://dx.doi.org/10.5849/forsci.12-610>
- 2014**
- Chen, H-C, J, Song, J.P. Wang, Y-C Lin, J. Ducoste, C.M. Shuford, J. Liu, Q. Li, R. Shi, A. Nepomuceno, F. Isik, D.C. Muddiman, C. Williams, R.R. Sederoff, and V.L. Chian. 2014. Systems biology of lignin biosynthesis in *Populus trichocarpa*: heteromeric 4-coumaric acid: coenzyme a ligase protein complex formation, regulation, and numerical modeling. *Plant Cell* 26(3): 876-893. DOI 10.1105/tpc.113.119685.
- El-Kassaby, Y.A., F. Isik, and R.W. Whetten. 2014. Modern advances in tree breeding (Chapter 18). In: T. Fenning (Ed.), Challenges and opportunities for the World's Forests in the 21st Century. Series: Forestry Sciences, Vol 81. 818p.
- Isik, F. 2014. Genomic selection in forest trees: prospects and challenges (review paper). *New Forests* 45(3): 379-401. DOI 10.1007/s11056-014-9422-z.
- McKeand, S., J.B. Jett, Tom Byram. 2014. Good wood. *Forest Landowners*. 73(2): 14-19
- Moraga-Suazo, P., L. Orellana, P. Quiroga, C. Balocchi, E. Sanfuentes, R. W. Whetten, R. Hasbún, and S. Valenzuela 2014. Development of a genetic linkage map for *Pinus radiata* and detection of pitch canker disease resistance associated QTLs. *Trees Structure and Function* 28(6): 1823-1835. DOI 10.1007/s00468-014-1090-2.
- Neale, D.B., J.L. Wegrzyn, K.A. Stevens, A.V. Zimin, D. Puiu, M.W. Crepeau, C. Cardeno , M. Koriabine, A.E. Holtz-Morris, J.D. Liechty, P.J. Martínez-García, H.A. Vasquez-Gross, B.Y. Lin, J.J. Zieve, W.M. Dougherty, S. Fuentes-Soriano, L-S Wu, D. Gilbert, G. Marçais, M. Roberts, C. Holt, M. Yandell, J.M. Davis, K.E. Smith, J.F.D. Dean, W. W. Lorenz, R.W. Whetten, R. Sederoff, N. Wheeler, P.E. McGuire, D. Main, C.A. Loopstra, K. Mockaitis, P.J. deJong, J.A. Yorke, S.L. Salzberg, and C.H. Langley. 2014. Decoding the massive genome of loblolly pine using haploid DNA and novel assembly strategies. *Genome Biology* 2014, 15:R59 doi:10.1186/gb-2014-15-3-r59.
- Ögüt, F., C. Maltecca, R.W. Whetten, S.E. McKeand, and F. Isik. 2014. Genetic analysis of diallel progeny test data using factor analytic linear mixed models. *For. Sci.* 60(1): 119-127.

Plomion C., E. Chancerel, J. Endelman, J-B. Lamy, E. Mandrou, I. Lesur, F. Ehrenmann, F. Isik, M.C. Bink, J. van Heerwaarden, and L. Bouffier 2014. Genome-wide distribution of genetic diversity and linkage disequilibrium in a mass-selected population of maritime pine. *BMC Genomics*, 15:171.

Smith, B.C., B.P. Bullock, F. Isik, and S.E. McKeand. 2014. Modeling genetic effects on growth of diverse provenances and families of loblolly pine across optimum and deficient nutrient regimes. *Can. J. For. Res.* 44: 1453–1461.

Xiong, S.J., S.E. McKeand, R.W. Whetten, and F.T. Isik. 2014. Genetics of stem forking and ramicorn branches in a cloned loblolly pine family. *For. Sci.* 60(2): 360-366.

2013

Alberto, F.J., S.N. Aitken, R. Alia, S. C. González-Martínez, H. Hanninen, A. Kremer, F. Lefèvre, T. Lenormand, S. Yeaman, R. Whetten, and O. Savolainen. 2013. Potential for evolutionary response to climate change - evidence from tree populations. *Global Change Biology*. 19:1645-1661.

Aspinwall, M.J., J.S. King, and S.E. McKeand. 2013. Productivity differences among loblolly pine genotypes are independent of individual-tree biomass partitioning and growth efficiency. *Trees* 27:533–545.

Frampton, L.J., F. Isik, and D.M. Benson. 2013. Genetic variation in resistance to *Phytophthora cinnamomi* in seedlings of two Turkish Abies species. *Tree Genetics & Genomes*. 9:53-63.

Nelson, C.D., G.F. Peter, S.E. McKeand, E.J. Jokela, R.B. Rummer, L.H. Groom, and K.H. Johnsen. 2013. Pines. *P*. 427-459, In: B.P. Singh (ed.). *Biofuel Crops: Production, Physiology and Genetics*, Chapter 20. CABI Wallingford, UK.

Zapata-Valenzuela, J., R. W. Whetten, D. B. Neale, S. E. McKeand, and F. Isik. 2013. Genomic estimated breeding values using genomic relationship matrices in a cloned population of loblolly pine. *G3: Genes Genomes Genetics*. doi:10.1534/g3.113.005975.

2012

Aspinwall, M.J., S.E. McKeand, and J.S. King. 2012. Carbon sequestration from 40 years of planting genetically improved loblolly pine across the southeast United States *For. Sci.* 58:446-456.

Cumbie, W.P., F. Isik, and S.E. McKeand. 2012. Genetic improvement of sawtimber potential in loblolly pine. *For. Sci.* 58:168–177.

Espinoza, J.A., H.L. Allen, S.E. McKeand, and P.M. Dougherty. 2012. Stem sinuosity in loblolly pine with nitrogen and calcium additions. *For. Ecol. and Manag.* 265: 55–61.

Isik, F., H.V. Amerson, R.W. Whetten, S.A. Garcia, and S.E. McKeand. 2012. Interactions of Fr genes and mixed-pathogen inocula in the loblolly pine-fusiform rust pathosystem. *Tree Genetics & Genomes*. 8(1): 15-25.

McKeand, S. and R. Pohl. 2012. The Arrowhead Tree Breeding Center, \$483 million present value to the citizens of Georgia and the South. *Georgia Forestry Today*. 8(1): 24-29.

Zapata-Valenzuela, J., F. Isik, C. Maltecca, J. Wegrzyn, D. Neale, S. McKeand, and R. Whetten. 2012. SNP markers trace familial linkages in a cloned population of *Pinus taeda* – prospects for genomic selection. *Tree Genetics and Genomes* DOI 10.1007/s11295-012-0516-5.

2011

Aspinwall, M.J., J.S. King, F.L. Booker, and S.E. McKeand. 2011. Genetic effects on total phenolics, condensed tannins and non-structural carbohydrates in loblolly pine (*Pinus taeda* L.) needles. *Tree Physiology* 31: 831-842, doi: 10.1093/treephys/tpr073.

- Aspinwall, M.J., J.S. King, J-C. Domec, S.E. McKeand and F. Isik. 2011. Genetic effects on transpiration, canopy conductance, stomatal sensitivity to vapor pressure deficit, and cavitation resistance in loblolly pine. *Ecohydrology*. Published online in Wiley Online Library (wileyonlinelibrary.com) DOI: 10.1002/eco.197.
- Aspinwall, M.J., J.S. King, S.E. McKeand, and B.P. Bullock. 2011. Genetic effects on stand-level uniformity, and above- and belowground biomass production in juvenile loblolly pine. *Forest Ecology and Management*. 262: 609–619.
- Aspinwall, M.J., J.S. King, S.E. McKeand, and J-C. Domec. 2011. Leaf-level gas-exchange uniformity and photosynthetic capacity among loblolly pine (*Pinus taeda* L.) genotypes of contrasting inherent genetic variation. *Tree Physiology*. 31: 78-91.
- Cumbie, W.P., F. Isik, B. Li, and B. Goldfarb. 2011. Effects of propagule type on genetic parameters of wood density and growth in a loblolly pine progeny test at ages 10 and 11 years. *Tree Genetics & Genomes*, 7:1147–1158, DOI 10.1007/s11295-011-0402-6.
- Cumbie, W.P., A.J. Eckert, J.L. Wegrzyn, R.W. Whetten, D.B. Neale, and B. Goldfarb. 2011. Association genetics of carbon isotope discrimination, height, and foliar nitrogen in a natural population of *Pinus taeda* L. *Heredity* advance online publication 19 January 2011; doi: 10.1038/hdy.2010.168.
- El-Kassaby, Y.A., S. Mansfield, F. Isik, and M. Stoehr. 2011. In situ wood quality assessment in Douglas-fir. *Tree Genetics & Genomes*, 7:553-561. DOI: 10.1007 /s11295 - 010-0355-1
- Grissom, J.E., J.H. Roberds, C.D. Nelson, F.T. Isik, S.E. McKeand, and R. Rousseau. 2011. Genetic variation in a longleaf pine population: a long-term field study of a 13-parent diallel. P. 51-53. In: Proc. 31th Southern Forest Tree Improvement Conf., Biloxi, MS. <http://www.sftic.org>.
- Mullin, T.J., Andersson, B., Bastien, J.-C., Beaulieu, J., Burdon, R.D., Dvorak, W.S., King, J.N., Kondo, T., Krakowski, J., Lee, S.D., McKeand, S.E., Pâques, L., Raffin, A., Russell, J.H., Skrøppa, T., Stoehr, M., and Yanchuk, A. 2011. Economic importance, breeding objectives and achievements. Chapter 2, P.40-127 In: *Genetics, Genomics and Breeding of Conifers*. Edited by: C. Plomion, J. Bousquet, and C. Kole. Volume in *Genetics, Genomics and Breeding of Crop Plants*. Science Publishers, an imprint of Edenbridge Ltd., Enfield, NH, USA. 456p.
- Isik, F., C.R. Mora and L.R. Schimleck. 2011. Genetic variation in *Pinus taeda* wood properties predicted using non-destructive techniques. *Annals of Forest Science* 68:283–293, DOI 10.1007/s13595-011-0035-9
- Isik, F., R. Whetten, J. Zapata-Valenzuela, F. Ogut, and S. McKeand. 2011. Genomic selection in loblolly pine - from lab to field. *BMC Proceedings*, 5(Suppl 7):I8 <http://www.biomedcentral.com/1753-6561/5/S7/I8>
- Sherrill, J.R., B.P. Bullock, T.J. Mullin, S.E. McKeand, and R.P. Purnell. 2011. Total and merchantable stem volume equations for mid-rotation loblolly pine (*Pinus taeda* L.). *South. J. App. For.* 35:105-108.
- 2010**
- Aspinwall, M.J., B. Li, S.E. McKeand, F. Isik, and M.L. Gumpertz. 2010. Prediction of whole-stem α -cellulose yield, lignin content, and wood density in juvenile and mature loblolly pine. *South. J. Appl. For.* 34:84-90.
- Dougherty, D., R. Bryant, H. Burkhart, P. Dougherty, S. Jones, S. McKeand. 2010. Valuing tomorrow's loblolly pine plantations today. *Forest Landowner*. Jan./Feb. 2010: 19-21.

- Eckard, J.T., F. Isik, B. Bullock, B. Li, and M. Gumpertz. 2010. Selection efficiency for solid wood traits in *Pinus taeda* using time-of-flight acoustic and micro-drill resistance methods. *For. Sci.* 56(3), 233-241.
- McKeand, S., P. Cumbie, and B. Abt. 2010. Investment in genetically improved loblolly pine – landowner benefits today and for generations to come. *Forest Landowner*. Jan./Feb. 2010: 27-29.
- Nelson, C.D., T. L. Kubisiak, and H. V. Amerson. 2010. Unravelling and managing fusiform rust disease: a model approach for coevolved forest tree pathosystems. *For. Path.* 40: 64–72.
- Whetten, R.W. and R. Kellison. 2010. Research gap analysis for application of biotechnology to sustaining US forests. *J. Forestry* 108(4):193-201.
- Xiong, S.J., F. Isik, S.E. McKeand and R.W. Whetten. 2010. Genetic variation of stem forking in loblolly pine. *For. Sci.* 56: 429-436.
- 2009**
- Bains, B., F. Isik, W. Strong, B. Jaquish, J.A. McLean, Y.A. El-Kassaby. 2009. Genetic susceptibility of spruce to gall forming adelgids (Hemiptera: Adelgidae). *Can. J. Forest Research.*39: 2536-2541.
- Barker, D.K., S.E. McKeand, F. Isik, and R.W. Whetten. 2009. Analysis of biomass production in young loblolly pine. P. 66-68. In: Proc. 30th South. For. Tree Impr. Conf., Blacksburg, VA.
- Cumbie, P.W., R. Whetten, B. Goldfarb, A.J. Eckert, J.L. Wegrzyn, and D.B. Neale. 2009. Association genetics of water relations and growth phenotypes in loblolly pine. P. 33-37. In: Proc. 30th South. For. Tree Impr. Conf., Blacksburg, VA.
- Frampton, L.J, F. Isik, M. Benson, and AM Braham. 2009. Variation in resistance to *Phytophthora* root rot within Turkish and Trojan Fir. The IUFRO 9th International Christmas Tree Research and Extension Conference. 14-18 September 2009, Corvallis, OR. USA.
- Gräns, D., B. Hannrup, F. Isik, S-O Lundqvist, and S. McKeand. 2009. Genetic variation and relationships to growth traits for microfibril angle, wood density, and modulus of elasticity in a Norway spruce (*Picea abies*) clonal trial in southern Sweden. *Scandinavian J. For. Res.* 24(6): 494-503.
- Isik, F., H. Amerson, R. Whetten, S. Garcia, S. McKeand. 2009. Fusiform rust Fr genes by bulked inocula interactions in loblolly pine. P. 104-106. In: Proc. 30th South. For. Tree Impr. Conf., Blacksburg, VA.
- McKeand, S.E. 2009. Genetically improved loblolly pine – have we reached our limit? P. 3, 5 In: Treeline, Newsletter of the North Carolina Forestry Association. Jan/Feb 2009.
- McKeand, S., Steiger, J, and Crane, B. 2009. Progeny testing of longleaf pine seed orchards – plans for 2009. *The Longleaf Leader*, Newsletter of The Longleaf Alliance. 2(3): 8-9.
- McKeand, S., R. Whetten, P. Cumbie, J. Steiger, F. Isik, T. Batista-Brooks, S. Garcia, and J.B. Jett. 2009. What are the consequences of reduced effort in tree improvement? P. 88-89. In: Proc. 30th South. For. Tree Impr. Conf., Blacksburg, VA.
- Mora, C.R., L.R. Schimleck, F. Isik, J.M. Mahon, Jr., A. Clark III, and R.F. Daniels. 2009. Relationships between acoustic variables and different measures of stiffness in standing *Pinus taeda* trees. *Can. J. For. Res.* 39:1421-1492.
- Morse, A.M., D.G. Peterson, M. N. Islam-Faridi, K.E. Smith, Z. Magbanua, S.A. Garcia, T.L. Kubisiak, H.V. Amerson, J.E. Carlson, C.D Nelson, J.M. Davis. 2009. Evolution of genome size and complexity in *Pinus*. *PLoS ONE* 4(2): e4332. doi:10.1371/journal.pone.0004332

Morse A.M., R.W. Whetten, C. Dubos, M.M. Campbell. 2009 Post-translational modification of a R2R3-MYB transcription factor during xylem development. *New Phytologist* 183: 1001-1013.

Whetten R.W., S. Valenzuela, L.J. Frampton. 2009. Polymerase chain reaction preparation of template for massively parallel pyrosequencing. *J. Biomol. Tech.* 20:128 – 134.

Xiong, J.S., S. McKeand, F. Isik, and R.Whetten. 2009. Genetic variation in stem forking in loblolly pine. P. 90-91. In: Proc. 30th South. For. Tree Impr. Conf., Blacksburg, VA.

2008

Emerson, J.L., L.J. Frampton and S.E. McKeand. 2008. Genetic variation in early growth and bud production among natural populations of Fraser fir. *HortScience* 43: 589-968.

Isik, F., H.V. Amerson, R.W. Whetten, S. Garcia, B. Li, and S.E. McKeand. 2008. Resistance of *Pinus taeda* families under artificial inoculations with diverse fusiform rust pathogen populations and comparison with field trials. *Can. J. For. Res.* 38: 2687-2696.

Isik, F., M. Gumpertz, B. Li, B. Goldfarb, X. Sun. 2008. Analysis of cellulose microfibril angle (MFA) using a linear mixed model in *Pinus taeda* clones. *Can. J For. Research* 38: 1676-1689.

Isik, F., B. Li, B. Goldfarb, and S. McKeand. 2008. Prediction of wood density breeding values of *Pinus taeda* elite parents from unbalanced data: A method for adjustment of site and age effects using common checklots. *Ann. For. Sci.* 65: 406.

McKeand, S.E., D.M. Gerwig, W. P. Cumbie, and J.B. Jett. 2008. Seed orchard management strategies for deployment of intensively selected loblolly pine families in the southern US. P. 177- 182, In: Lindgren, D. (ed.). *Seed orchards, Proceedings from a conference at Umeå, Sweden, September 26-28, 2007 (ISBN: 978-91-85911-28-8)*

McKeand, S.E., B. Li, J.E. Grissom, F. Isik, and K.J.S. Jayawickrama. 2008. Genetic parameter estimates for growth traits from diallel tests of loblolly pine throughout the southeastern United States. *Silvae Genetica* 57:101-110.

Sherrill, J.R., T.J. Mullin, B.P. Bullock, S.E. McKeand, R.C. Purnell, M.L. Gumpertz, and F. Isik. 2008. An evaluation of selection for volume growth in loblolly pine. *Silvae Genetica* 57(1):22-28.

2007

Cumbie, W.P., S.E. McKeand, J. Espinoza, F. Isik, and J.E. Grissom. 2007. Improvements in stem form and growth of elite genotypes in loblolly pine. P. 108-111. In: Proc. 29th South. For. Tree Impr. Conf., Galveston, TX. Galveston, TX.

Lise, Y., Z. Kaya, F. Isik., R. Sabuncu, I. Kandemir and S. Önde. 2007. The impact of over-exploitation on the genetic structure of Turkish red pine (*Pinus brutia* Ten.) populations determined by RAPD markers. *Silva Fennica* 41(2): 211–220.

McKeand, S.E., B.J. Zobel, T.D. Byram, and D.A. Huber. 2007. Southern pine tree improvement – a living success story. P. 3-7. In: Proc. 29th South. For. Tree Impr. Conf., Galveston, TX. Galveston, TX.

2006

Alizoti, P., B. Li, and S.E. McKeand. 2006. Early evaluation of intra- and inter-provenance hybrids of loblolly pine for planting in Piedmont regions of the southern US. *For. Sci* 52:557-567.

Emerson, J.L., L.J. Frampton, and S.E. McKeand. 2006. Genetic variation of spring frost damage in three-year-old Fraser fir Christmas tree plantations. *HortScience* 41:1531-1536.

- Hu, X. S., B. Li. 2006. Additive genetic variation and the distribution of QTN effects among sites. *Journal of Theoretical Biology* 243:76-85.
- Li, Hua, H. Amerson, Bailian Li. 2006. Genetic models of host-pathogen gene interaction based on inoculation of loblolly pine seedlings with the fusiform rust fungus. *New Forests* 31: 245-252.
- Li, Hua., S. Ghosh, H. Amerson and B. Li. 2006. Major gene detection for fusiform rust resistance using Bayesian complex segregation analysis in loblolly pine. *Theor. and Appl. Genetics* 113:921-929.
- Lstiburek, M., Mullin, T.J., and El-Kassaby, Y.A. 2006. The impact of differential success of somatic embryogenesis on the outcome of clonal forestry programs. I. Initial comparison under multi-trait selection. *Can. J. For. Res.* 36: 1376-1384.
- McKeand, S.E., R.C. Abt, H.L. Allen, B. Li, and G.P. Catts. 2006. What are the best loblolly pine genotypes worth to landowners? *J. For.* 104:352-358.
- McKeand, S.E., E.J. Jokela, D.A. Huber, T.D. Byram, H. Lee Allen, B. Li, T.J. Mullin. 2006. Performance of improved genotypes of loblolly pine across different soils, climates, and silvicultural inputs. *For. Ecol. and Manag.* 227:178-184.
- Myburg, H., A.M. Morse, H.V. Amerson, T.L. Kubisiak, D. Huber, J.A. Osborne, S.A. Garcia, C.D. Nelson, J.M. Davis, S.F. Covert, and L.M. van Zyl. 2006. Differential gene expression in loblolly pine (*Pinus taeda* L.) challenged with the fusiform rust fungus, *Cronartium quercuum* f.sp. *fusiforme*. *Physiological and Molecular Plant Pathology* 68:79-91.
- Sykes, R., B. Li, F. Isik, J. Kadla, H.M. Chang. 2006. Genetic variation and genotype by environment interactions of juvenile wood chemical properties in *Pinus taeda* L. *Annals of Forest Science* 63 (8): 897-904.
- Yu, Q., B. Li, C.D. Nelson, S.E. McKeand, V.B. Batista, and T.J. Mullin. 2006. Association of the *cad-n1* allele with increased stem growth and wood density in full-sib families of loblolly pine. *Tree Genetics & Genomes* 2:98-108.

2005

- Amerson, H.V., T.L. Kubisiak, S.A. Garcia, G.C. Kuhlman, C.D. Nelson, S.E. McKeand , T.J. Mullin, and B. Li. 2005. Interacting Genes in the Pine-Fusiform Rust Forest Pathosystem. P. 60. In: Proc. 28th South. For. Tree Impr. Conf., Raleigh, NC.
- Bridgwater, F., T. Kubisiak, T. Byram, S. McKeand. 2005. Risk management with current deployment strategies for genetically improved loblolly and slash pines. *South. J. Appl. For.* 29(2):80-87.
- Byram, T.D., Mullin, T.J., White, T.L, and van Buijtenen, J.P. 2005. The future of tree improvement in the southeastern United States: alternative visions for the next decade. *South. J. Appl. For.* 29(2):88-95.
- Capanema, E.A., Balakshin, M.Y., Heerman, M.L., Yeh, T., Yu, Q., Nelson, C.D., McKeand, S.E., Li, B., Jameel, H., Chang, H., and Mullin, T.J. 2005. Chemical properties in CAD-deficient pine and their effect on pulping. Pp. 170-176 In: Proc. 13th Intl. Symp. on Wood and Pulping Chemistry, 16-19 May 2005, Auckland, NZ.
- Emerson, J.L., L.J. Frampton, and S.E. McKeand. 2005. Genetic variation in young Fraser fir progeny tests. P. 115-117. In: Proc. 28th South. For. Tree Impr. Conf., Raleigh, NC.
- Kang, K.S., Lindgren, D., Mullin, T.J., Choi, W.-Y., and Han, S.-U. 2005. Genetic gain and diversity of orchard crops under alternative management options in a clonal seed orchard of *Pinus thunbergii*. *Silvae Genet.* 54(3): 93-144.

- Isik, F., D.D. Boos and B. Li. 2005. The distribution of genetic parameter estimates and confidence intervals from small disconnected diallels. *Theoretical and Applied Genetics*. 110: 1236-1243.
- Isik, F., B. Goldfarb, A. LeBude, B. Li and S. McKeand. 2005. Predicted genetic gains and testing efficiency from two loblolly pine clonal trials. *Can. J. For. Res.* 35:1754-1766.
- Isik, F., B. Li, B. Goldfarb. 2005. Genetic variation in MFA, MOE and wood density among clones of *Pinus taeda* L. P. 95. In: Proc. 28th South. For. Tree Impr. Conf., Raleigh, NC.
- Lambeth, C., S. McKeand, R. Rousseau and R. Schmidling. 2005. Planting nonlocal seed sources of loblolly pine – managing benefits and risks. *South. J. Appl. For.* 29(2):96-104.
- Li, B., F. Isik, and B. Goldfarb. 2005. What Do We Do to Improve Wood Properties in a Breeding Program? P. 184. In: Proc. 28th South. For. Tree Impr. Conf., Raleigh, NC.
- Li, B. and S.E. McKeand. 2005. Forest genetics and tree breeding in the age of genomics – IUFRO Conference. *Forest Genetics* 12(2):141-143.
- Lstiburek, M., Mullin, T.J., Mackay, T.F.C., Huber, D.A., and Li, B. 2005. Positive assortative mating with family size as a function of predicted parental breeding values. *Genetics* 171: 1311-1320.
- Martin, T.A, P.M Dougherty, P.M., M.A. Topa, and S.E. McKeand. 2005. Strategies and case studies for incorporating ecophysiology into southern pine tree improvement programs. *South. J. Appl. For.* 29(2):70-79.
- McKeand, S.E. and H. L. Allen. 2005. Summary of IEG-40 Meeting: silviculture and genetic impacts on productivity of southern pine forests. *South. J. Appl. For.* 29(2):61.
- Mullin, T.J., Lstiburek, M., Pait, J., and El-Kassaby, Y.A. 2005. The impact of variable success of somatic embryogenesis among elite crosses on expected genetic gain and diversity of selected varieties. Pp. 92-94 In: Proc. 28th South. For. Tree Impr. Conf., Raleigh, NC.
- Rosier, C.L., S.E. McKeand, E.M. Raley. 2005. Clonal replacement as a tool for seed orchard managers. P. 102. In: Proc. 28th South. For. Tree Impr. Conf., Raleigh, NC.
- Sherrill, J.R., T.J. Mullin, B.P. Bullock, S.E. McKeand, R.C. Purnell, and M.L. Gumpertz. 2005. Total inside-bark volume estimation for loblolly pine (*Pinus taeda* L.) in genetic trials. P. 123-125. In: Proc. 27th South. For. Tree Impr. Conf., Raleigh, NC.
- Smith, B.C., B.P. Bullock, and S.E. McKeand. 2005. Comparing parameter estimation techniques for diameter distributions of loblolly pine. P. 104-106. In: Proc. 28th South. For. Tree Impr. Conf., Raleigh, NC.
- Yu, Q., B. Li, C.D. Nelson, S.E. McKeand, and T.J. Mullin. 2005. Is the *cad-n1* Allele Associated with Increased Wood Density or Growth in Full-Sib Families of Loblolly Pine? P. 127. In: Proc. 28th South. For. Tree Impr. Conf., Raleigh, NC.
- Yu, Q., S.E. McKeand, C.D. Nelson, B. Li, J.R. Sherrill and T.J. Mullin. 2005. Differences in wood density and growth of fertilized and non-fertilized loblolly pine associated with a mutant gene, *cad-n1*. *Can. J. For. Res.* 35:1723-1730.
- Zobel, B. 2005. Our Roots: The Start of Tree Improvement in the South. P. 1-5. In: Proc. 28th South. For. Tree Impr. Conf., Raleigh, NC.

2004

- Jansson, G. and B. Li. 2004. Genetic gains of full-sib families from disconnected diallels in loblolly pine. *Silvae Genetica* 53(2):60-64.
- Kang, K.-S., Lindgren, D., and Mullin, T.J. 2004. Fertility variation, genetic relatedness, and their impacts on gene diversity of seed from a seed orchard of *Pinus thunbergii*. *Silvae Genet.* 53:202-206.

- Kegley, A.J., S.E. McKeand, and B. Li. 2004. Seedling evaluation of Atlantic Coastal and Piedmont sources of loblolly pine and their hybrids for height growth. *South. J. Appl. For.* 28(2):83-90.
- Li, B. and S. McKeand, eds. 2004. Forest Genetics and Tree Breeding in the Age of Genomics: Progress and Future. IUFRO Joint Conference of Division 2, Conference Proceedings. 490 p. Available online at: http://www.ncsu.edu/feop/iufro_genetics2004/proceedings.pdf.
- Lstiburek M., T.J. Mullin, D. Lindgren and O. Rosvall. 2004. Open-nucleus breeding strategies compared to population-wide positive assortative mating. I. Equal distribution of testing effort. *Theor. Appl. Gen.* 109:1196-1203.
- Lstiburek M., T.J. Mullin, D. Lindgren and O. Rosvall. 2004. Open-nucleus breeding strategies compared to population-wide positive assortative mating. II. Unequal distribution of testing effort. *Theor. Appl. Gen.* 109:1169-77.
- McKeand, S.E. and H. L. Allen. 2004. Silviculture and genetic impacts on productivity of loblolly pine in the southern United States. Invited paper. P. 373-374. In: Li, B. and S. McKeand, eds. Forest Genetics and Tree Breeding in the Age of Genomics: Progress and Future, IUFRO Joint Conference of Division 2, Conference Proceedings. 2004. Available online at: http://www.ncsu.edu/feop/iufro_genetics2004/proceedings.pdf.
- McKeand, S.E., J.E. Grissom, H.L. Allen, and B.P. Bullock. 2004. Ten-year response of diverse families of loblolly pine to fertilization. P. 453-455. In: Li, B. and S. McKeand, eds. Forest Genetics and Tree Breeding in the Age of Genomics: Progress and Future, IUFRO Joint Conference of Division 2, Conference Proceedings. 2004. Available online at: http://www.ncsu.edu/feop/iufro_genetics2004/proceedings.pdf.
- Schmidling, R.C., T.L. Robison, S.E. McKeand, R.J. Rousseau, H.L. Allen, and B. Goldfarb. 2004. The role of genetics and tree improvement in southern forest productivity. Chapter 10, P.97-108. In: Rauscher, H.M. and K. Johnsen, eds. Southern Forest Science: Past, Present, Future. Gen. Tech. Rep. SRS-75. Asheville, NC. US Dept. Agr., Forest Service. Southern Research Station. 394p.
- Whetten, R.W., Z. Li, and S. E. McKeand. 2004. Microarray Analysis of Gene Expression in OP Pine Families in Field Plantings. P. 257-269. In: Li, B. and S. McKeand, eds. Forest Genetics and Tree Breeding in the Age of Genomics: Progress and Future, IUFRO Joint Conference of Division 2, Conference Proceedings. 2004. Available online at: http://www.ncsu.edu/feop/iufro_genetics2004/proceedings.pdf.
- Wu, R, J.E. Grissom, S.E. McKeand, and D.M. O'Malley. 2004. Phenotypic plasticity of fine roots increases plant productivity in pine seedlings. *BMC Ecology* 4:14.
- Yu, Q., Capanema, E., Batista, V.B., Josserand, S., Johnson, G., Nelson, C.D., McKeand, S.E., MacKay, J.J., Kadla, J.F., Li, B., Jameel, H., Chang, H.-M., and Mullin, T.J. 2004. Tracking down the effects of a rare mutant gene in loblolly pine – a first report. In: “2004 Paper Summit, Spring Technical and International Environmental Conference, May 3-5, 2004, Atlanta, GA, USA”, CD-ROM published by TAPPI, Norcross, GA
- Zeng, W., S. Ghosh and B. Li. 2004. A blocking Gibbs sampling method with a mixed inheritance for major gene detection. *Genetical Research*. 84:1-12.
- Zobel, B.J. 2004. Biological improvement of wood properties. Chap. In Encyclopedia of Forest Sciences. Academic Press.

- Alizoti, P., B. Li, and S.E. McKeand. 2003. Early performance and genetic parameters for Atlantic Coastal and Piedmont loblolly pine and their hybrids in the Piedmont. P. 138 In: Proc. 27th South. For. Tree Impr. Conf., Stillwater, OK.
- Byram, T.D., A.C. Mangini, and S.E. McKeand. 2003. Cone and seed insect pest research: the role of the southwide studies. P. 116-125. In: Proc. 27th South. For. Tree Impr. Conf., Stillwater, OK.
- Hu, X.S. and B. Li. 2003. On migration load of seeds and pollen grains in a local population. *Heredity* 90:162-168.
- Hu, X.S., W. Zeng and B. Li. 2003 Impacts of one-way gene flow on genetic variance components in a natural population. *Silvae Genetica* 51:18-24.
- Isik, F. and B. Li. 2003. Rapid assessment of wood density of live trees using the Resistograph for selection in tree improvement programs. *Can. J. For. Res.* 33:2426-2435.
- Isik, F., B. Li, and J. Frampton. 2003. Additive, dominance and epistatic genetic variance estimates from a replicated clonal test of loblolly pine. *Forest Science* 49:77-88.
- Isik, F., B. Li, J. Frampton, and B. Goldfarb. 2003. Efficiency of seedlings and rooted cuttings for testing and selection in *Pinus taeda*. *For. Sci.* 50:44-53.
- Jansson, G., B. Li, and K. Hannrup. 2003. Time trends in genetic parameters for height and optimal age for parental selection in Scots pine. *For. Sci.* 49:696-705.
- Li, B. 2003. Implementation of Third-Cycle loblolly Pine Breeding Plan – N. C. State University-Industry Cooperative Tree improvement Program. Abstract, Proc. 27th Southern Forest Tree Improvement Conference, Stillwater, OK, June 24-27, 2003.
- Li, H., H. Amerson and B. Li. 2003. Time Trend and Genetic Difference of Rust Infection in a Diallel Loblolly Pine Population Across Four Tests. Abstract. In: Proc. 27th Southern Forest Tree Improvement Conference, Stillwater, OK, June 24-27, 2003.
- Li, H., H. Amerson and B. Li. 2003. Complementary Pairs Interaction of Resistance Genes and Avirulent Genes in Loblolly Pine: Fusiform Rust Pathosystem using Diallel Data. Abstract. In: Proc. 27th Southern Forest Tree Improvement Conference, Stillwater, OK, June 24-27, 2003.
- Lstiburek M. and Mullin T.J. 2003. Evaluation of an open-nucleus model for forest tree breeding. Pp. 77-80 In: Proceedings of the 27th Southern Forest Tree Improvement Conference, Oklahoma State University, Stillwater, Oklahoma, June 24-27, 2003.
- Lstiburek, M., and Mullin, T.J. 2003. Can clonal replication of genetic tests for advance-generation selection eliminate the need for polycross assessment of breeding value? Pp. 60 In: Proceedings of the 28th Canadian Tree Improvement Association. Part 2.
- McKeand, S.E., H.V. Amerson, B. Li, and T.J. Mullin. 2003. Families of loblolly pine that are most stable for resistance to fusiform rust are the least predictable. *Can. J. For. Res.* 33:1335-1339.
- McKeand, S.E., J.E. Grissom, R. Rubilar, and H.L. Allen. 2003. Responsiveness of diverse families of loblolly pine to fertilization: eight-year results from SETRES-2. P. 30-33. In: Proc. 27th South. For. Tree Impr. Conf., Stillwater, OK.
- McKeand, S., T. Mullin, T. Byram, T. White. 2003. Deployment of genetically improved loblolly and slash pine in the South. *J. For.* 101(3): 32-37.
- McKeand, S.E., T.J. Mullin, B. Li. 2003. Genetic diversity in intensively managed loblolly pine plantations. Invited Paper for Society of American Foresters National Convention. Buffalo, NY.

- Roberds, J.H., B.L. Strom, F.P. Hain, D.P. Gwaze, S.E. McKeand, L.H. Lott. 2003. Estimates of genetic parameters for oleoresin and growth traits in juvenile loblolly pine. Can. J. For. Res. 33: 2469-2476.
- Rosvall, O., D. Lindgren, and T.J. Mullin. 2003. Controlling parent contributions during positive assortative mating and selection increases gain in long-term forest tree breeding. For. Genetics 10(1):35-53.
- Rosvall, O., and Mullin, T.J. 2003. Positive assortative mating with selection restrictions on group coancestry enhances gain while conserving genetic diversity in long-term forest tree breeding. Theor. Appl. Genet. 107: 629-642.
- Rubilar, R., S.E. McKeand, and H.L. Allen. 2003. Dominance and stand structure analysis in a GxE interaction trial. P. 34-37. In: Proc. 27th South. For. Tree Impr. Conf., Stillwater, OK.
- Sierra-Lucero, V., D.A. Huber, S.E. McKeand, T.L. White, and D.L. Rockwood, D.L. 2003. Genotype-by-environment interaction and deployment considerations for families from Florida provenances of loblolly pine. Forest Genetics 10(2):85-92.
- Sykes, R., F. Isik, B. Li, J. Kadla, and H-m. Chang. 2003. Genetic variation of juvenile wood properties in a loblolly pine progeny test. TAPPI 86(12): 3-8.
- Tang, W., Mullin, T.J., and Newton, R.J. 2003. Genetically engineering trees to enhance productivity, reduce disease, and improve wood properties. Recent Res. Devel. Plant Sci. 1: 209-230.
- Xiang, B. and B. Li. 2003. Best linear unbiased prediction of clonal breeding values and genetic values from full-sib mating designs. Can. J. For. Res. 33:2036-2043.
- Xiang, B., B. Li, and F. Isik. 2003. Time trend of genetic parameter estimates in growth traits of *Pinus taeda* L. Silv. Genet. 52:114-121.
- Xiang, B., B. Li, and S.E. McKeand. 2003. Genetic gain and selection efficiency of loblolly pine in three geographic regions. For. Sci. 49:196-208.
- Zeng, W. and B. Li. 2003. Power and robustness of statistical tests for major gene detection in diallel progeny test data. For. Sci. 48: 268-278.

2002

- Dimmel, D.R., J.J. MacKay, C.E. Courchene, J.F. Kadla, J.T. Scott, D.M. O'Malley, and S.E. McKeand. 2002. Pulping and bleaching of partially cad-deficient wood. J. Wood Chem. and Tech. 22:235-248.
- Hu, X. and B. Li. 2002. Seed and pollen flow and cline discordance among genes with different models of inheritance. Heredity 88:212-217.
- Hu, X.S. and B Li. 2002. Linking the evolutionary qualitative genetics to conservation of genetic resources in natural forest populations. Silvae Genetics 51:20-31.
- Isik, F., K. Isik, T. Yildirim, and B. Li. 2002. Using shoot growth patterns to select desired genotypes and understanding adaptation of *Pinus brutia*. Tree Physiology 22:51-58.
- Lai, C.T., G.G. Katul, J. Butnor, M. Siqueira, D. Ellsworth, C. Maier, K. Johnsen, S. McKeand, and R. Oren. 2002. Modeling the limits on the response of net carbon exchange to fertilization in a southeastern pine forest. Plant, Cell, and Environment 25:1095-1119.
- Mullin, T.J. 2002. Consensus document on the biology of *Pinus strobus* L. (eastern white pine). Series on Harmonization of Regulatory Oversight in Biotechnology No. 22, Organization for Economic Cooperation and Development, Paris. 50 pp.
- Mullin, T.J. 2002. Consensus document on the biology of *Picea sitchensis* (Bong.) Carr. (Sitka spruce). Series on Harmonization of Regulatory Oversight in Biotechnology No. 21, Organization for Economic Cooperation and Development, Paris. 53 pp.

Mullin, T.J. 2002. Analyzing breeding strategy options for out-crossing species and their impacts on gain and genetic resource management. Invited presentation. Pp. 21-22 In: "Quantitative Genetics and Efficient Plant Breeding", Abstracts of presentations at the 28th Nordic Postgraduate Course in Plant Breeding, 21-26 January 2002, Marholmen, Sweden.

Sierra-Lucero, V., S.E. McKeand, D.A. Huber, D.L. Rockwood, and T.L. White. 2002. Performance differences and genetic parameters for four coastal provenances of loblolly pine in the southeastern United States. For. Sci. 48:732-742.

2001

Cumbie, W.P., Li, B., Goldfarb, Mullin, T., and McKeand, S. 2001. Genetic parameters and uniformity of wood properties of full-sib families and clones of loblolly pine. Pp. 104-106 In: Proc. 26th Southern Forest Tree Improvement Conference, Athens, GA, 26-29 June 2001.

Dimmel, D.R., J.J. MacKay, C. Courchene, A. White-Hughes, J. Kadla, J. T. Scott, K. Holtman, H-m. Chang, D. M. O'Malley, and S. E. McKeand. 2001. Pulping and bleaching of partially cad-deficient wood. P. 33-36 In: Proc of the 11th International Symposium of Wood and Pulping Chemistry, Nice, June 2001, Vol.

Grissom, J.E. and S.E. McKeand. 2001. Comparative physiology of contrasting genotypes of loblolly pine under dry field conditions. P. 122-124. In: Proc. 26th South. For. Tree Impr. Conf.

Hu, X. and B. Li. 2001. Assessment of the ratio of pollen to seed flow in a cline for genetic variation in a quantitative trait. Heredity 87:400-409.

Isik, F., S. Keskin, and S.E. McKeand. 2001. Provenance variation and provenance-site interaction in *Pinus brutia* Ten.: consequences on the defining of breeding zones. Silvae Genet. 49: 213-223.

Isik, F. and B. Li. 2001. Use of resistograph for wood density measurements. Abstract (p. 120) Proc. 26th Southern Forest Tree Improvement Conference, Athens, GA, June 26-29, 2001.

Isik, F., B. Li and J. Frampton. 2001. Additive and non-additive genetic parameters from replicated clonal tests of loblolly pine. P. 143-146, In: Proc. 26th Southern Forest Tree Improvement Conference, Athens, GA, June 26-29, 2001.

Kang, K.-S., D. Lindgren, and T.J. Mullin. 2001. Prediction of genetic gain and gene diversity in seed orchard crops under alternative management strategies. Theor. Appl. Genet. 103:1099-1107.

Landsberg, J.J., K. H. Johnsen, T.J. Albaugh, H.L. Allen, and S.E. McKeand. 2001. Applying 3-PG, a simple process-based model designed to produce practical results, to data from loblolly pine experiments. For. Sci. 47: 43-51.

Li, B. 2001. Hybrid aspen heterosis and breeding. In: P. Pulkkinen , P. M.A. Ingerstedt and V. Raija (eds.), Aspen in paper making. P. 8-25, University of Helsinki Press, Helsinki, Finland.

Li, B. and W. Zeng. 2001. Detecting major genes of quantitative traits using phenotypic data. Abstract, Invited Paper at IUFRO Tree Biotechnology Symposium: Tree Biotechnology in the New Millennium, Skamania Lodge, Stevenson, WA. July 22-27, 2001

McKeand, S.E., H.L. Allen, and B. Goldfarb. 2001. Tree improvement and intensive silviculture - productivity increases from modern plantation methods. Invited Paper. P. 99-112. In: Proc. 14th CAETS Convocation. World Forests and Technology. June 11-15, 2001. Espoo, Finland.

O'Malley, D., J. Scott, D. Harkins, J. Kadla, S. McKeand, and H-M Chang. 2001. Cinnamyl alcohol dehydrogenase (cad) and genomic approaches to manipulating wood properties in loblolly pine. P. 19-24. In: 7th Brazilian Symposium on the Chemistry of Lignins and Other Wood Components. Belo Horizonte, MG, Brazil.

- Retzlaff, W.A., J.A. Handest, D.M. O'Malley, S.E. McKeand, and M.A. Topa. 2001. Whole-tree biomass and carbon allocation of juvenile trees of loblolly pine (*Pinus taeda*): influence of genetics and fertilization. *Can. J. For. Res.* 31:960-970.
- Wu, R., B. Li., S. S. Wu, and G. Casella. 2001. A maximum likelihood-based method for mining major genes affecting a quantitative character. *Biometrics*, 57(3):764-768.
- Xiang, B. and B. Li. 2001. A new mixed analytical method for genetic analysis of diallel data. *Can. J. For. Res.* 31: 2252-2259.
- Xiang, B. and B. Li. 2001. Optimal method for analysis of disconnected diallel tests. P. 107-111, In: Proc. 26th Southern Forest Tree Improvement Conference, Athens, GA, June 26-29, 2001.
- 2000**
- Frampton, J., B. Li, and B. Goldfarb. 2000. Early field growth of loblolly pine rooted cuttings and seedlings. *South. J. Appl. For.* 24(2): 98-105.
- Grissom, J.E. and S.E. McKeand. 2000. Growth efficiencies of diverse *Pinus taeda* families as affected by genetics of the root system. Abstract in: Proceedings of the North American Forest Biology Workshop-2000, Merida, Mexico. July 17-20, 2000.
- Isik, F., K. Isik, T. Yildirim, and B. Li. 2000. Using shoot growth patterns to select desired genotypes and understanding adaptation of *Pinus brutia*. Proceeding of the XXI IUFRO World Congress, Kuala Lumpur, Malaysia. Aug. 7-12, 2000. p. 41.
- Li, B. 2000. Situation and results of breeding and plantation forestry in the American Southeast. Proceeding of the XXI IUFRO World Congress, Kuala Lumpur, Malaysia. Aug. 7-12, 2000. p. 38.
- Li, B., S.E. McKeand and R.J. Weir. 2000. Impact of forest genetics on sustainable forestry - results from two cycles of loblolly pine breeding in the U.S. *J. Sustainable For.* 10: 79-85.
- Li, B. and R. Wu. 2000. Hybrid vigor and genetic mechanism of heterosis in aspen hybrids. *Hybrid Breeding and Genetics* (Eds M. Dieter and H. Dungey). Queensland Forestry Institute, Australia.
- McKeand, S.E., J.E. Grissom, J.A. Handest, D.M. O'Malley, and H.L. Allen. 2000. Responsiveness of diverse provenances of loblolly pine to fertilization - age 4 results. *J. Sustainable For.* 10:87-94.
- McKeand, S.E. and J.B. Jett. 2000. Grafting loblolly pine. *Amer. Conifer Soc. Bull.* 17(1): 22-30.
- McKeand, S.E. and E.M. Raley. 2000. Interstock effects on strobilus initiation in topgrafted loblolly pine. *For. Genet.* 7: 179-182.
- Mullin, T.J. 2000. Monograph on *Picea glauca*. In: *Forestry Compendium Global Module on CD-ROM*. CAB International, Wallingford, Oxon, UK.
- Mullin, T.J. 2000. Monograph on *Picea sitchensis*. In: *Forestry Compendium Global Module on CD-ROM*. CAB International, Wallingford, Oxon, UK.
- Mullin, T.J. 2000. Monograph on *Pinus strobus*. In: *Forestry Compendium Global Module on CD-ROM*. CAB International, Wallingford, Oxon, UK.
- Wu R., J.E. Grissom, D.M. O'Malley, and S.E. McKeand. 2000. Root architectural plasticity to nutrient stress in loblolly pine. *J. Sustainable For.* 10: 307-317.
- Wu, R. and B. Li. 2000. A quantitative genetic model for analyzing species differences in outcrossing species. *Biometrics*, 56(4): 1098-1104
- Wu, R., Z-B Zeng, S.E. McKeand, and D.M. O'Malley. 2000. The case for molecular mapping in forest tree breeding. *Plant Breeding Reviews* 19: 41-68.
- 1999**

- Anderson, A.B., L.J. Frampton, and R.J. Weir. 1999. Shoot production and rooting ability of cuttings from juvenile greenhouse loblolly pine hedges. *Trans. IL State Acad. Sci.* 92:(1&2): 1-14.
- Bila, A.D., Lindgren, D., and Mullin, T.J. 1999. Fertility variation and its effect on diversity over generations in a Teak plantation (*Tectona grandis* L.f.). *Silvae Genet.* 14: 109-114.
- Frampton, L.J., Jr., B. Goldfarb, S.E. Surles, and C.C. Lambeth. 1999. Nursery rooting and growth of loblolly pine cuttings: effect of rooting solutions and full-sib family. *South. J. Appl. For.* 23:108-115.
- Grissom, J.E. and S.E. McKeand. 1999. Growth and biomass allocation of grafted loblolly pine seedlings from diverse families following fertilization. Pp. 67-69. *In:* Proc. 25th South. For. Tree Impr. Conf.
- Grissom, J.E., R.L. Wu, D.M. O'Malley, and S.E. McKeand. 1999. Response of loblolly pine seedlings from diverse families to controlled nutrient supply. Abstract *In:* Proc. 25th South. For. Tree Impr. Conf.
- Handest, J.A., H.L. Allen, S.E. McKeand. 1999. Genotype and nutrition effects on stand-level leaf area in loblolly pine. Pp. 70-72 *In:* Proc. 25th South. For. Tree Impr. Conf.
- Harbin, M.C. and S.E. McKeand. 1999. Seed source study of North Carolina and South Carolina Atlantic Coastal Plain loblolly pine in Virginia. Pp.73-75. *In:* Proc. 25th South. For. Tree Impr. Conf.
- Li, B., S.E. McKeand and R.J. Weir. 1999. Tree improvement and sustainable forestry - impact of two cycles of loblolly pine breeding in the U.S.A. *For. Genet.* 6(4): 229-234.
- Lindgren, D., Mullin, T.J., and Zheng, Y.-Q. 1999. Combining high gain and little relatedness in breeding. Proceedings Meeting of Nordic Group for Management of Genetic Resources of Trees 10-11 June, 1997, Magleås, Denmark. Edited by T.Skrøppa. p. 29.
- McKeand, S.E., B. Li, and H.V. Amerson. 1999. Genetic variation in fusiform rust resistance in loblolly pine across a wide geographic range. *Silvae Genet.* 48: 255-260.
- McKeand, S.E. and F. Raley. 1999. Interstock effects on topgrafting in loblolly pine. Pp.121-123. *In:* Proc. 25th South. For. Tree Impr. Conf.
- Mullin, T.J. 1999. Consensus document on the biology of *Picea glauca* (Moench) Voss (white spruce). Series on Harmonization of Regulatory Oversight in Biotechnology No. 13, Organization for Economic Cooperation and Development, Paris. 47 pp.
- Mullin, T.J. 1999. At the forest edge as transgenic trees enter the Canadian landscape. Invited paper, Proceedings of Rendez-vous BioAtlantech 1999, 27 - 30 July 1999, BioAtlantech, Fredericton, NB.
- Mullin, T.J., and S. Bertrand. 1999. Forest management impacts on genetics of forest tree species. Technical Report #113, Ontario Ministry of Natural Resources, Southcentral Sciences Section, North Bay, ON. 37 pp.
- Olsson, T., D. Lindgren, and B. Li. 2002. Balancing genetic gain and relatedness in seed orchards. *Silvae Genetica* 50:222-227.
- Svensson, J.C., S.E. McKeand, H.L. Allen, and R.G. Campbell. 1999. Genetic variation in height and volume of loblolly pine open-pollinated families during canopy closure. *Silvae Genet.* 48: 204-208.
- Wu, R. and B. Li. 1999. A multiplicative epistatic model for analyzing interspecific differences in outcrossing species. *Biometrics*, 55: 24-32.
- Wu, R., B. Li and Z-B Zeng. 1999. Molecular dissection of quantitative traits: new perspectives from *Populus*. Pp. 475-490. *In:* S.M. Jain and S.C. Minocha (eds.), *Molecular Biology of Woody Plants*. Kluwer Academic Publishers, The Netherlands.

- Wu, R., D.M. O'Malley, and S.E. McKeand. 1999. Understanding the genetic architecture of a quantitative trait in gymnosperms by genotyping haploid megagametophytes. *Theor. Appl. Gen.* 99: 1031-1038.
- Wu, R., D.L. Remington, J.J. Mackay, S.E. McKeand, and D.M. O'Malley. 1999. Average effect of a mutation in lignin biosynthesis in loblolly pine. *Theor. Appl. Gen.* 99: 705-710.
- Zobel, B.J. and Sprague, J. R. 1999. Developing better trees by genetic manipulation. P. 370-388. In: *Forest and Wildlife Science in America - A History*. Forest History Society, Durham, NC. 455p.

1998

- Allen, H.L, R.J. Weir, and B. Goldfarb. 1998. Investing in wood production in southern pine plantations. *PaperAge April*: 20-21.
- Belonger, P.J. and S.E. McKeand 1998. Genetic and environmental effects on volume production-and wood density in four southern provenances of loblolly pine. IEG40 Workshop on Wood and Wood Fibers: Properties and Genetic Improvement. Abstract (invited talk).
- Jayawickrama, K.J.S., S.E. McKeand, and J.B. Jett. 1998. Phenological variation in height and diameter growth in provenances and families of loblolly pine. *New Forests* 16:11-25.
- Li, B., G. Howe, and R. Wu. 1998. Developmental factors responsible for heterosis in aspen hybrid (*Populus tremuloides x P. tremula*). *Tree Physiology* 18:29-36.
- Li, B., S.E. McKeand and R.J. Weir. 1998. Tree improvement and sustainable forestry - impact of two cycles of loblolly pine breeding in the U.S. Invited paper presented at: IUFRO Division 2 Conference on Forest Genetics and Tree Improvement. *Contribution of Genetics to the Sustained Management of Global Forest Resources*. August 1998, Beijing, China.
- Mangini, A.L., L.R. Barber, R.S. Cameron, G.L. DeBarr, G.R. Hodge, J.B. Jett, W.S. Lowe, J.L. McConnell, J. Nord and J.W. Taylor. 1998. A southwide rate test of Azinphosmethyl (Guthion®) for cone and seed insect control in southern pine seed orchards. *So. J. Appl. For.* 22:106-110.
- McKeand, S.E. and F.E. Bridgwater. 1998. A strategy for the third breeding cycle of loblolly pine in the Southeastern U.S. *Silvae Genetica* 47:223-234.
- McKeand, S.E. and S. Kurinobu. 1998. Japanese tree improvement and forest genetics. *J. For.* 96(4):12-17.
- Robison, D.J., B. Goldfarb and B. Li. 1998. Advancing hardwood production forestry. *PaperAge*, May 22-24.
- van Buijtenen, J.P. and Zobel, B.J. 1998. Genetics and breeding of wood. Chapter in: *Forest Genetics and Tree Breeding*. Mandel and Gibson (eds). CBC Publishers & Distributors, New Delhi, India.
- Zobel, B.J. and Sprague, J. R. 1998. Juvenile Wood of Forest Trees. Springer-Verlag 300pp.

1997

- Belonger, P.J., S.E. McKeand, and J.B. Jett. 1997. Wood density assessment of diverse families of loblolly pine using x-ray densitometry. P. 133-142. In: *Proc. 24th South. For. Tree Impr. Conf.*
- Bridgwater, F.E. and S.E. McKeand. 1997. Early family evaluation for growth of loblolly pine. *Forest Genetics* 4:51-57.
- Hodge, G.R., C.J. Masters, R.S. Cameron, W.J. Lowe, and R.J. Weir. 1997. Seed orchard pest management: The case for Forest Service R&D. *J. For.* 95(1):29-32.
- Jayawickrama, K.J.S., S.E. McKeand, and J.B. Jett. 1997. Rootstock effects on scion growth and reproduction in 8-year-old grafted loblolly pine. *Can. J. For. Res.* 27:1781-1787.

- Jayawickrama, K.J.S., S.E. McKeand, J.B. Jett, and E.A. Wheeler. 1997. Date of earlywood-latewood transition in provenances and families of loblolly pine, and its relationship to growth phenology and juvenile wood specific gravity. *Can. J. For. Res.* 27:1245-1253.
- Jett, J.B., M. Williford, S.E. McKeand, M. Powell. 1997. Timing of nitrogen applications in a loblolly pine seed orchard. P. 187-191. In: Proc. 24th South. For. Tree Impr. Conf.
- Li, B., S. McKeand, A. Hatcher and R. Weir. 1997. Genetic gains of second generation selections from the NCSU-Industry Cooperative Tree Improvement Program. Proc. 24th Southern Forest Tree Improvement. Conference, p. 134-238. Orlando, Florida. June 9-12, 1997.
- Li, B., S.E. McKeand and R.J. Weir. 1997. Genetically improved seedlings can benefit small forest landowners. *Forest Landowner* 56(5):20-23.
- Li, B. and R. Wu. 1997. Heterosis and genotype x environment interaction in juvenile aspen: The implications for tree breeding. *Canadian Journal of Forest Research* 27: 1525-1537.
- McKeand, S.E. 1997. Improving forest resources in the 21st century through tree breeding. In: Proc. of the 40th Commemorative Symposium on Forest Tree Breeding in Japan. Invited Paper. Sponsored by the Japanese Forest Tree Breeding Association. July 14, 1997. Tokyo.
- McKeand, S.E., R.P. Crook, and H.L. Allen. 1997. Genotypic stability effects on predicted family responses to silvicultural treatments in loblolly pine. *South. J. Appl. For.* 21:84-89.
- McKeand, S.E., G. Eriksson, and J.H. Roberds. 1997. Genotype by environment interaction for index traits that combine growth and wood density in loblolly pine. *Theor. Appl. Gen.* 94:1015-1022.
- McKeand, S.E., J.E. Grissom, D.M. O'Malley, and H.L. Allen. 1997. Early growth response of diverse families of loblolly pine to nutrient amendments on a poor site. P. 267-274. In: Proc. 24th South. For. Tree Impr. Conf.
- McKeand, S. and B. Li. 1997. Stability of fusiform resistance in loblolly pine. Proc. 24th Southern Forest Tree Improvement. Conference, p. 261-266. Orlando, Florida. June 9-12, 1997.
- McKeand, S.E. and B. Li. 1997. Two generations of genetic gains with loblolly pine in the southeastern United States. Invited Paper. P. 16-20. In: Beaulieu, J. and J.D. Simpson (eds.), Proc. 26th Meeting of the Canadian Tree Impr. Assoc., Part 2 Symposium, Sainte-Foy, Québec.
- McKeand, S.E. and J.C. Svensson. 1997. Loblolly pine, sustainable management of genetic resources. *J. For.* 95: 4-9.
- McKeand, S.E., B. Weir, A. Hatcher, B. Li, J. Sprague, P. Zanker. 1997. Establishment of 2.5-generation seed orchards. Tech. Rep. 97-1. North Carolina State University - Industry Cooperative Tree Improvement Program. 11p.
- Zobel, B.J. and Sprague, J.R. 1997. Developing better trees by genetic manipulation. Chapter in: History of Forest Science, 8pp.

1996

- Belonger, P.J. and S.E. McKeand, and J.B. Jett. 1996. Genetic and environmental effects on biomass production and wood density in loblolly pine. P. 307-310. In Dieters, J.J., Matheson, A.C., Nikles, D.G., Harwood, C.E. and Walker, S.M. (eds.). Tree Improvement for Sustainable Tropical Forestry. Proc. QFRI-IUFRO Conf. Caloundra, Queensland, Australia. 27 Oct. – 1 Nov., 1996.
- Enebak, S.A., M.E. Ostry, G.W. Wyckoff, and B. Li. 1996. Mortality of hybrid-triploid aspen in Wisconsin and upper Michigan. *Can. J. For. Res.* 26:1304-1307.

- Enebak, S.A., B. Li, and M.E. Ostry. 1996. Seedlings response of two trembling aspen (*Populus tremuloides*) to infection by *Hypoxylon mammatum*. *Europ. J. For. Path.* 26:245-253.
- Li, B. and S.E. McKeand. 1996. Adaptation and growth performance of selected loblolly pine families in the southeastern United States. Abstract in Proc. Western Forest Genetics Association Meeting. July 29 – August 1, 1996. Newport, OR. p.24.
- Li, B., S.E. McKeand and R.J. Weir. 1996. Genetic parameter estimates and selection efficiency for the loblolly pine breeding in the south-eastern U.S. P. 164-168. In Dieters, M.J., Matheson, A.C., Nikles, D.G., Harwood, C.E., and Walker, S.M. (eds.). Tree Improvement for Sustainable Tropical Forestry. Proc. QFRI-IUFRO Conf. Caloundra, Queensland, Australia. 27 Oct. – 1 Nov., 1996.
- Li, B. and R. Wu. 1996. Genetic causes of heterosis in juvenile aspen: a quantitative comparison across intra- and interspecific hybrids. *Theo. Appl. Genetics.* 93:380-391.
- Weir, R.J. 1996. The impact of genetics on forest productivity. *Tree Talk* (official publication of Miss. For. Assoc.). Winter 21-24.
- Weir, R. J. 1996. The impact of genetics on forest productivity. Alabama's Treasured Forests, Spring 19-21.
- Zobel, B.J. and J.B. Jett. 1996. Inheritance in Wood. In: 1997 McGraw-Hill Yearbook of Science and Technology. McGraw-Hill Book Co. New York. NY. P 517-518.

1995

- Arnold, R.J. and J.B. Jett. 1995. Seed source variation for growth and quality traits of Fraser fir Christmas trees; rotation age results. *So. J. Appl. For.* 19:157-167.
- Arnold, RJ., J.B. Jett and W.T. Huxster. 1995. Relationship of USDA grades to wholesale and retail values of Fraser fir Christmas trees. *HortScience* 30(2):369-373.
- Greenwood, M.S. and Weir, R.J. 1995. Genetic variation in rooting ability of loblolly pine cuttings: Effects of auxin and family on rooting by hypocotyl cuttings. *Tree Physiology.* 15:41-45.
- Jayawickrama, K.J.S., S.E. McKeand, and J.B. Jett. 1995. Phenological variation in height and diameter growth in provenances and families of loblolly pine. P. 33-39. In: Proc. 23rd South. For. Tree Impr. Conf., Asheville, NC.
- Li, Bailian. 1995. Aspen improvement strategies for western Canada – Alberta and Saskatchewan. *Forestry Chronicle* 71(6):720-724.
- McKeand, S., F. Bridgwater, C. McKinley, J.B. Jett, and R Arnold. 1995. 1994 seed collection from natural stands of Fraser fir and plans for breeding and genetics research at NCSU. *Limbs & Needles* 22:4,6-7.
- McKeand, S.E. and F.E. Bridgewater. 1995. Variance component and genetic gain estimates from 6-year-old diallel tests of loblolly pine. P. 197-203. In: Proc. 23rd South. For. Tree Impr. Conf., Asheville, NC.
- McKinley, C.R and S.E. McKeand. 1995. Genetic improvement of Christmas trees: progress and possibilities. P. 48-54. In: Proc. 23rd South. For. Tree Impr. Conf., Asheville, NC.
- Wilcox, Phillip L. 1995. Genetic Dissection of Fusiform Rust Resistance in Loblolly Pine. Ph.D. Thesis, Dept. of Forestry, NC State University. Raleigh, NC, 125 pp.
- Zobel, B.J. and J.B. Jett. 1995. The genetics of wood production. Springer-Verlag, Heidelberg, 337 p.

1994

- Arnold, R.J., F.E. Bridgwater, and J.B. Jett. 1994. Single- and multiple-trait index selection efficiencies in Fraser fir Christmas trees. *Can. J. For. Res.* 24: 1487 -1494.

- Arnold, R.J., J.B. Jett and S.E. McKeand. 1994. Natural variation in genetic parameters in Fraser fir for growth and Christmas tree traits. Can. J. For. Res. 24:1480-1486.
- Balocchi, C.E., F E. Bridgwater, R. Bryant. 1994. Selection efficiency for a non-selected population of loblolly pine: The North Carolina State University-International Paper Company Heritability Study. For. Sci. , 40:452-473
- Li, B. and G.W. Wyckoff. 1994. Breeding strategies for *Larix decidua*, *L. leptolepis* and their hybrids in the United States. Forest Genetics 1:(2):65-72.
- O'Malley, D.M. and S.E. McKeand. 1994. Marker assisted selection for breeding value in forest trees. Forest Genetics 1:231-242.
- van Buijtenen. J.P. and B.J. Zobel. 1994. Genetics and breeding of wood. In: Tree Breeding. (A.K Mandai. ed.). International Book Distributors and Publishers. Dehra Dun. India.
- Zobel, BJ. 1994. Feasibility of establishing forest plantations in the tropics of America. Plantaciones Forestales IV Reunion National, Institute Nacional de Investigaciones Forestales y Agropecuarias. Mexico City, Mexico. p.51-55.
- Zobel, B.J. 1994. The need and potential for intensive forestry in Mexico. Second International Agribusiness Seminar. Monterrey, Mexico. II pp.

1993

- Balocchi, C. E.. F. E. Bridgwater. B. J. Zobel. and S. Jahromi. 1993. Age trends in genetic parameters for tree height in a non-selected population of loblolly pine. For. Sci. vol. 39(2)231-251.
- Bridgwater. EE. 1993. Supplemental mass pollination. P. 69-77. In: Advances in Pollen Management. USDA Agricultural Handbook 698.
- Bridgwater. F.E. W.C. Woodbridge. and M.E Mahalovich. 1993. Computer modeling of some aspects of a subliming system. P. 327-333. In. Proc 22nd South. For. Tree Impr. Conf, Atlanta, GA.
- Grattapaglia, D.. J. Chaparro, P. Wilcox. S. McCord, B. Crane. H. Amerson, D. Werner. B.H. Liu. D. O'Malley. R. Whetten, S. McKeand, B. Goldfarb, M. Greenwood. G. Kuhlman. E Bridgwater. and R. Sederoff. 1993. Application of genetic markers to tree breeding. P. 452-463. In: Proc. 22nd South. For. Tree Impr. Conf.. Atlanta. GA.
- Hodge, G.R. and R.J. Weir. 1993. Freezing stress tolerance of hardy and tender families of loblolly pine. Can. J. For. Res. 23:1892-1899.
- Jett. J.B.. D.L. Bramlett, J.E. Webber, and U. Eriksson. 1993. Pollen collection, storage, and testing. P. 101- In: Advances in Pollen Management. USDA Agricultural Handbook 698.
- Jett. J.B., S.E. McKeand, Y. Liu and W:T. Huxster. 1993. Seed source variation for height and crown traits of Fraser fir Christmas trees. South. J. Appl For. 17:5-9.
- Lowe. W.J., L.R. Barber, R.S. Cameron, G.L. DeBarr. G.R. Hodge. J.B. Jett. J.L. McConnell. A. Mangini, J. Nord, and J.W. Taylor. 1993. A southwide test of bifenthrin (Capture_R) for cone and seed insect control in orchards. South. J. Appl. For.
- McKeand, S.E. and J.B. Jett. 1993. Growth and stem sinuosity of diverse provenances of three-year-old loblolly pine. P. 208-213. In: Proc. 22nd South. For. Tree Impr. Conf., Atlanta, GA.
- Struve, D.K. and S.E. McKeand. 1993. A means of accelerating red oak genetic tests. Ann. Sci. For. 50:410-415.
- McKeand, S.E. and FE. Bridgwater. 1993. Provenance and family variation for juvenile growth characteristics of *Pinus taeda* L. and the impact on early selection for growth. Studia Forestalia Suecica. 191:5-10.

Weir, R.J. and Goldfarb, B. 1993. Loblolly and slash pine rooted cutting research at N.C. State University. 22nd Southern Forest Tree Improvement Conference, Atlanta, Georgia, June, 1993. pp. 434-446.

Weir, RJ. and Todd, D. 1993. Third-cycle breeding strategy: a description and economic appraisal for the North Carolina State University Cooperative Tree Improvement Program. Invited Paper: Canadian Tree Improvement Association Conference, Fredericton, N.B., Canada, August, 1993. pp. 41-51.

Zobel, B.J.. 1993. Clonal forestry in the eucalypts. Chap. 21 in Ahuja, M.R. and WJ. Libby (eds.). *Clonal Forestry*, pp 140-148.

Zobel, B.J. and J.R. Sprague. 1993. A Forestry Revolution: the history of tree improvement in the Southern United States. Carolina Academic Press. 161p.

1992

Arnold, R., J.B. Jett, and H.L. Allen. 1992. DRIS diagnosis for identifying nutritional influences on cone production in Fraser fir. *Soil Sci. Soc. Amer. Jour.* 56:586-591.

Bridgwater, F E. 1992. Mating Designs. p. 69-95. In: Quantitative Genetics Handbook. L. Fins, S. T. Friedman, and J. V. Brotschol (eds). Kluwer Academic Publishers. London. 403 p.

Bridgwater, FE., T.D. Blush, and D.L. Bramlett. 1992. Supplemental mass pollination. In: Pollen Management Handbook. USDA Agricultural Handbook.

Grattapaglia. D., J. Chaparro. P. Wilcox, S. McCord, D. Werner, H. Amerson, S. McKeand. F. Bridgwater, R. Whetten. D. O'Malley. and R. Sederoff. 1992. Mapping in woody plants with RAPD markers: application to breeding in forestry and horticulture. In Proc. Symp. Applications of RAPD Technology to Plant Breeding. Joint Plant Breeding Symp. Series.

Crop Sci. Soc. of Am.. Am. Soc. for Hort. Sci.. and Am. Gen. Assoc.. Minneapolis. MN. p. 37-40.

Jayawickrama, K.J.S., S.E. McKeand, J.B. Jett and E. Young. 1992. Rootstock and scion effects on carbohydrates and mineral nutrients in loblolly pine. *Can. J. For. Res.* 22:1966-1973.

Jett, J.B., D.L. Bramlett, J.E. Webber, and U. Eriksson. 1992. Pollen collection, storage, and testing. In: Pollen Management Handbook. USDA Agricultural Handbook.

Jett, J.B. and W.M. Guiness. 1992. Growth and wood properties in a Carolina Sandhills pine seed source study. *South. J. Appl. For.* 16(4): 164–169.

McKeand, S.E. and F.E. Bridgwater. 1992. Third-generation breeding strategy for the North Carolina State University - Industry Cooperative Tree Improvement Program. In: Proc. IUFRO Conf. S2.02-08, Breeding Tropical Trees. Solving tropical forest resource concerns through tree improvement, gene conservation and domestication of new species. Oct. 8-18, 1992. Cartagena and Cali, Colombia.

McKeand, S.E. and F.E. Bridgwater. 1992. Breeding strategy for the third generation in the North Carolina State University Tree Improvement Program. Proc. CIEF Meeting, Jornadas sobre Pinos subtropicales Torno I: 1-7. Eldorado (Misiones), Argentina. July 5-7, 1992.

Zobel, BJ. 1992. El Manejo de los Bosques Dinamicos (Managing the dynamic forest). 1992. Venezuela Forestel4(12):2-14.

Zobel, B.J. 1992. Silvicultural effects on wood properties. IPEF 2:31-38.

Zobel, B.J. 1992. Vegetative propagation in production forestry. *J. For.* 90:29-33.

Zobel, BJ. 1992. Clonal forestry in the eucalypts. Chap. 21 in Ahuja, M.R. and WJ. Libby (eds.). *Clonal Forestry*.

Zobel, B.J. and W.L. Ladrach. 1992. The tropics as an emerging forestry business. IUFRO Conf., Cali, Colombia, 10pp.

1991

- Anderson, A.B., L.J. Frampton, S.E. McKeand and J.F. Hodges. 1991. Tissue culture shoot and root system effects on field performance of loblolly pine. *Can. J. For. Res.* 22:56-61.
- Jayawickrama, K.J.S. 1991. Rootstock effects on scion growth, sexual reproduction, nutrient and carbohydrate status and water potential in loblolly pine (*Pinus taeda* L.). M.S. Thesis. N.C. State Univ., Raleigh, NC. 83p.
- Jayawickrama, K.J.S., J.B. Jett and S.E. McKeand. 1991. Rootstock effects in grafted conifers: a review. *New Forests* 5:157-173.
- Jett, J.B. and S.E. McKeand. 1991. The genetic improvement of Fraser fir Christmas trees in North Carolina - an update. *Limbs & Needles* 18:26.
- Jett, J.B., S.E. McKeand and R.J. Weir. 1991. Stability of wood specific gravity of loblolly pine in diverse geographic areas. *Can. J. For. Res.* 21:1080-1085.
- Li, B., H.L. Allen and S.E. McKeand. 1991. Nitrogen and family effects on biomass allocation of loblolly pine seedlings. *For. Sci.* 37:271-283.
- Li, B., S.E. McKeand and H.L. Allen. 1991. Genetic variation in nitrogen use efficiency of loblolly pine seedlings. *For. Sci.* 37:613-626.
- Li, B., S.E. McKeand and H.L. Allen. 1991. Seedling shoot growth of loblolly pine families under two nitrogen levels related to 12-year height. *Can. J. For. Res.* 21:842-847.
- Liu, Y. 1991. Geographic variation of Fraser fir. M.S. Thesis. N.C. State Univ., Raleigh, NC. 53p.
- Wisniewski, L.A., D.L. Brandan, S.E. McKeand and A.V. Amerson. 1991. The effect of root pruning on the maturation of loblolly pine (*Pinus taeda* L.) plantlets, rooted hypocotyls and seedlings. *Can. J. For. Res.* 21:1073-1079.
- Zobel, B.J. 1991. Silvicultural effects on wood properties. IPEF.
- Zobel, B.J. 1991. Clonal forestry in the eucalypts. Chap. 21 in Ahuja, M.R. and W.J. Libby (eds.). *Clonal Forestry*.
- Zobel, B.J. and C.B. Davey. 1991. The 1989 Wallenberg Prize winner: Torsten Ingestad. *Tappi* 74(2):60-64.

1990

- Bridgwater, F.E. 1990. Shoot elongation patterns of loblolly pine families selected for contrasting growth potential. *For. Sci.* 36:641-656.
- Frampton, L. J. and J. B. Jett. 1990. Juvenile wood specific gravity of loblolly pine tissue culture plantlets and seedlings. *Can. J. For. Res.* 19:1347-1350.
- Jayawickrama, K.J.S., S.E. McKeand, J.B. Jett, and E. Young. 1990. Control of scion growth and physiology in grafted loblolly pine (*Pinus taeda* L.). Abstract 11th N. Amer. For. Biol. Workshop, Athens, GA.
- Jett, J. B. and L. J. Frampton. 1990. Effect of rehydration on in vitro germination of loblolly pine pollen. *South. J. Appl. For.* 14:48- 50.
- Jett, J.B., S.E. McKeand, W.T. Huxster and K.O. Summerville. 1990. Fraser fir Christmas tree workshop manual. N.C. State Univ., Raleigh, 102p
- Li, Bailian and S. E. McKeand. 1990. Stability of loblolly pine families in the southeastern U.S. *Silvae Genetica* 38:96-101.
- Lima, R., J.B. Jett, and W.S. Dvorak. 1990. Family stability of wood specific gravity in *Pinus tecunumanii* established on three sites in South America. *New Forest* 3:311-316,

Mahalovich, M.F. 1990. Modeling positive assortative mating and elite populations in recurrent selection programs for general combining ability. Ph.D. Dissertation. N.C. State University, Raleigh, NC. 128 p.

McKeand, S.E., FE. Bridgwater, M.N. Todhunter and G.P. Cannon. 1990. Early selection of loblolly pine based on first-year stem elongation. Abstract 11th N. Amer. For. Biol. Workshop, Athens, GA. p.13.

McKeand, S. E., B. Li, A. V. Hatcher and R. J. Weir. 1990. Stability parameter estimates for stem volume for loblolly pine families growing in different regions in the southeastern United States. For. Sci. 36:10-17.

Moody, W. R. and J. B. Jett. 1990. Effects of pollen viability and vigor on seed production of loblolly pine. South. J. Appl. For. 14:33-38.

Shimizu, J. Y. and B. J. Zobel. 1990. The importance of inter-family competition in loblolly pine. Silvae Genetica.

Struve, D. K. and S. E. McKeand. 1990. Growth and development of eastern white pine rooted cuttings compared to seedlings through eight years of age. Can. J. For. Res. 20:365-368.

Zobel, B.I. 1990. Managing the dynamic forest. Venezuela Forestal

1989

Bramlett, D. L. and F. E. Bridgwater. 1989. Pollen development classification system for loblolly pine. p. 116-121. In: Proc. 20th Southern For. Tree Impr. Conf., Charleston, Sc.

Li, Bailian. 1989 Genetic variation among loblolly pine families in seedling growth, root and shoot morphology and N use efficiency, and use of these traits for potential early genetic selection. Ph.D. Dissertation. N. C. State University. Raleigh, NC. 132 p.

Li, B. and S.E. McKeand. 1989. Stability of loblolly pine families in the southeastern U.S. Silvae Genetica 38:96-101.

Li, B., S. E. McKeand and H. L. Allen. 1989. Early selection of loblolly pine families based on seedling shoot elongation characters. Proc. 20th South. For. Tree Impr. Conf. p. 228-234.

Lima, R., J. B. Jett and W. S. Dvorak. 1989. Family stability of wood specific gravity in *Pinus tecunumanii* established on three sites in South America. New Forests. 3:123-128.

Lowerts, G. A. and J. B. Jett. 1989. Seed orchard turf management with sublethal application of selected herbicides. Abst. in Proc. 20th So. For. Tree Improv. Conf. June 26-30, Charleston, Sc.

Mahalovich, M. F. and F. E. Bridgwater. 1989. Modeling elite populations and positive assortative mating in recurrent selection programs for general combining ability. p.43-49. In: Proc. 20th South For. Tree Impr. Conf., Charleston, Sc.

McKeand, S. E., R. J. Weir and A. V. Hatcher. 1989. Performance of diverse provenances of loblolly pine throughout the southeastern United States. South. J. Appl. For. 13:46-51.

Struve, D. K, J. B. Jett, S. E. McKeand and G. P. Cannon. 1989. Subsoiling in a loblolly pine seed orchard: effects on seed quality. Can. J. For. Res. 19:505-508.

Zobel, B.J. 1989. The next step - vegetative propagation in forestry. National Breeders' Roundtable, St. Louis, MO.

Zobel, B. J. 1989. Vegetative propagation in production forestry.

Zobel, B. J. 1989. Global tree improvement compared to that in the southern United States. p. 418-424. In: Proc. 20th Southern For. Tree Impr. Conf. Charleston, SC.

Zobel, B. J. and van Buijtenen, J. P. 1989. Wood variation - Its causes and control. Springer-Verlag, Heidelberg, 363 pp.

1988

- Amerson, H. V., I. J. Frampton, Jr., R. L. Mott and P. C. Spaine. 1988. Tissue culture of conifers using loblolly as a model. pp. 117- 137. In: J. Hanover and D. Keathley (eds.) Genetic manipulation of woody plants. Plenum Press, New York.
- Arnold, R. J. 1988. Foliar mineral nutrient diagnosis with DRIS for identifying nutritional influences on female cone production in Fraser fir. M.S. Thesis, N. C. State Univ., Raleigh, NC, 65 p.
- Jett, J. B. 1988. Thirty-five years later: an overview of tree improvement in the southeastern United States. In: Proc. Southern Forest Nursery Assoc. Conf., July 25-28, Charleston, SC.
- Li, Bailian, J. B. Jett and R. J. Weir. 1988. A preliminary study of geographic variation in Fraser fir seedlings. South J. of Appl. For. 12:128-132.
- McKeand, S. E. 1988. Optimum age for family selection for growth in genetic tests of loblolly pine. For. Sci. 34:400-411.
- McKeand, S. E., A. V. Hatcher and B. Li. 1988. Loblolly pine seed transfer within the eastern region: provenance and family effects. SRIEG-40 Workshop. Loblolly Pine Seed Transfer: State of Our Knowledge. Hot Springs, AR. June 14, 1988.
- McKeand, S. E., B. Li, A. V. Hatcher and R. J. Weir. 1988 Stability parameters for loblolly pine families growing in different regions in the southeastern United States. For. Sci.
- McKeand, S. E., J. R. Sprague and J. B. Jett. 1988. Management of loblolly pine clone banks for scion production. South. J. Appl. For. 12:231-234.
- Moody, W. R. 1988. Evaluation of loblolly pine pollen quality. M. S. Thesis, N. C. State Univ., Raleigh, NC, 68 p.
- Richmond, J. A. 1988. Genetic Structure of Species and Populations of Pine Coneworms in the Eastern United States. Ph.D. Thesis NC State Univ., Raleigh, NC, 113 p.
- Shimizu, J. Y. and B. J. Zobel. 1988. The importance of inter-family competition in loblolly pine. Silvae Genetica.
- Zobel, B. J. 1988. Eucalyptus in the forest industry. TAPPI 71:43-46.

1987

- Balocchi, C. 1987. Determining an efficient genetic test design for *Pinus radiata* (D. Don) in Chile. M. S. Thesis, N. C. State Univ., Raleigh, NC, 77 p.
- Bramlett, D. L. and F. E. Bridgwater. 1987. Effect of a clonal row design on the seed yields of loblolly pine. In: Proceedings of the 19th S. For. Tree Improvement Conf., College Station, Texas, June 16-18, 1987. pp. 253-260.
- Bridgwater, F. E. 1987. Tree Improvement, silviculture and forest management interactions in loblolly and slash pines and their potential use in young tree improvement programs. In: Proceedings of Simposio Sobre Silvicultura Y Mejoramiento Genetico De Especies Forestales, Buenos Aires, Argentina, April 6-10, 1987. Sponsored by Centro De Investigaciones Y Experiencias Forestales, Tomo III, pp. 1-9.
- Bridgwater, F. E., D. L. Bramlett, and F. R. Matthews. 1987. Supplemental mass pollination is feasible on an operational scale. In: Proc. of the 19th S. For. Tree Improvement Conf., College Station, Texas, June 16-18, 1987. pp. 216-222.
- Bridgwater, F. E. and C. G. Williams. 1987. Early testing and juvenile selection in loblolly pine. Proc. 30th N. E. For. Tree Impr. Conf., July 22-24, 1986, Univ. of Maine, Orono. p.1-7.
- Brown, S. D. and F. E. Bridgwater. 1987. Observations on pollination in loblolly pine. Can. J. For. Res., 17:299-303
- Lima, R. T. 1987. Stability of genotypes of *Pinus oocarpa* for specific gravity in three different environments in South America. M.S. Thesis, N. C. State Univ., Raleigh. 48 p.

- Mahalovich, M. F., S. E. McKeand, and J. B. Jett. 1987. Seasonal rooting response of 6-year-old loblolly pine clones to different concentrations of indole-3-butyric acid and dimethyl sulfoxide. Proc. 19th South. For. Tree Impr. Conf. p. 125-131.
- McKeand, S. E., J. B. Jett, J. R. Sprague, and M. N. Todhunter. 1987. Summer wax grafting of loblolly pine. South. J. Appl. For. 11:96-99.
- Papke, K. E. 1987. Studies in fusiform rust: histological comparison of loblolly and shortleaf pines and evaluation of limiting factors in axenic culture growth. M. S. Thesis, N. C. State Univ., Raleigh. 61 pp.
- Wisniewski, L. A. 1987. The effect of cytokinins and root system parameters on the maturation of loblolly pine. Ph.D. Thesis, N. C. State Univ., Raleigh, NC. 91 p.
- Sniezko, R. A. and B. J. Zobel. 1987. Seedling height and diameter variation of various degrees of inbred and outcross progenies of loblolly pine. Silvae Genetica 37:50-60.
- Wisniewski, L. A., S. E. McKeand and H. V. Amerson. 1987. The effect of root pruning on the maturation of loblolly pine (*Pinus taeda*) tissue culture plantlets. Abstr. for Amer. Soc. Plant Phys. Ann. Mtg.
- Williams, C. G. 1987. The influence of shoot ontogeny on juvenile-mature correlations in loblolly pine. For. Sci. 33:411-422.
- Zobel, B. J. 1987. Forestry in the developing countries - an overview. Beijing, China, Sci. and Tech. Review. 4 p.
- Zobel, B. J., G. van Wyk, and P. Stahl. 1987. Growing exotic forests. John Wiley & Sons, NY. 508 p.

1986

- Bramlett, D. L. and F. E. Bridgwater. 1986. Segregation of recessive embryonic lethal alleles in a F1 population of Virginia pine. pp. 401-409. In: Proc. IUFRO Conf. Joint Mtg. of Working Parties on Breeding Theory, Progeny Testing and Seed Orchard. Williamsburg, Va.
- Bridgwater, F. E. and F. T. Ledig. 1986. Selecting for super trees. J. For. 84:53-56.
- Bridgwater, F. E. and A. E. Squillace. 1986. Selection indexes for forest trees. p. 17-20. In: Southern Coop. Sere Bull. No. 309. Advanced Generation Breeding of Forest Trees. Proc. of a Workshop on Advanced Generation Breeding. Current Status and Research Needs, June 6-7, 1984. Baton Rouge, LA.
- Bridgwater, F. E. and C. G. Williams. 1986. Early testing and juvenile selection in loblolly pine. Proc. of the 30th N.E. For. Tree Impr. Conf., July 22-24, 1986, Univ. of Maine, Orono.
- Foster, G. S. and F. E. Bridgwater. 1986. Genetic analysis of fifth-year data from a seventeen parent partial diallel of loblolly pine. Silvae Genetica 35:118-122.
- Frampton, L. J., Jr. 1986. Field performance of loblolly pine tissue culture plantlets. pp. 547-553. In: Proc. IUFRO Conf. Joint Mtg. of Working Parties on Breeding Theory, Progeny Testing and Seed Orchard. Williamsburg, Va.
- Frampton, L. J., Jr. and K. Isik. 1986. Comparison of field growth among loblolly pine seedlings and three plant types produced in vitro. Tappi 70:119-123.
- Jett, J. B. 1986. Reaching full production: A review of seed orchard management in the southeastern United States. pp. 34-58. In: Proc. IUFRO Conf. Joint Mtg. of Working Parties on Breeding Theory, Progeny Testing and Seed Orchard. Williamsburg, Va.
- McKeand, S. E. and F. E. Bridgwater. 1986. When to establish advanced generation seed orchards. Silvae Genetica 35:245-247.
- McKeand, S. E., G. S. Foster, and F. E. Bridgwater. 1986. Breeding systems for pedigree-controlled production populations of loblolly pine. p. 53-61. In: Southern Coop. Series Bull.

- No. 309. Advanced Generation Breeding of Forest Trees. Current Status and Research Needs, June 6-7, 1984. Baton Rouge, La.
- Struve, D. K., J. B. Jett and D. L. Bramlett. 1986. Production and harvest influences on woody plant seed germination. In: Proc. XXII International Hort. Congress, 83rd Annual Meeting of the Amer. Soc. Hort. Sci., August 10-18, Univ. California, Davis.
- van Buijtenen, J. P. and F. E. Bridgwater. 1986. Mating and genetic test designs. p. 5-10. In: Southern Coop. Series Bull. No. 309. Advanced Generation Breeding of Forest Trees. Proc. of a Workshop on Advanced Generation Breeding. Current Status and Research Needs, June 6-7, 1984. Baton Rouge, La.
- Weir, R. J. and R. E. Goddard. 1986. Advanced generation operational breeding programs for loblolly and slash pine. p. 21-26. In: Southern Coop. Series Bull. No. 309. Advanced Generation Breeding of Forest Trees. Proc. of a Workshop on Advanced Generation Breeding. Current Status and Research Needs, June 6-7, 1984. Baton Rouge, La.
- Wisniewski, L. A., L. J. Frampton, Jr. and S. E. McKeand. 1986. Early shoot and root quality effects on nursery and field development of tissue cultured loblolly pine. HortScience 21:1185-1186.
- Zobel, B. J. 1986. Advances in forestry in South America and their effect on competition with the southern United States. Tappi 69:34-36.
- 1985**
- Amerson, H. V., L. J. Frampton, Jr., S. E. McKeand, R. L. Mott, and R. J. Weir. 1985. Loblolly pine tissue culture: laboratory, green-house and field studies. p. 271-287. In: R. R. Henke, K. W. Hughes, M. J. Constantin and A. Hollaender (eds.). Tissue culture in forestry and agriculture. Plenum Press, NY. 390p.
- Bridgwater, F. E., C. G. Williams, and R. G. Campbell. 1985. Patterns of leader elongation in loblolly pine families. For. Sci. 31:933-944.
- Dvorak, W. S. and B. J. Zobel. 1985. Selection of species for industrial pulpwood plantations in developing tropical and subtropical countries. FAO Adv. Committee on Pulp and Paper. Rome.
- Frampton, L. J., Jr., H. V. Amerson, and J. W. Moyer. 1985. Development of *in vitro* techniques for screening loblolly pine for fusiform rust resistance. p. 125-139. In: J. Barrow-Broadbush and H. R. Powers (eds.). Proc. of the Rusts of Hard Pines Working Party Conf., S2.06-10. Sponsored by IUFRO and Southeastern For. Expt. Sta., USFS. 331 p.
- Frampton, L. J., Jr., R. L. Mott, and H. V. Amerson. 1985. Field performance of loblolly pine tissue culture plantlets. Proc. 18th South. For. Tree Impr. Conf., Long Beach, MS., May 21-23. p. 136-144.
- Gray, D. J. and H. V. Amerson. 1985. In vitro colonization and resistance of loblolly pine embryos infected with the fusiform rust fungus. pp. 257-270. In: R. R. Henke, K. W. Hughes, M. J. Constantine and A. Hollaender (eds.). Tissue Culture in Forestry and Agriculture. Plenum Press. 390 p.
- Hodge, G. 1985. Offspring vs. parent selection: a case study. Proc. 18th South. For. Tree Impr. Conf., Long Beach, MS. May 21-23, 1985. p. 145-154.
- McCutchan, B.G. 1985. Design efficiencies with planned and unplanned imbalance for the estimation of heritability in forestry. Ph.D. Thesis, N. C. State Univ., Raleigh. 177 p.
- McKeand, S.E. 1985. Expression of mature characteristics by tissue culture plantlets derived from embryos of loblolly pine. J. Amer. Soc. Hort. Sci. 110:619-623.

- Mott, R.L. 1985. Relative strengths of biotechnology - forest, agronomic and horticultural crops. Colloquium on Progress and Prospects in Crop and Forest Biotechnology, April 18-20, 1985, Syracuse, NY.
- Spaine, P C., H.V. Amerson, and J. W. Moyer. 1985. Detection of *Cronartium quercuum* f. sp. *fusiforme* in *Pinus taeda* embryos using the enzyme linked immunosorbent assay. p. 141-153. In: J. Barrow-Broaddus and H.R. Powers (eds.). Proc. of the Rusts of Hard Pines Working Party Conf., S2.06-10. Sponsored by IUFRO and Southeastern For. Expt. Sta., USFS.331 p.
- Talbert, J. T., R. J. Weir, and R. D. Arnold. 1985. Costs and benefits of a mature first-generation loblolly pine tree improvement program. J. For. 83:162-166.
- Weir, R. J. 1985. Breeding southern pines in the United States. Proceedings, IX World Forestry Congress (International Workshop About the State of the Art in Forest Genetics and Breeding). Mexico. 11 pp.
- Zobel, B. J., R. Umana, W. Dvorak, W. Ladrach, and C. Davey. 1985. Political and associated biological problems related to growing exotics in the tropics and sub-tropics of South America. CONIF.

1984

- Amerson, H. V., L. J. Frampton, Jr., S. E. McKeand, R. L. Mott, and R.J. Weir. 1984. Loblolly pine tissue culture: laboratory, green- house and field studies. Symp. Propagation of Higher Plants Through Tissue Culture: III Development and Variation. Univ. Tennessee. Sept. 9-13, 1984.
- Amerson, H. V., L. J. Frampton, Jr. and R. L. Mott. 1984. In vitro methods for the study of fusiform rust in association with loblolly pine. p. 103-123. In: J. Barrow-Broaddus and H. R. Powers (eds.). Proc. of the Rusts of Hard Pines Working Party Conf., S2.06-10. Sponsored by IUFRO and Southeastern For. Expt. Sta., USFS. 331 p.
- Bridgwater, F. E. 1984. The impact of genetic improvement of stem straightness on yield and value of lumber. p. 80-87. In: Proc. of a Symposium on "Utilization of the Changing Wood Resource in the Southern United States". Raleigh, N. C., June 12-13.
- Bridgwater, F. E. and E. C. Franklin. 1984. "Forest Tree Breeding: Strategies, Achievements and Constraints." pp. 36-48. In: Cannell, M.R.G. and J. E. Jackson (eds.). Attributes of Trees As Crop Plants. Titus Wilson and Son, Ltd. Great Britain.
- Brown, S. D. 1984. Pollination mechanisms in *Pinus taeda* L. N. C. State Univ., Raleigh. 30 p. MS Thesis.
- Carson, S. D. 1984. Indirect screening of loblolly pine for fusiform rust resistance through controlled inoculation. Ph.D. Thesis, N. C. State Univ., Raleigh. 57 p.
- Eguiluz-Piedra, T. and B. J. Zobel. Properties of *Pinus tecunumanii*.1984. Geographic variation in wood. Wood Sci..
- Emery, B. M. 1984. Provenance trial of *Eucalyptus camaldulensis* Dehn. in California. M.S. Thesis, N. C. State Univ., Raleigh. 43 p.
- Frampton, L. J. 1984. *In vitro* studies of disease resistance in loblolly pine. Ph.D. Thesis, N7 C. State Univ., Raleigh. 63 p.
- Jett, J. B. and R. J. Weir. 1984. Integrated Pest Management in Seed Orchards--Vegetation. Proc. Integrated Pest Management Symposium, Athens, Ga., June 19-20.
- Johnson, G. R., Jr. 1984. Genetic variation in nutrient use efficiencies by loblolly pine and use of nutrient data to improve genetic gain for growth. Ph.D. Thesis, N. C. State Univ., Raleigh. 70p.

- Kellison, R. C. and R. J. Weir. 1984. Selection and breeding strategies in tree improvement programs for elevated atmospheric carbon dioxide levels. National Forest Products Assoc. Conference on Rising CO₂ and Changing Climate: Forest Risks and Opportunities. Boulder, CO., June 25-27.
- McKeand, S. E. and H. L. Allen. 1984. Nutritional and root development factors affecting growth of tissue culture plantlets of loblolly pine. *Physiol. Plant.* 61:523-528.
- McKeand, S. E. and R. J. Weir. 1984. Tissue culture and forest productivity. *J. For.* 82:212-218.
- McKeand, S. E. and L. J. Frampton, Jr. 1984. Performance of tissue culture plantlets of loblolly pine *in vivo*. Proc. International Symposium of Recent Advances in Forest Biotechnology. June 10-13. Traverse City, MI. p. 82-91.
- Sniezko, R. A. 1984. Inbreeding and outcrossing in loblolly pine. Ph.D. Thesis, N. C. State Univ., Raleigh. 50 p.
- Struve, D. K., J. T. Talbert, and S. E. McKeand. 1984. Growth of rooted cuttings and seedlings in a 40 year-old plantation of eastern white pine. *Can. J. For. Res.* 14:462-464.
- Talbert, C. B. 1984. An analysis of several approaches to multiple-trait index selection in loblolly pine (*Pinus taeda* L.). Ph.D. Thesis. N. C. State Univ., Raleigh. 106 p.
- Talbert, J. T., J. B. Jett and R. L. Bryant. 1984. Inheritance of wood specific gravity in an unimproved loblolly pine population: 20 years of results. *Silo Gen.* 32:33-37.
- Wisniewski, L. A. 1984. The development and usefulness determination of a discriminant analysis model for fusiform rust resistance at the United States Forest Service Resistance Screening Center, Asheville, North Carolina. MS Thesis, N. C. State Univ., Raleigh. 55 p.
- Zobel, B. J. 1984. The changing quality of the world timber supply. *Wood Sci. Technol.* 18:1-17.
- Zobel, B. J. and R. C. Kellison. 1984. Wood - where will it come from, where will it go? A comparison of the southern United States with South America. *Tappi* 67:33-37.
- Zobel, B. J. and J. T. Talbert. 1984. Applied Tree Improvement. John Wiley & Sons. 505 p.

1983

- Bridgwater, F. E. and S. E. McKeand. 1983. Experimental design and how it relates to test objectives and sites. In: Proc. Forest Genetics Workshop. U. S. Forest Service. Dec. 5-9, 1983. Charleston, S. C.
- Bridgwater, F. E., J. T. Talbert and S. Jahromi. 1983. Index selection for increased dry weight in a young loblolly pine population. *Sil. Gen.* 32:157-161.
- Bridgwater, F. E. and C. G. Williams. 1983. Feasibility of supplemental mass pollination to increase genetic gains from seed orchards. Proc. 17th South. For. Tree Impr. Conf. p. 78-83.
- Busby, C. L. 1983. Crown-quality assessment and the relative economic importance of growth and crown characters in mature loblolly pine. Proc. 17th South. For. Tree Impr. Conf. p. 121-130.
- Carson, M. J. 1983. Breeding for resistance to fusiform rust in loblolly pine. PhD Thesis, NC State Univ., Raleigh. 122 p.
- Dvorak, W. S. 1983. Strategy for the development of conservation banks and breeding programs for coniferous species from Central America and Mexico. Proc. 17th South. For. Tree Impr. Conf. p. 22-29.
- Frampton, L. J., H. V. Amerson, and R. J. Weir. 1983. Potential of *in vitro* screening of loblolly pine for fusiform rust resistance. Proc. 17th South. For. Tree Impr. Conf. p. 325-331.
- Franklin, E. C. 1983. Patterns of genetic and environmental variance in a short-term progeny test of loblolly pine. Proc. 17th South. For. Tree Impr. Conf. p. 332-343.

- Gray, D. J. and H. V. Amerson. 1983. In vitro resistance of embryos of *Pinus taeda* to *Cronartium quercuum* f:-sp. *fusiforme*. Ultrastructure and histology. *Phytopathology* 73:1492-1499.
- Jett, J. B. 1983. The impact of irrigation and supplemental nitrogen fertilization on the development of a young loblolly pine seed orchard. Ph.D. dissertation, Dept. of For., N. C. State Univ., Raleigh. 38 p.
- Lambeth, C. C., J. P. van Buijtenen, S. D. Duke and R. B. McCullough. 1983. Early selection is effective in 20 year-old genetic tests of loblolly pine. *Silva Gen.* 32:210-215.
- McCutchan, B.G. 1983. Estimation of gain in form, quality and volumetric traits of American sycamore in response to selection for tree dry weight. Proc. 17th South. For. Tree Impr. Conf. p. 209-219.
- McKeand, S. E. 1983. Growth and development of tissue culture plantlets of loblolly pine in a greenhouse. Ph.D. Thesis, N. C. State Univ. 65 p.
- McKeand, S. E. and R. J. Weir. 1983. Economic benefits of an aggressive breeding program. Proc. 17th South. For. Tree Impr. Conf. pp. 99-105.
- Sprague, J. R., J. T. Talbert, J. B. Jett and R. L. Bryant. 1983. Utility of the Pilodyn in selection for mature wood specific gravity in loblolly pine. *For. Sci.* 29:696-701.
- Purnell, R. C. and R. C. Kellison. 1983. A tree improvement program for southern hardwoods. Proc. 17th South. For. Tree Impr. Conf. p. 90-98.
- Saylor, L. C. 1983. Karyotype analysis of the genus *Pinus* - subgenus *strobus*. *Silv. Gen.* 32:119-124.
- Skoller, D.L., F.E. Bridgwater, and C.C. Lambeth. 1983. Fusiform rust resistance of select loblolly pine seedlots in the laboratory, nursery, and field. *South. Jour. App. For.* 7:198-203.
- Stubblefield, G. W. 1983. Geographic patterns of variation among sweetgum populations in the southern United States - Fourteenth-year Results. Proc. 17th South. For. Tree Impr. Conf. p. 234-244.
- Talbert, J. T., R. J. Weir and R. D. Arnold. 1983. Loblolly pine tree improvement an attractive forestry investment. Proc. South. For. Econ. Workers Workshop, Mobile, Ala.
- Weir, R. J., J. P. van Buijtenen and R. E. Goddard. 1983. Lessons from one generation of progeny testing. Proc. 17th South. For. Tree Impr. Conf. p. 157-160.
- Williams, C. G., F. E. Bridgwater and C. C. Lambeth. 1983. Performance of single family versus mixed family plantation blocks of loblolly pine. Proc. 17th South. For. Tree Impr. Conf. p. 194-201.
- Wisniewski, L. A., S. E. McKeand and R. Brooks. 1983. Growth of tissue culture plantlets of loblolly pine in a nursery and greenhouse. Proc. 17th South. For. Tree Impr. Conf. pp. 186-193.
- Zobel, B. J., E. Campinos, Jr., and Y. K. Ikemori. Selecting and breeding for desirable wood. *TAPPI* 66:70-73.1983.

1982

- Amerson, H. V. and R. L. Mott. 1982. Phytopathology and tissue culture alliances. In: Bonga, J. M. and Durzan, D. J. (eds.) *Tissue culture in forestry*. Martinus Nyhoff Publ. Netherlands. p. 208-230.
- Bridgwater, F. E. and D. L. Bramlett. 1982. Supplemental mass pollination to increase seed yields in loblolly pine seed orchards. *South. Jour. App. For.* 6:100-103.
- Bridgwater, F. E., J. T. Talbert, and D. Rockwood. 1982. Field designs for genetic testing of forest trees. Workshop on Progeny Test Methodology, Auburn, Ala. June, 1982.

- Bruno, A. and B. Zobel. 1982. Genetic base populations, gene pools, and breeding populations for Eucalyptus in Brazil. *Silo Gen.* 30:146-149.
- Gallegos, C. M., C. B. Davey, R. C. Kellison, P. A. Sanchez, and B. J. Zobel. 1982. Technologies for reforestation of degraded lands in the tropics. Office of Technology Assessment, Food and Renewable Resources, Congress of the United States, Washington, D. C. 133 p.
- Garlo, Albert. 1982. Vegetative propagation of Fraser fir seed orchard trees by rooted cuttings and grafting. M.S. Thesis, Dept. of Forestry, N. C. State Univ., Raleigh. 60 p.
- Jett, J. B., and J. T. Talbert. 1982. (Abstract) The inclusion of wood specific gravity in the development of advanced generation seed orchards. Proc. 6th N. Am. For. Biol. Workshop. Edmonton, Alberta. Aug., 1980, p. 138.
- Jett, J. B. and J. T. Talbert. 1982. The place of wood specific gravity in the development of advanced-generation seed orchards and breeding programs. *South. Jour. Appl. For.* 6:177-180.
- Kellison, R. C. and R. C. Purnell. 1982. Genetic improvement of southern hardwood--an update. *For. Farmer.* 12 p.
- Lambeth, C. C., B. J. Zobel, and R. W. Stonecypher. 1982. Interaction of Douglas-fir full-sib families with temperature, nutrients, and moisture in a phytotron: the effect of predicting field performance. Proc. 7th N. Am. For. Bio. Workshop, Lexington, KY.
- McKeand, S. E. and L. A. Wisniewski. 1982. Root morphology of loblolly pine tissue culture plantlets. Proc. 7th N. Am. For. Bio. Workshop, Lexington, KY.
- Miller, L. K. and R. J. Weir. 1982. Effect of two differing temperature regimes on the expression and heritability of several seedling characteristics of Fraser fir (*Abies fraseri*).
- Talbert, J. T., F. E. Bridgwater, J. B. Jett, and S. Jahromi. 1982. Genetic parameters for wood specific gravity in a control-pollinated genetic test. TAPPI R&D Conference, Asheville, N. C., August, 1982, 10 p.
- Talbert, J. T., R. A. Wilson, and R. J. Weir. 1982. Utility of first- generation pollen parents in young second-generation seed orchards. 7th N. Am. For. Bio. Workshop, Lexington, KY. .Proc.
- Weir, R. J., J. P. van Buijtenen, and R. E. Goddard. 1982. What not to do or Robert's Rules of Disorder in progeny testing of forest trees. Workshop on Progeny Test Methodology, Auburn, Ala.
- Weir, R. J., R. G. Pearson, and W. D. Smith. 1982. Utilization of pine thinnings. Proc. Workshop on Thinning Pine Plantations, Long Beach, MS.
- Weir, R. J., J. T. Talbert, and S. E. McKeand. 1982. Trends in loblolly pine tree improvement in the Southern United States. Proc. Symp. on Management of Loblolly Pine Ecosystems, Raleigh, N. C. p. 102-114.
- Wilson, R. A., J. T. Talbert, and R. J. Weir. 1982. Utility of first-generation pollen parents in young second-generation seed orchards (7th N. Am. For. Bio. Workshop, July, 1982, Lexington, Ky.).
- Zobel, B. J. 1982. Changing quality of the world timber supply (*to be presented at the International Academy of Wood Science Conference, September, 1983*).
- Zobel, B. J. 1982. Developing fusiform resistant trees in the Southeastern United States. Proc. ,3rd Int. Conf. on Genetics of Host-Parasite Interactions in Forestry, Wageningen, Holland (H. M. Heybroek, B. R. Stephan, and K. von Weissenberg, eds.), p. 417-426.
- Zobel, B. J. 1982. Loblolly pine - in retrospect. Proc. Symp. on Management of Loblolly Pine Ecosystems, Raleigh, N. C. p. 1-6.

- Zobel, B. J. 1982. Research and development in forest biology in Canada. Can. For. Congress, Toronto. p. 68-73.
- Zobel, B. J. 1982. The necessity for tree improvement in forestry plantations in Venezuela. Venezuela Forestal. 12 p.
- Zobel, B. J. 1982. The world's need for pest-resistant forest trees. Proc. Int. Workshop on the Genetics of Host-Parasite Interactions in Forestry, Wagninen, Holland (H.M. Heybroek, B. R. Stephan, and K. von Weissenberg, eds.), pp. 1-8.
- 1981**
- Amerson, H. V., S. E. McKeand, and R. L. Mott. 1981. Tissue culture and greenhouse practices for the production of loblolly pine plantlets. Proc. 16th South. For. Tree Impr. Conf., Blacksburg, Va. p. 168-175.
- Bridgwater, F. E. and I. F. Trew. 1981. Supplemental Mass Pollination. In: Pollen Management Handbook. USDA For. Sere Agricultural Handbook. No. 587. p. 52-57.
- Cretcher, G. 1980. Natural variation of willow oak (*Quercus phellos*) along four river systems along the East Coast. M.S. Thesis, Dept. of Forestry, N. C. State University, Raleigh. 75 p.
- Duffield, John W. 1981. Hybridization - then and now. Proc. 16th Southern Forest Tree Improvement Conference, Blacksburg, Va. p. 1-5.
- Dvorak, W. S., E. C. Franklin, and G. Meskimen. 1981. Genetic strategy for *Eucalyptus robusta* Sm. in southern Florida. Proc. 16th Southern Forest Tree Improvement Conference, Blacksburg, Va. p. 116-122.
- Foster, G. S., F. E. Bridgwater, and S. E. McKeand. 1981. An analysis of systems for producing large numbers of vegetative propagules of forest trees. Proc. 16th Southern Forest Tree Improvement Conference, Blacksburg, Va. p. 311-319.
- Foushee, D. L., J. T. Talbert, B. J. Zobel, and K. O. Summerville. 1981. The effects of seed orchard fertilization on seed and seedling characteristics of four longleaf pine families. Southern Journal of Applied Forestry 5:159-162.
- Franklin, Carlyle. (Ed.) 1981. Pollen Management Handbook. USDA For. Sere Agricultural Handbook. No. 587. 98 p.
- Franklin, E. C., and F. E. Bridgwater. 1981. Genetics of fast growth and wood properties. TAPPI National Meeting, Chicago, Ill., March, 1981. 4 pp.
- Harcharik, D. A. 1981. The timing and economics of irrigation in loblolly pine seed orchards. Ph.D. dissertation, Dept. of Forestry, N. C. State Univ., Raleigh, N. C. 86 pp.
- Hatcher, A. V., and R. J. Weir. 1981. The design and layout of advanced generation seed orchards. Proc. 16th Southern Forest Tree Improvement Conference, Blacksburg, Va. p. 205-212.
- Hatcher, A. V., F. E. Bridgwater, and R. J. Weir. 1981. Performance level-a standardized score for progeny test performance. Silvae Genetica. 30:184-187.
- Kellison, R. C. and J. R. Sprague. 1981. Forest genetics for tomorrow's southern pine forest. Pulp and Paper 55:187-191.
- Lowerts, G. A., and R. C. Kellison. 1981. Genetically controlled resistance to discoloration and decay in wounded trees of yellow poplar. Silvae Genetica 30:98-101.
- McKeand, S. E. 1981. Loblolly pine tissue culture: current and future uses in southern forestry. N. C. State Univ., School of Forest Res. Tech. Rept. No. 64. 50 p.
- McKeand, S. E. and W. F. Beineke. 1981. Sublining for half-sib breeding populations of forest trees. Silvae Genetica 29:14-17.

- Mott, R. L. 1981. Tissue culture propagation of conifers: current and future. Proc. 16th Southern Forest Tree Improvement Conference, Blacksburg, Va. p. 160-167.
- Mott, R. L., and H. V. Amerson. 1981. A tissue culture process for the clonal production of loblolly pine plantlets. Technical Bulletin No. 271. N. C. Ag. Res. Serv. 14 pp.
- Paschke, J. L., G. R. Johnson, Jr., and W. E. Gardner. 1981. Genetic aspects of nursery management for sweetgum seedling uniformity. Proc. 16th Southern Forest Tree Improvement Conference, Blacksburg, Va. p. 279-287.
- Perry, T. O. and W. L. Hafley. 1981. Variation in seedling growth rates - their genetic and physiological bases. Proc. 16th Southern Forest Tree Improvement Conference. Blacksburg, Va. p. 288-301.
- Pousujja, Reungchai. 1981. Potential and gain of a breeding program using vegetative propagation compared to traditional systems. Ph.D. dissertation, Dept. of Forestry, N. C. State Univ., Raleigh, N. C.
- Sniezko, R. A. 1981. Genetic and economic consequences of pollen contamination in seed orchards. Proc. 16th Southern Forest Tree Improvement Conference. Blacksburg, Va. p. 225-233.
- Sprague, J., and E. B. Snyder. 1981. Extraction and drying of southern pine pollen. In: Pollen Management Handbook. USDA For. Ser. Agricultural Handbook.--No. 587. p. 33-36.
- Talbert, J. T. 1981. One generation of loblolly pine tree improvement: results and challenges. Proc. 18th Can. Tree Imp. Assoc. Meeting, Duncan, B. C. p. 106-120.
- Talbert, J. T., and J. B. Jett. 1981. Regional specific gravity values for I plantation grown loblolly pine in the southeastern United States. Forest Science 27:801-807.
- Talbert, J. T., F. E. Bridgwater, and C. C. Lambeth. 1981. Genetic Testing Manual. N. C. State University-Industry Pine Tree Improvement Cooperative. 37 p.
- Williams, Claire G. 1981. Differences in seedling root morphology between two edaphic sources of loblolly pine (*Pinus taeda* L.) in eastern North Carolina. M.S. Thesis, Dept. of Forestry, N. C. State Univ., Raleigh, N. C. 54 p.
- Williams, C. and F. E. Bridgwater. 1981. Screening loblolly pine for adaptability to deep peat sites: A seedling study of two edaphic seed sources from eastern North Carolina. Proc. 16th Sou. For. Tree Imp. Conf., Blacksburg, Va. p. 143-148.
- Zobel, B. 1981. Fast Growth Plantations in the Tropics and Subtropics of South America. Forest Farmer.
- Zobel, B. J. 1981. Making forests productive--overcoming perceived constraints. Banff Center/IRPP National Resources Conf., Canada. 9 pp. (Mimeo).
- Zobel, B. J. 1981. The effect of genetic improvement of pine on regeneration methods. In Artificial Regeneration of Southern Pines - Decision Making in the Regeneration Process, Clemson Univ. 4 pp. seed source trial in the interior South. South. Jour. of Applied Forestry 4:153-156.
- Zobel, Bruce J. 1981. Vegetative propagation in forest management operations. Proc. 16t Southern Forest Tree Improvement Conference, Blacksburg, Va. p. 149-159.
- 1980**
- Adams, Tim. 1980. A determination of the predictive value of the Bent Creek Screening Center. M.S. Thesis, Dept. of Forestry, N. C. State University, Raleigh. 39 pp.
- Cretcher, G. 1980. Natural variation of willow oak (*Quercus phellos*) along four river systems along the East Coast. M.S. Thesis, Dept. of Forestry, N. C. State University, Raleigh. 75 p.

- Frederick, D.J., W.E. Gardner., R.C. Kellison., and M. Williford. 1980. Energy plantations - a future source of biomass. Paper to be presented at 1980 Annual Meeting of the International Solar Energy Society, Phoenix, Arizona, June 2-6, 1980.
- Goncalves, P. De S., and R.C. Kellison. 1980. Potential of black alder in the South. Technical Report No. 62, School of Forest Resources, N. C. State University, Raleigh. 31pp. Johnson, G. R., Jr.. 1980. Seed size and clonal effects on sweet gum and sycamore growth in a nursery bed. M.S. Thesis, Dept. of Forestry, N. C. State University, Raleigh, N. C. 34 pp.
- Kellison, R. C. 1980. Genetically improved hardwoods. Council, Cashiers, N. C., April, 1980. 8 pp. Eighth Hardwood Research.
- Kellison, R.C. 1980. Early natural stand growth in hardwoods. Paper presented to the Southeastern Lumber Manufacturer's Assoc. Hardwood Symposium, Atlanta, GA, Jan. 29, 1980.
- Kellison, R.C. and R.J. Weir. 1980. How forest genetics is helping grow better trees for tomorrow. Tappi 63:57-61.
- Lambeth, C. C. 1980. Juvenile-mature correlations in Pinaceae and implications for early selection. For. Sci. 26:571-580.
- Lowerts, G.A. 1980. Genetically controlled resistance to discoloration and decay in wounded trees of yellow-poplar. M.S. Thesis, Dept. of Forestry, NC State Univ., Raleigh.
- McCall, E. 1980. Conelet abortion in longleaf pine. Forest Resources, N. C. State Univ., Raleigh. M. S. Thesis, School of Forestry.
- Makoui, K.B. 1980. An experimental study of the relationship between kraft pulp strength properties and wood morphological characteristics of several families of sweetgum (*Liquidambar styraciflua* L.) Ph.D. dissertation. Dept. of Forestry, N. C. State Univ., Raleigh.
- Messina, M.G., D.J. Frederick, W.E. Gardner, A. Clark, D. Phillips, and M. Williford. 1980. Biomass, energy and nutrient estimation of mixed southern hardwoods. Paper submitted to the Bio-Energy Council for publication in their Resource Book, (Paul Bente, Ed.)
- Miller, L.K. 1980. A genetic study of seed orchard Fraser fir. Dept. of Forestry, N. C. State Univ., Raleigh. 59 pp.
- Otegbeye, G.O., and R. C. Kellison. 1980. Genetics of wood and bark characteristics of *Eucalyptus viminalis*. Silvae Genetica 29:27-31.
- Paschke, J. L. 1980. Mycorrhizal relationships in sweetgum. Ph.D. Thesis. Dept. of Forestry, N. C. State University, Raleigh. 65 p. Pearson, R. G., and R. C. Gilmore. 1980. Effect of fast growth rate on mechanical properties of loblolly pine. Forest Products Journal 30:47-54.
- Pearson, R.G, R. J. Weir and W.D. Smith. 1980. Utilization of pine thinnings. Paper prepared for Southern Forest Economics Workers Conf. 27 pp.
- Slichter T.K., D.J. Frederick, R.C. Kellison W.E. Gardner and M. Williford. 1980. Energy plantation research in the southeastern United States. Bio-Energy Council for publication in their Resource Book (P. Bentet, Ed.)
- Struve, Daniel K. 1980. Vegetative propagation of *Pinus strobus* L. by needle fascicles and stem cuttings. Ph.D. Thesis, Dept. of Horticultural Science, N. C. State Univ., Raleigh, N. C. 79 pp.
- Talbert, J. T., G. White, and C. Webb. 1980. Analysis of a Virginia pine seed source trial in the interior South. South. Jour. of Applied Forestry 4:153-156.
- Weir, R. J. 1980. North Carolina State University-Industry Cooperative Tree Improvement Program, North American Quantitative Forest Genetics Workshop. Idaho. p. 57-70.
- Zobel, B. J. 1980. Advances in genetics and tree breeding. Twenty-seventh Northeastern Forest Tree Improvement Conference, Burlington, Vt. Mimeo. 5 pp.

- Zobel, B. J. 1980. Developing fusiform resistant trees in the Southeastern United States. Presented at the International Conference on Pest Resistance, Wageningen, Holland. 12 pp.
- Zobel, B. J. 1980. El bosque como fuente de energia (The forest as an energy source. Seminar on Preservation and Harvesting of the Forest as a Renewable Natural Resource in Colombia. Carton de Colombia Res. Rept. #61. p. 181-195.
- Zobel, B. J. 1980. Forest Tree Improvement - Past and Present. In Advances in Forest Genetics (P. K. Khosla, ed.) Amika Publications, New-Delhi, India. p. 11-25.
- Zobel, B. 1980. Genetic improvement of forest trees for biomass production. Progress in Biomass Conversion II. p. 37-58.
- Zobel, B. 1980. Inherent differences affecting wood quality in fast grown plantations. Tappi 64:71-74.
- Zobel, B. J. 1980. Research and development in forest biology in Canada. The Forest Imperative. Proc. Can. For. Congress, Toronto Ontario. p. 43-44.
- Zobel, B. 1980. Special report: supply. Tappi 63:94-98. Imbalance in the world's conifer timber.
- Zobel, B. J. 1980. The World's need for pest-resistant forest trees. Presented at the International Conference on Pest Resistance, Wageningen, Holland. Mimeo. 10 pp.
- 1979**
- Bridgwater, F.E., and R.W. Stonecypher. 1979. Index selection for volume and straightness in a loblolly pine population. Proc. 15th Southern Forest Tree Improvement Conf. pp. 132-139.
- Foster, G.F., and F.E. Bridgwater. 1979. Viability tests to evaluate pollen reliability in loblolly pine controlled pollinations. Forest Science 25:270-274.
- Frederick, D.J. 1979. Biomass production in intensively cultured energy plantations. Paper presented at West Virginia Chapter Meeting - Society of American Foresters, Beckley, WV, November.
- Frederick, D.J., W.E. Gardner, A. Clark., D. Phillips., and M. Williford. 1979. Biomass estimation of mixed southern hardwoods using an area sampling technique. Proc. Forest Resources Inventory Workshop, Fort Collins, CO pp. 782-791.
- Frederick, D.J., W.E. Gardner., A. Clark., D. Phillips., and M. Williford. 1979. Biomass and nutrient distribution in hardwood forest of the Southern Coastal Plain. Proc. Symposium on Impact of Intensive Harvesting on Forests Nutrient Recycling. Syracuse, NY p. 394.
- Frederick, D.J., W.E. Gardner., R.C. Kellison., and P. Marsh. 1979. Area sampling predicts weight yields in West Virginia mountain hardwood stands. J. For. 77:762-764.
- Frederick, D.J., R.C. Kellison., W.E. Gardner., M. Williford., and T.K. Slichter. 1979. Species selection and silvicultural systems for producing fuels from woody biomass in the Southeastern United States. Proc. 3rd Annual Biomass Energy Systems Conf. Colorado School of Mines, Golden Colorado. pp. 387-392.
- Kellison, R.C. 1979. The making of a cooperative forestry program. Paper presented at Canadian Tree Improvement Association, Gander, New Foundland, Sept. 30, 1979.
- Kellison, R.C. 1979. Advances in tropical tree improvement. Paper presented at the International Symposium" on Forest Sciences and their Contribution to the Development of Tropical America. San Jose, Costa Rica, Oct. 1979.
- Kellison, R.C., T.K. Slichter and D.J. Frederick. 1979. Increased wood production from matching species to site. Tappi 62:77-79.
- Lambeth, C.C. 1979. Interaction of Douglas fir full-sib families with field and phytotron environments. Ph.D. Thesis, School of Forest Resources, N. C. State Univ., Raleigh.

- Otegbeye, G.O. 1979. Estimate of heritability of some wood and fiber characteristics in *Eucalyptus viminalis* Lambill. M. S. Thesis, Dept. of Forestry. N. C. State Univ., Raleigh. 59 pp.
- Paschke J.L. 1979. Age-age relationships in loblolly pine (*Pinus taeda* L.). M. S. Thesis Dept. of Forestry N. C. State Univ. Raleigh. 47 pp.
- Schultz Emily Butler. 1979. Artificial cold-hardiness testing of *Eucalyptus*. M. S. Thesis. Dept. of Forestry, N. C. State University, Raleigh. 56 pp.
- Talbert, J.T. 1979. An advanced-generation breeding plan for the N. C. State University-Industry Pine Tree Improvement Cooperative. *Silvae Genetica* 37:72-75.
- Talbert J.T. and R.D. Heeren. 1979. Sex differences in green ash. *South. Jour. of Applied Forestry*. 3:173-174.
- Talbert, J.T. and R.J. Weir. 1979. Improved loblolly pine of northern Piedmont - source does well in the northern Coastal Plain. *Tree Planters Notes*. 30:33-35.
- Wearstler, Jr. K.A. 1979. Competition-density effects and genetic improvement in loblolly pine (*Pinus taeda* L.) Ph.D. dissertation. Dept. of Forestry, N. C. State University, Raleigh. 64 pp.
- Williford, M., R.C. Kellison, D.J. Frederick, and W.E. Gardner. 1979. The use and selection of trees for energy and chemicals. Proc. Fifteenth Southern Forest Tree Improvement Conf. Mississippi State Univ., Starkville, MS, pp. 149-155.
- Zobel, B. 1979. The ecological impact of industrial forest management. given at CICEPLA - Cartegena, Colombia. Nov. 1979. 11 pp.
- Zobel, B. 1979. Florestas baseadas em exóticas (Forestry based on exotics). *Boletim Technical Paper* 2(3):22-30.
- Zobel, B. 1979. Growing More Timber on Less Land: Forest genetics can provide a means. *For. Farmer*. 38(9) 3 pp.
- Zobel, B. 1979. Making the forest resource more productive. Paper presented at the 50th Anniversary of the School of Forest Resources, Raleigh, NC Sept.
- Zobel, B. 1979. Panel introductory comments - PBS II. Breeding Symposium #2, March 16, 1979, Ames, Iowa. Given at the Plant 55 pp.
- Zobel, B. 1979. Resource renewability. Presented at the International Materials Congress, Reston, VA, March 27, 1979. Part of a panel on Materials Aspects of the Worlds Energy Needs. 2 pp.
- Zobel, B. 1979. The Southeast timber supply: how it will be affected by changing forestry in South America, Canada, and the Northeast. *Sou. J. App. For.* 3:37-42.
- Zobel, B. 1979. Timber Supply Trends in South America. Given at CICEPLA in Cartegena, Columbia, Nov. 19, 1979, to pulp mill presidents of South America.
- 1978**
- Bridgwater, F.E., and R.W. Stonecypher. 1978. Genotype x Environment interaction: Implications in tree breeding programs. In: Proc. Fifth N. American For. Bio. Workshop. pp. 46-63.
- Brotschol, J.V., L. Nunnally, G. Namkoong and H.A. Thomas. 1978. Studies on enzyme variation in the Southern pine beetle. *The Journal of the Elisha Mitchell Scientific Society* 93(2):91.
- Cannell, M.G.R., F.E. Bridgwater, and M.S. Greenwood. 1978. Seedling growth rates, water stress response, and root-shoot relationships related to eight- year volumes among families of *Pinus taeda* L. *Silvae Genetica* 27:237-247.

- Gomide, J. L. 1978. Ethanol pulping of *Eucalyptus viminalis* wood and chemical characterization of the pulping spent liquor. Ph. D. Thesis, N: C. State Univ., Raleigh., Department of Wood and Paper Science. 113 pp.
- Hunt, R. and B. Zobel. 1978. Frost-hardy *Eucalyptus* grows well in the Southeast. South. Jour. Applied For. 2(1):6-10.
- Hunter, C. 1978. An electrophoretic analysis of isoenzyme variation in a Piedmont loblolly pine seed orchard. M. S. Thesis, School of Forest Resources, N. C. State Univ. 47 pp.
- Kang, Hyun-Chung. 1978. Limits of artificial selection under various mating systems. (Under the direction of Gene Namkoong and Bruce J. Zobel. Ph. D. Thesis, School of Forest Resources, N. C. State Univ. 140 pp.
- Kellison, R.C. 1978. Genetic manipulation of southern hardwoods. Proc. Eighth Forestry and Wildlife Forum: Productivity of Southern Forests. April 13-14. Virginia Polytechnic Institute and State Univ. pp. 111-120.
- Leach, G. N. 1978. Early growth of tissue culture-produced loblolly pine (*Pinus taeda* L.) plantlets in soil. M. S. Thesis, Dept. of Forestry, N. C. State Univ., Raleigh. 50 pp.
- McCall, Early. 1978. Conelet abortion in longleaf pine. School of Forest Resources, N. C. State Univ. M. S. Thesis.
- Namkoong, G. 38-41.1978. Choosing strategies for the future. *Unasylva* 30(119-120):
- Powers, Jr., H. R. and B. J. Zobel. 1978. Progeny specific loblolly pine clones vary in fusiform rust resistance according to seed orchard of origin. For. Sci. 24(2):227-230.
- Schoenhofen, L. H. 1978. The distribution of biomass in selected Appalachian hardwood species and stands, and the economic feasibility of separating sawlogs in conjunction with full tree chipping. M. S. Thesis, N. C. State Univ., Raleigh. 57 pp.
- Sprague, J., J. B. Jett and B. J. Zobel. 1978. The management of southern pine orchards to increase seed production. Symp., North American Forest Biol. Workshop, Gainesville, Fla. March. Symp. on Forest Tree Seeds, IUFRO Workshop, Starkville, Miss., May.
- Stahl, P. H. 1978. Interfamily competition in loblolly pine (*Pinus taeda* L.). Ph. D. Thesis, School of Forest Resources, N.C. State Univ., Raleigh. 127 pp.
- Zobel, B. 1978. Gene conservation--as viewed by an applied forest tree breeder. Ecology and Forest Management 1:339-344.
- Zobel, B. 1978. Production of quality hardwoods by the large forest industries. Southern Lumberman, Logging and Sawmilling. pp. 11-16.
- Zobel, B. 1978. Progress in breeding forest trees--the problem of time. Breeders Roundtable, Kansas City, Mo. May.
- Zobel, B. 1978. The good life or subsistence--how tree breeding can help. Third World Consul. on Forest Tree Breeding. *Unasylva* 30(119-120): 5-9.
- Zobel, B. 1978. World timber supplies and effect on the southern pine region. Mimeo Rept.25pp.
- Zobel, B. J. and R. C. Kellison. 1978. The importance of genotype-x- environment interaction in southern pine forestry. Paper to be given at 8th World For. Cong., Indonesia, October.
- Zobel, B. J. and R. C. Kellison. 1978. The rate of growth syndrome. *Silvae Genetica* 27(3-4):123-124.
- Zobel, B., J. B. Jett and Roy Hutto. 1978. Improving wood density of short-rotation southern pine. *Tappi* 61(3):41-44.
- Zobel, B. 1978. World timber supplies and effect on the southern pine region. MimeoRept.25pp.
- 1977**
- Bridgwater, F. E. 1977. Objectives of industrial tree improvement programs. *Tappi* 60(6):78-80.

- Gallegos, C. M. 1977. Parameters for the selection of loblolly pine (*Pinus taeda* L.) seed orchard sites. Ph. D. Thesis, N. C. State Univ., Raleigh. 204 pp.
- Gregory, J. D. and C. B. Davey. 1977. Subsoiling to stimulate flowering and cone production in a loblolly pine seed orchard. Southern Jour. of Applied Forestry 1(2):20-23.
- Jett, Jr., J. B., R. J. Weir and J. A. Barker. 1977. The inheritance of cellulose in loblolly pine. TAPPI. For. Biol. Com. Meet., June 20-22, 1977, Madison, Wis. 4 pp.
- Kellison, R. C. 1977. Changing philosophies of hardwood management. Paper prepared for second symposium on southeastern hardwoods. Dothan, Ala. Apr. 20-22, 1977. 7 pp.
- Kellison, R. C. 1977. Promises and problems of the forest industry in Latin America. Speech given to Wood Pulp Section, Canadian Pulp and Paper Assoc. Meet., Feb. 2, 1977. 10 pp.
- Kellison, R. C. 1977. Silvicultural impacts on production forestry in the South. Paper presented at 56th Ann. Meet., SAF, Appalachian Sec., Richmond, Va.
- Kellison, R. C. and J. B. Jett. 1977. Species-site relationships of pines and hardwoods in the Atlantic Coastal Plain. Paper presented to Soil Moisture-Site Index Symp., Myrtle Beach, S. C. Nov. 1-3.
- Kellison, R. C. and J. B. Jett, Jr. 1977. Species selection for plantation establishment in the Atlantic Coastal Plain and Sandhills provinces. Paper presented at the Soil Moisture-Site Productivity Symp., Myrtle Beach, S. C. Nov. 1-3, 1977.
- Mott, R. L., at 1977. TAPPI Ann. Meet., Atlanta, Ga. Feb., 1977. 15 pp.
- Sombun, K. 1975. Germination tests of loblolly pine (*Pinus taeda*) seeds treated with different fertilization and insecticides. M. S. Thesis. School of Forest Resources, N. C. State Univ., Raleigh.
- Mott, R. L., R. H. Smeltzer, A. Mehra-Palta and B. J. Zobel. 1977. Production of forest trees by tissue culture. Tappi 60(6):62-64.
- Owino, F. and B. Zobel. 1977. Genotype-x-environment interaction and genotypic stability in loblolly pine I. General introduction and description of the experiment. Sil. Gen. 26(1):18-21.
- Owino, F. 1977. Genotype-x-environment interaction and genotypic stability in loblolly pine II. Genotypic stability comparisons. Sil. Gen. 26(1): 21-26.
- Owino, F., R. C. Kellison and B. J. Zobel. 1977. Genotype-x-environment interaction and genotypic stability in loblolly pine. V. Effects of genotype-x-environment interaction on genetic variance component estimates and gain predictions. Sil. Gen. 26(4):131-134.
- Smith, H. D. 1977. Economically optimum spacing and site preparation for slash pine plantations and comparison with hardwood plantations. Ph. D. Thesis, School of Forest Resources, N. C. State Univ. 181 pp.
- Smith, H. D. and G. Anderson. 1977. Economically optimum spacing and site preparation for slash pine plantations. Tech. Rept. No. 59. 104 pp.
- Sprague, J. R. and V. W. Johnson. 1977. Extraction and storage of loblolly pine (*Pinus taeda*) pollen. Proc., 14th South. For. Tree Impr. Conf. 8 pp.
- Squillace, A. E., D. G. Nikles and L. C. Saylor. 1977. Monoterpene composition in cortical oleoresin of *Pinus caribaea* and relation to *P. elliottii* of Florida. Third World Consultation on Forest Tree Breeding, Canberra, Aust. Session 2: Advances in Species and Provenance Selection. 19 pp.
- Weir, R. J. 1977. Genetic variation in loblolly pine (*Pinus taeda* L.) tolerance to ozone. Ph. D. Thesis, School of Forest Resources, N. C. State Univ., Raleigh. 88 pp.
- White, T. L., H. G. Harris, Jr. and R. C. Kellison. 1977. Conelet abortion in long leaf pine. Canadian Jour. of For. Res. 7(2):378-382.

- Williford, M., R. A. Brown and B. J. Zobel. 1977. Wide crosses in the southern pines. South. For. Tree Impr. Meet., Florida. 12 pp.
- Zobel, B. 1977. Increasing southern pine timber production through tree improvement. South. Jour. of Applied Forestry 1(1):3-10.
- Zobel, B. J. 1977. Intensive forest management and the quality of the wood supply in the southern pine region. Southern Pulp and Paper Manufacture 40(5):24-28.
- Zobel, B. 1977. Progress in breeding forest trees--the problem of time. Paper presented to 1978 Breeders' Roundtable, Kansas City, Missouri. May, 1978.
- Zobel, B. 1977. Tissue culture as seen by a plant breeder. Panel discussion at the Forest Biol. Meet., Madison, Wis. June 22. 13-15. Tappi 61 (1):
- Zobel, B. J. and Davey, C. B. 1977. A conservative miracle. Alabama Forest Products 20(5):5-6.
1976
- Blair, R., B. Zobel, R. G. Hitchings and J. B. Jett. 1976. Pulp yield and physical properties of young loblolly pine with high-density juvenile wood. Applied Polymer Symp. No. 28:435-444.
- Gibson, G. E. and E. C. Sossaman. 1976. Fifteen-year results on a sweetgum spacing study. Tree Planters Notes, USDA For. Ser. 28(1):18-20.
- Kellison, R. C. 1976. Progress of the N. C. State University-Industry Tree Improvement Program. Forest Farmer 36(3):11-14.
- Kellison, R. C. 1976. The silviculture and management of the southern United States coniferous forests--The way Americans meet the growing challenge. Paper given at Canadian Inst. of Forestry and the Ontario Professional Foresters' Assn., Thunder Bay, Onto 11 pp. Forest Chronicle 52(6):1-4.
- Kellison, R. C., Heeren, R. D., and Jones, S., 1976. Species selection as related to soils in the Atlantic Coastal Plain. Paper presented to the Sixth Southern Forest Soils Workshop, Charleston, S. C. Oct. 20-21. 7 pp.
- Matziris, D. I. and B. J. Zobel. 1976. Effects of fertilization on growth and quality characteristics of loblolly pine. Forest Ecology and Management 1(1):21-30.
- Roberds, J. H., G. Namkoong and C. B. Davey. 1976. Family variation in growth response of loblolly pine to fertilizing with urea. Forest Sci. 22(3):291-299.
- Zobel, B. J. 1976. Production of quality hardwoods by the large forest industries. 4th Ann. Hardwood Symp. 8p.
- Zobel, B. J. 1976. Will timber resources of the southern United States meet the demands? Paper given at Annual Meeting, TAPPI, February. Tappi 60(6):51-53.
- Zobel, B. J. 1976. Wood properties as affected by changes in the wood supply of southern pines. Tappi 59(4):126-128.
- Zobel, B. J. and Blair, R., 1976. Wood and pulp properties of juvenile and topwood of southern pines. Applied Polymer Symp. No. 28, pp. 421-433.
- 1975**
- Blair, R. L., B. J. Zobel, and J. A. Barker. 1975. Predictions of gain in pulp yield and tear strength in young loblolly pine. Forest Biol. Com. Meet., TAPPI, Seattle, Wash. Sept. Tappi 58(1):89-91.
- Blair, R., B. Zobel, R. G. Hitchings, and J. B. Jett. 1975. Pulp yield and physical properties of young loblolly pine with high-density juvenile wood. Eighth Cellulose Conf., Syracuse, N. Y. May 19 - 23. pp. 66-67.

- Cole, D. E. 1975. Comparisons within and between populations of planted slash and loblolly pine. Ga. For. Res. Pap. 81, Georgia Forest Research Council, Macon, Ga. 12 pp.
- Davey, C. B. 1975. Increasing seed yield through cultural practices--today and tomorrow. Proc., 13th South. For. Tree Impr. Conf., Raleigh, N. C. June 10-11. pp. 138-144.
- Goddard, R. E., B. J. Zobel and C. A. Hollis. 1975. Response of southern pines to varied nutrition. Physiological Genetics Conf., Edinburgh, Scotland. July. 13 pp. Tree Physiology and Yield Impr. pp. 449-462.
- Gregory, J. D. 1975. Subsoiling to stimulate flowering and cone production and ameliorate soil conditions in loblolly pine (*Pinus taeda* L.) seed orchards. Ph. D. Thesis, School of Forest Resources, N. C. State Univ., Raleigh. 121 pp.
- Jett, J. B. and B. J. Zobel. 1975. Wood and pulping properties of young hardwoods. Tappi 58(1):92-96.
- Kellison, R. C. 1975. Cone and seed harvesting from seed orchards. Chap. 10 in Book, "Seed Orchards." For. Comm. Bull. 54, Her Majesty's Stationery Off., London. pp. 101-107.
- Kellison, R. C. 1975. Genetic improvement of forest trees. Am. Inst. of Chem. Engrs., 80th National Meet., Boston, Mass. Sept. 7 - 10. 5 pp.
- Kellison, R. C. 1975. Increasing the production of genetically improved planting stock. In "Forest Tree Improvement--The Third Decade." Proc., 24th Ann. For. Symp., LSU, Baton Rouge, La. pp. 179-185.
- Kellison, R. C. and B. Zobel. 1975. Genetics of Virginia pine. USDA For. Ser. Res. Paper WO-21. U. S. Govt. Printing Off., Washington, D. C. 10 pp.
- Kellogg, R. M., Porterfield, R. L. and Zobel, B. J., 1975. How will tree improvement and intensive forestry affect pulp manufacture? Tappi 58(9):129-134.
- Ledig, F., B. J. Zobel and M. F. Matthias. 1975. Geoclimatic patterns in specific gravity and tracheid length in wood of pitch pine. Can. Jour. of For. Res. 5(2):318-329.
- Mallonee, E. H., Jr. 1975. Effects of thinning and seasonal time of nitrogen fertilization on the growth of pole-sized loblolly pine (*Pinus taeda* L.).
- Owino, F. 1975. Genotypic stability comparisons in loblolly pine. Proc., 13th South. For. Tree Impr. Conf., Raleigh, N. C. June 10-11. pp. 214-218.
- Porterfield, R. L., B. J. Zobel and F. T. Ledig. 1975. Evaluating the efficiency of tree improvement programs. Sil. Gen. 24(2-3):33-84.
- Smith, H. D. 1975. Potential for foreign production of pine seed for the United States. Proc., 13th South. For. Tree Impr. Conf., Raleigh, N. C. June 10-11. pp. 27 – 36.
- Sombun, K. 1975. Germination tests of loblolly pine (*Pinus taeda*) seeds treated with different fertilization and insecticides. M. S. Thesis. School of Forest Resources, N. C. State Univ., Raleigh.
- South, D. 1975. The determination of nursery practices for the production of quality sweetgum (*Liquidambar styraciflua* L.) and sycamore (*Platanus occidentalis* L.) planting stock. M. S. Thesis, School of Forest Resources, N. C. State Univ., Raleigh. 93 pp.
- van Wyk, G. 1975. Early growth results in a diallel progeny test of *Eucalyptus grandis* W. Hill ex Maiden. Ph. D. Thesis, N. C. State Univ., School of Forest Resources, Raleigh. 135 pp.
- Weir, R. J. 1975. Cone and seed insects--southern pine beetle: a contrasting impact on forest productivity. Proc., 13th South. For. Tree Impr. Conf., Raleigh, N. C. June 10-11. pp. 182-192.
- Weir, R. J. and B. J. Zobel. 1975. Advanced-generation seed orchards. Chap. 12 in Book, "Seed Orchards." For. Comm. Bull. 54, Her Majesty's Stationery Off., London.

- Weir, R. J. and B. J. Zobel. 1975. Managing genetic resources for the future-- a plan for the N. C. State-Industry Cooperative Tree Improvement Program. Proc., 13th South. For. Tree Impr. Conf., Raleigh, N. C. June 10-11.
- White, T. L. 1975. Conelet abortion in long leaf pine (*Pinus palustris* Mill.). M. S. Thesis, School of Forest Resources, N. C. State Univ., Raleigh. 63 pp.
- Woessner, R. A., C. B. Davey, B. E. Crabtree and J. D. Gregory. 1975. Nutrient content of the above ground tissue of 12 week old loblolly pine intraprovenance and interprovenance crosses. Can. Jour. For. Res. 5(4) :592-598.
- Zobel, B. J. 1975. Increasing timber production from forest lands. Burgess-Lane Lectureship, Univ. of Brit. Columbia, Vancouver, B. C. Nov. 19. 26 pp.
- Zobel, B. J. 1975. New developments in hardwood genetics research. Third Ann. Hdwd. Symp. (Hardwood Research Council), Cashiers, N. C. May 1-3. 8 pp.
- Zobel, B. J. 1975. Our changing wood resource--its effect on the pulp industry. Applied Polymer Symp. No. 28, pp. 47-54.
- Zobel, B. J. 1975. The significance of intensive forest renewal, including tree improvement. Forest Farmer 11 pp. (This article is a revision of:
- Zobel, B. J. 1975. The South's potential for wood production and the management required to achieve maximum production. Meet. of the SE Sec., Society of American Foresters, "The World Fiber Supply and the South. Will or Can the South Meet the Challenge or Opportunity?" 16 pp.
- Zobel, B. J. 1975. Tree improvement--what it holds for the future. Proc., 6th Governor's Conf. on Forestry, Lexington, Ky. Oct. 23. pp. 45-50.
- Zobel, B. J., 1975. Using the juvenile wood concept in the southern pines. Southern Pulp and Paper Manufacturer. Sept. pp. 14-16.
- Zobel, B. J. 1975. Wood morphology as affected by changes in the wood supply of southern pines. Inter. Pap. Physics Conf., New York. Sept. 21-25. pp. 1-6.
- Zobel, B. J. and Blair, R., 1975. Wood and pulp properties of juvenile and top- wood of southern pines. Eighth Cellulose Conf., Syracuse, N. Y. 18 pp.
- Zobel, B. J. and Davey, C. B.. 1975. A simplified guide to hardwood management in the Southeast. School of Forest Resources, N. C. State Univ., Raleigh. 21 pp. Also in Forest Farmer 35(1):8-10. Oct. Issue.
- Zobel, B. and Zoerb, M., 1976. Reducing fusiform rust in plantations through control of the seed source. Given at Symp. on Fusiform Rust of Southern Pine, Gainesville, FL. Dec. 7-8, 11pp.
- 1974**
- Barker, J. A. 1974. Location differences and their influence on heritability estimates and gain predictions for 10-year-old loblolly pine. Proc., Twelfth South. For. Tree Impr. Conf., Baton Rouge, La. pp. 33-45.
- Blair, ,R. L., B. J. Zobel, E. C. Franklin, A. C. Djurf, and J. M. Mendel. 1974. The effect of tree form and rust infection on wood and pulp properties
- Corriveau, A. 1974. The clonal performance of loblolly and Virginia pines, a reflection of their breeding value. Ph. D. Thesis, N. C. State Univ., School of Forest Resources, Raleigh. 173 pp.
- Dorman, K. W. and B. J. Zobel. 1974. Genetics of loblolly pine. Forest Service Res. Pap. WO-19, U. S. D. A. 21 pp.
- Hunt, R. and B. Zobel. 1974. Early growth and future possibilities of *Eucalyptus* in the southeast coastal plain. Ala. For. Prod. 17(8):90-93.

- Kellison, R. C. 1974. Status and plans for the radiata seed orchards of the New Zealand Forest Service. Genetics and Tree Improvement Report No. 66, Production Forestry Division, FRI, N. Z. Forest Service. 20 pp.
- Land, S. B. 1974. Variation and inheritance in tolerance of loblolly, slash and pond pine seedlings to sea water floods. *Silvae Genetica*.
- Land, S. B., Jr. 1974. Depth effects and genetic influences on injury caused by artificial sea water floods to loblolly and slash pine seedlings. *Canadian Jour. of For. Res.* 4(2):179-185.
- Matziris, D. I. 1974. Predicted versus realized gain in loblolly pine (*Pinus taeda* L.) improvement. Ph. D. Thesis. School of Forest Resources,
- Miller, W. D. 1974. An annotated bibliography of southern hardwoods. *Tech. Bull.* No; 228. N. C. Agri. Expt. Sta. December. 271 pp.
- Porterfield, R. L. 1974. Predicted and potential gains from tree improvement programs--a goal programming analysis of program efficiency. *Tech. Rept.* No. 52. School of Forest Resources, N. C. State Univ., Raleigh. 112 pp.
- Rockwood, D. L. 1974. Cortical monoterpane and fusiform rust resistance relationships in slash pine. *Phytopathology* 64(7):976-979.
- Veal, M. A., R. L. Blair, J. B. Jett and W. T. McKean. 1974. Impact of fusiform rust on pulping properties of young loblolly and slash pines. *Proc., TAPPI For. Biol. Conf.*, Seattle. 15 pp.
- Weir, R. J. 1974. A breeding and selection program for second-generation improvement. Joint Meet., IUFRO Working Parties on Population Genetics, Breeding Theory and Progeny Testing. Stockholm, Sweden. August 30 - September 5. 10 pp.
- Weir, R. J. 1974. A proposal for advanced-generation breeding and testing. *Proc., 12th NE For. Tree Impr., Conf.*, Syracuse, N. Y. August. 15 pp.
- Zobel, B. J. 1974. Forest Renewal on Industrial Timberlands. *Jour. of For.* 72(11):681-685.
- Zobel, B. J., 1974. Improving yields from forest land. Seminar. Chicago. May 31. 16 pp.
- Zobel, B. J. 1974. Changing wood quality by breeding. Chap. in Report, "Quality Control in the Forest and in the Mill." *TAPPI CA Rept.* No. 54. pp. 5-8.
- Zobel, B. J., 1974. Increasing productivity of forest lands through better trees. The S. J. Hall Lectureship in Industrial Forestry. Univ. of Calif. April 18. 19 pp.
- Zobel, B. J., 1974. Progress in hardwood forest management. Hardwood Symp., Cashiers, N. C. May. 14 pp.
- Zobel, B. J. 1974. Increasing wood supply by fertilization and genetic selection. In "Fiber Conservation and Utilization," Proc. of the May, 1974 Pulp and Paper Seminar. Chicago, Ill. Chap. 17, pp. 183-205.

1973

- Adams, T., Roberds, J. and Zobel, B. 1973. Intergenotypic interactions among seedling families of loblolly pine (*Pinus taeda* L.). *Theoretical and Applied Genetics* 43:319-322.
- Cole, D. E. 1973. Comparisons within and between populations of planted slash and loblolly pine: A seed source study. *Proc., Twelfth South. For. Tree Impr. Conf.*, Baton Rouge, La. July. pp. 277-292.
- Deines, J. 1973. The effects of fertilization on the growth and development of 1-0 sycamore (*Platanus occidentalis* L.), sweetgum (*Liquidambar styraciflua* L.) and green ash (*Fraxinus pennsylvanica* Marsh.) seedlings. M.S. Thesis, School of Forest Resources, N. C. State Univ. 80 pp.

- Denison, N. P. 1973. Variation in families of patula pine (*Pinus patula* Schlechtand Cham) grown at two locations in the Republic of South Africa. M. S. Thesis, School of Forest Resources, N. C. State Univ. 133 pp.
- Drew, T.J. 1973. Magnitude and variation of photorespiration and oxygen inhibition of photosynthesis in seedlings of loblolly pine (*Pinus taeda* L.). Ph. D. Thesis, School of Forest Resources, N. C. State University, Raleigh. 62 pp.
- Jett, J. B. and Finger, G. 1973. Stimulation of flowering in sweetgum. Proc., Twelfth South. For. Tree Impr. Conf., Baton Rouge, La. July. pp. 111-117.
- Lewis, R. A. 1973. An investigation of possible biochemical indicators for resistance to fusiform rust in loblolly pine. Ph. D. Thesis. N. C. State Univ., Raleigh. 74 pp.
- Long, A. 1973. Genotypic variation and response to mycorrhizal formation on loblolly pine seedlings. Ph. D. Thesis. N. C. State Univ., Raleigh.
- Long, A. J. 1973. Genotype and ectomycorrhizal fungi as factors in feeder root development and patterns of growth in four and one-half-month-old loblolly pine (*Pinus taeda* L.) seedlings. Ph. D. Thesis, School of Forest Resources, N. C. State Univ. 127 pp.
- Porterfield, R. L. 1973. Predicted and potential gains from tree improvement programs--a goal programming analysis of program efficiency. Ph. D. Diss., Yale Univ., New Haven, Conn. 240 pp.
- Rockwood, D. L. 1973. Monoterpene-fusiform rust relationships in loblolly pine. *Phytopathology* 63(5):551-553.
- Rockwood, D. L. 1973. Variation in the monoterpene composition of two oleoresin systems of loblolly pine. *For. Sci.* 19(2):147-153.
- Smith, H. D. 1973. Decision-making under uncertainty: Should hardwood plantations be established? Tech. Rept. No. 49, School of Forest Resources, N. C. State Univ. 62 pp.
- Smith, H. D. 1973. Economics of hardwood plantations. Proc., Twelfth South. For. Tree Impr. Conf., Baton Rouge, La. July. pp. 158-168.
- Smouse, P. E. and L. C. Saylor. 1973. Studies of the *Pinus rigida-serotina* complex II. Natural hybridization among the *Pinus rigida-serotina* complex, *P. taeda* and *P. echinata*. *Annals of the Missouri Botanical Garden* 60(2):192-203.
- Sprague, J. and Weir, R. J. 1973. Geographic variation of sweetgum. Proc., Twelfth South. For. Tree Improve. Conf., Baton Rouge, La. July. pp. 169-180.
- Stonecypher, R. W., Zobel, B. J. and Blair, R. L. 1973. Inheritance patterns of loblolly pine from a nonselected natural population. Tech. Bull. No. 220, Agri. Expt. Sta., N. C. State Univ. 60 pp.
- Sumantakul, V. 1973. Genetic variation of sycamore (*Platanus occidentalis* L.) M. S. Thesis. School of Forest Resources, N. C. State Univ., Raleigh.
- Weir, R. J. 1973. Realizing genetic gains through second-generation seed orchards. Proc., Twelfth South. For. Tree Impr. Conf., Baton Rouge, La. July. pp. 14-23.
- Wilcox, M. D. 1973. Brightness in loblolly pine. NC State Univ., Raleigh. 114 pp.
- Wilcox, M. D. and Smith, H. D. 1973. Selection indices for wood quality in loblolly pine. Proc., Twelfth South. For. Tree Impr. Conf., Baton Rouge, La. July. pp. 322-340.
- Zobel, B. J., 1973. Conifers in the northern Andean region. Paper given to the Instituto Interamericano de Ciencias Agricolas de la OEA. October 22 - 26. Quito, Ecuador. 13 pp.
- Zobel, B. J., 1973. Improvement of trees through genetics and the resultant physical and chemical properties of fibers. TAPPI-API Meet., Mobile, Ala. Nov. 16 pp.

Zobel, B. J., 1973. What trees to plant, where to plant them, and why. South. For. Conf., "Plantations, People and Profits." May 9-11. Biloxi, Miss. 7 pp.

Zobel, B. J. and Dorman, K. W. 1973. Loblolly pine as an exotic. Forest Genetics Resources Information, No.2, FAD, Rome, Italy. pp. 3 - 15.

1972

- Adams, T., Roberds, J. and Zobel, B. 1972. Intergeneric interactions among seedling families of loblolly pine (*Pinus taeda* L.). Theoretical and Applied Genetics. 15 pp.
- Barker, J. A. 1972. Location effects on heritability estimates and gain predictions for ten-year-old loblolly pine. Ph. D. Thesis. N. C. State Univ., Raleigh. 107 pp.
- Blair, R. L. and Cowling, E. B. 1972. Influence of site, vertical position, age, and fertilization on the susceptibility of loblolly pine to fusiform rust. N. C. State Univ., Agri. Expt. Sta., Raleigh. 16 pp.
- Debarr, G. L., Merkel, E. P., O'Gwynn, C., Zoerb, M. H., Jr. 1972. Differences in insect infestation in slash pine seed orchards due to phorate treatment and clonal variation. For. Sci. 18(1):56-64.
- Duffield, J. W. 1972. Biological and technical problems in American seed orchard development. Symp. in Honor of C. Syrach-Larson. Hørsholm. 39pp.
- Ibrahim, S. 1972. Variation of wood properties of *Pinus caribaea* var. *hondurensis* grown in West Malaysia. M. S. Thesis, N. C. State Univ., Raleigh. 73 pp.
- Jett, J. B., 1972, Breeding methods to produce selection and to evaluate parent trees. Biology Comm, Appleton, Wis, (May 1 - 16)
- Kellison, R. C. 1972. Cone and seed collections from seed orchards. Nurserymen's Conf., Wilmington, N. C. June. 6 pp.
- Kirk, D. G., Breeman, L. G. and Zobel, B. J. 1972. A pulping evaluation of juvenile loblolly pine. TAPPI For. Biol, Carom., Appleton, Wis., May.
- Kirk, D. G., Breeman, L. G. and Zobel, B. J. 1972. A pulping evaluation of juvenile loblolly pine. TAPPI For. Biol. Meet., Appleton, Wis. May 2-3. Tappi 55(11):1600-1604.
- Kitzmiller, J. H. 1972. Response of sycamore (*Platanus occidentalis* L.) families to nitrogen fertilization. PhD Thesis, School of Forest Resources, NC State University, Raleigh, NC 120pp.
- Kuhlman, E. G. 1972. Susceptibility of loblolly and slash pine progeny to *Fomes annosus*. USDA For. Ser. Res. Note SE-176. 7 pp.
- Kundt, J. F. 1972 A diallel analysis in Virginia pine (*Pinus virginiana* Miller), Ph, D. Thesis, School of Forest Resources, N. C, State University, Raleigh. 106 pp.
- Land, S. B., Jr. 1972. Sea-water flood tolerance of some southern pines. Ph. D. Thesis. N. C. State Univ., Raleigh. 169 pp.
- Lee, C. 1972. Natural variation in wood of American sycamore (*Platanus occidentalis* L.). Ph. D. Thesis. N. C. State Univ., Raleigh. 91 pp.
- Manan, S. 1972. Germination test of loblolly pine (*Pinus taeda* L.) seed produced from seed orchard after fertilization treatments. M. S. Thesis, School of Forest Resources, N. C. State Univ. 66 pp.
- Miller, W. D. and Zobel, B. 1972. Abstracts of Japanese literature in forest genetics and related fields. Authored by Ryookiti Toda, Govt. For. Expt. Sta., Vol.. 1, Part A, 236 pp. For. Sci. 18(2):150.
- Porterfield, R. L. 1972. Financial returns from managing southern hard- wood stands for pulpwood. Jour. of For. Oct. pp. 624-627.

- Rockwood, D. L. 1972. Aspects of monoterpene composition in loblolly pine. Ph.D. Thesis, School of Forest Resources, N. C. State University, Raleigh, 120 pp.
- Saylor, L. C. and Zobel, B. J. 1972. Interspecific hybridization involving sand pines--past attempts and future potential. Paper No. 3911, Jour. Series, N. C. State Univ. Agri. Expt. Sta., Raleigh. 15 pp.
- Smouse, P. E. 1972. The canonical analysis of multiple species hybridization. Biometrics 28:361-371.
- Webster, S. R. 1972. Nutrition of seed orchard pine in Virginia. PhD Thesis. N. C. State Univ., Raleigh. 173 pp.
- Weir, R. J. and Zobel, B. J. 1972. Outstanding general combiners and their influence on breeding programs. IUFRO Conf. on Progeny Testing. Macon, GA. 17p.
- Woessner, R. A. 1972. Crossing among loblolly pines indigenous to different areas as a means of genetic improvement. Sil. Gen. 21(1-2):35-39.
- Zobel, B. J. 1972. Breeding programs for coniferous forest trees--pines. Presented at VII Seminario Panamericano de Semillas, Cd. Obregon, Mexico. 15 pp.
- Zobel, B. J. 1972. Genetic effects on wood qualities. Presented at the Sixth TAPPI Forest Biol. Conf. (May). Part of a panel, "Innovation by Systems Analysis."
- Zobel, B. J. 1972. Genetic implications of even-aged forest management, Presented at the Second North American Forest Biology Workshop, Corvallis, Oregon, August. 6 pp.
- Zobel, B. J., 1972. Genetic implications of monoculture in forest management. Oregon State For. Bio1. Meet., Second North American For. Biol. Workshop. 10 pp.
- Zobel, B. J. 1972, Industry's increasing and changing requirements for wood. Presented at Seventh World Forestry Congress, Buenos Aires, Argentina, October. 7 pp,
- Zobel, B. J. 1972. The three-ring-per-inch, dense southern pine--can it be developed? Jour. For. 10(6):333-336.
- Zobel, B. J., Kellison, R. C. and Kirk, D. G, 1972. Wood properties of young loblolly and slash pines. Given at Madison, Wis., Nov. 10-11, For. Prod. Lab.-API-TAPPI Symp. on "Effect of Growth Acceleration on Wood Properties," pp M1-M22.
- Zobel, B. J., Weir, R. J. and Jett, J. B. 1972. Breeding methods to produce progeny for advanced-generation selection and to evaluate parent trees. TAPPI For. Biol. Comm., Appleton, Wis., May. Canadian Journal of Forest Research 2(3):339-345.
- Zobel, B. J. and Kellison, R. C., Matthias, M. and Hatcher, A. 1972. Wood density of southern pines. Tech. Bull. No. 208, N. C. State Univ. Agri. Expt. Sta., Raleigh. 56 pp.

1971

- Barefoot, A. C., Hitchings, R. G., Wilson, E. H. and Kellison, R. C. 1971. Related aspects of the morphology of loblolly pine and papermaking. Symp. on "Effect of Growth Acceleration on Wood Properties," Madison, Wis., November. 69 pp.
- Blair, R. L. and Zobel, B. 1971. Predictions of expected gains in resistance to fusiform rust in loblolly pine. 11th Southern Forest Tree Improvement Conference, Atlanta. 16 pp. Abstract pp. 4-5.
- Johnson, J. W. 1971. Effects of forest floor inclusion and ashing on nutrient analyses of forest soils. Ph. D. Thesis, N. C. State Univ., Raleigh. 113 pp.
- Kasile, J. D. 1971. Optimization of cluster sampling through empirical investigation of computer simulated forests. Ph. D. Thesis, N. C. State Univ., Dept. of Exper. Stat., Raleigh. 316 pp.
- Kellison, R. C. 1971. Hardwood management philosophies and practices. Talk given at Southeastern Hardwood Symp., Dothan, Ala., Sept. 15-16. 9 pp.

- Kellison, R. C. 1971. Seed orchard management. Talk given at 11th SFTIC Meeting, Atlanta, June. 7 pp. Abstract pp. 12-13.
- Kellison, R. C. 1971. The future of tree improvement in the southern pines. Alabama Chapter Annual Meeting, SAF, Mobile, Ala. August. 7 pp.
- Kellison, R. C. 1971. Tree improvement in southern pines--A decade of progress. Talk given at 20th LSU For. Symp., Baton Rouge, La., May. 10 pp.
- Kellison, R. C. and B. J. Zobel. 1971. Wood specific gravity and moisture content of five hardwood species of the southern United States. Paper present at IUFRO meet., Gainesville, FL. 13p.
- Kellison, R. C. and Zobel, B. J, 1971. Wood and fiber properties of five southern hardwoods. Talk given at 25th Annual Meeting, FPRS, Pittsburgh, Pa., June 27 - July 1. 17 pp.
- Kinloch, B. Bo, Jr. and Zoerb, M. H. 1971, Genetic variation in resistance to fusiform rust among selected parent clones of loblolly pine and their off- spring. Paper given at 11th SFTIC Meeting, Atlanta, June. 4 pp,
- Lamontagne, Y. 1971. Variation among bud characteristics, needle morphology and needle anatomy among white pine populations of the southern Appalachians. M. S. Thesis, School of Forest Resources, N. C. State University, Raleigh 98 pp,
- Matziris, D, 1971, Inheritance of juvenile characteristics in loblolly pine (*Pinus taeda* L.). M, S. Thesis, School of Forest Resources, N. C. State Univ.
- Porterfield, R. L. 1971. The financial maturity of certain southern mixed hardwood stands. Tech, Rept. 45, School of Forest Resources, N. C. State University, Raleigh, 49 pp.
- Sheikh, I. 1971. Variation in wood properties of *Pinus caribaea* var. *hondurensis* grown under Malaysian conditions. M. S. Thesis, N. C. State Univ., Raleigh.
- von Weissenberg, K. 1971, Indirect selection for resistance to fusiform rust in loblolly pine. Ph. D, Thesis, School of Forest Resources, N. C. State University, Raleigh. 85 pp.
- Zobel, B. J. 1971. Challenge of the seventies--wood and forest industries. Amer. Paper Ind. 53(1).
- Zobel, B. J., 1971. Fast-growing subtropical pines as exotics. Society for Economic Botany, Chicago. April. 14 pp.
- Zobel, B. J. 1971. Gene preservation by means of a tree improvement program. Canadian For, Tree Impr. Program, St. George, B. C., Canada. August. Sump, on Conservation of Forest Gene Resources.
- Zobel, B. J., 1971. Genetic manipulation of wood of the southern pines, including chemical characteristics, Talk given at 3d Plenary Meeting, International Academy of Wood Science Meeting, Raleigh, March, 25. pp. Paper No. 3409.
- Zobel, B., R. Blair, Kellison, R. C. and O'Gwynn, C. 1971. An operational breeding program-- theory and practice. IUFRO Meeting, Gainesville, Fla. March. 17 pp.
- Zobel, B. J., Blair, R. and Zoerb, M. 1971. Using research data – disease resistance. Jour. For. 68(8):486-489.
- Zobel, B. J. and R. C. Kellison. 1971. Should wood be included in a pine tree improvement program? IUFRO Meeting, Gainesville, Fla. March. 11 pp.
- Zobel, B. J. and Kellison, R. C., Matthias, M. and Hatcher, A. 1971. Wood density of southern, pines. 69 pp. mimeo. Tech, Bull. No. 208, N, C. State University, Agriculture Experiment Station, Raleigh.

- Adams, W. T. 1970. Competitive relationships among loblolly pine (*Pinus taeda* L.) seedlings. M. S. Thesis, N. C. State Univ., Raleigh.
- Barefoot, A. C., R. G. Hitchings, E. L. Ellwood and E. H. Wilson. 1970. The relationship between loblolly pine fiber morphology and kraft paper properties. Tech. Bull. No. 202, N. C. Agri. Expt. Sta. 89 pp.
- Blair, R. L. 1970. Quantitative inheritance of resistance to fusiform rust in loblolly pine. Ph. D. Thesis, N. C. State University, Raleigh. 73 pp.
- Gladstone, W. T., Barefoot, A. C. and Zobel, B. J. 1970. Kraft pulping of early- wood and latewood from loblolly pine. For. Prod. Jour. 20(2):17-24.
- Kellison, R. C. 1970. Phenotypic and genotypic variation of yellow-poplar. Ph. D. Thesis, School of Forest Resources, N. C. State Univ., Raleigh. 112 pp.
- Lantz, C. W. 1970. Graft incompatibility in loblolly pine. Ph. D. Thesis, N. C. State University, Raleigh. 103 pp.
- Mallonee, E. H. 1970. Effects of site preparation and fertilization on four tree species planted on a coastal plain wet flat. M. S. Thesis, N. C. State Univ., Raleigh. 83 pp.
- McElwee, R. L. 1970. Radioactive tracer techniques for pine pollen flight studies and an analysis of short-range pollen behavior. Ph. D. Thesis, School of Forest Resources, N. C. State Univ., Raleigh. 97 pp.
- McElwee, R. L. 1970. The silviculture of oaks and associated species—artificial regeneration of hardwoods. Res. Pap. NE-144, USDA Forest Service. p. 17-25.
- McElwee, R. L., R. Tobias, and A. H. Gregory. 1970. Wood characteristics of three southern hardwood species and their relationship to pulping properties. Fifth TAPPI For. Biol. Conf., Raleigh. 21 pp.
- Pederick, L. A. 1970. Variation and inheritance of stem form and bark thickness in young loblolly pine. Tech. Rept. No. 41, School of Forest Resources, N.C. State University, Raleigh, 44p.
- Porterfield, R. L. 1970. The financial maturity of certain southern mixed hardwood stands. M. S. Thesis, N. C. State Univ., Raleigh. 71 pp.
- Quijada Rosas M. 1970. Drought resistance in eight- and sixteen-week-old loblolly pine seedlings. Ph. D. Thesis, N. C. State Univ., Raleigh. 101 pp.
- Saylor, L. C. and H. A. Simons. 1970. Karyology of *Sequoia sempervirens*; karyotype and accessory chromosomes. Cytologia 35(2):294-303.
- Sluder, E.R. 1970. Variation in wood specific gravity of yellow-poplar (*Liriodendron tulipifera* L.) and its relationship to environmental conditions in the southern Appalachians. Ph. D. Thesis, N. C. State University, Raleigh. 68 pp.
- Smouse, P.E. 1970. Population studies in the genus *Pinus* L. N. C. State Univ., Raleigh. 126 pp.
- Weir, R. J. 1970. Open-pollinated sycamore (*Platanus occidentalis* L.) families on pine sites. M. S. Thesis, N. C. State Univ., Raleigh. 64 pp.
- Zobel, B. J., 1970. Challenge of the seventies--wood for forest industries. Proc., 49th Ann. Meet., Appalachian Sec., SAF. pp. 9-12.
- Zobel, B. J. 1970. Developing trees with wood qualities most desirable for paper. Fifth TAPPI Forest Biology Conference, Raleigh. 24 pp.
- Zobel, B. J. 1970. More wood per acre by use of genetics. Symposium, Virginia Polytechnic Institute. 7 pp. First Forest
- Zobel, B. J., 1970. Pulpwood mensuration. Chap. 2, Art. 3, Handbook of Pulp and Paper Technology by K. W. Britt. pp. 125-132.

Zobel, B. J., 1970. The impact of tree improvement on the third forest. Forest Farmer (2):10-11 and 38-39.

Zobel, B. J. and J. Roberds. 1970. Differential genetic response to fertilizers within tree species. For. Biol. Workshop, SAF, Michigan State Univ., August. 19 pp. Mimeo
1969

Franklin, E. C. 1969. Inbreeding depression in metrical traits of loblolly pine (*Pinus taeda* L.) as a result of self-pollination. Tech. Rept. No. 40, School of Forest Resources, N. C. State University, Raleigh. 19 pp.

Jett, J. B., Jr. and Thor, E. 1969. Formation of graft unions in yellow-poplar. Tenn. Farm and Home Science--Progress Rept. No.7. pp. 7-11.

Kinloch, B. B., Jr. and Stonecypher, R. W. 1969. Genetic variation in susceptibility to fusiform rust in seedlings from a wild population of loblolly pine. Phytopathology 59(9):1246-1255.

Kundt, J. F. and Lantz, C. W. 1969. Cone ripening study of loblolly, Virginia and shortleaf pines. Submitted to Journal of Forestry.

Lantz, C. W. and Hofmann, J. G. 1969. Geographic variation in growth and wood quality of loblolly pine in North Carolina. Tenth Southern Forestry Tree Improvement Conference, Houston Texas.

Ledig, F. T. and Perry, T. O. 1969. Net assimilation rate and growth in loblolly pine seedlings. For. Sci. 15(4):431-438.

Saylor, L. C. 1969. Chromosomal differentiation as a barrier to interspecific hybridization among pines. Second World Consultation on Forest Tree Breeding, Washington, D. C. 6 pp.

Saylor, L. C. 1969. Provenance testing Mexican pines in the United States and Brazil. Proceedings of the Tenth Southern Conf. on For. Tree Improvement, Houston, Texas. pp. 155-164.

Saylor, L. C. 1969. Chromosomal differentiation as a barrier to interspecific hybridization among pines. Second World Consult. On For. Tree Breeding, Washington, D.C. 6p.

Shelbourne, C. J. A., Zobel, B. J. and Stonecypher, R. W. 1969. The inheritance of compression wood and its genetic and phenotypic correlations with six other traits in five-year-old loblolly pine. Sil. Gen. 18:43-47.

Webb, C. D. 1969. Variation of interlocked grain in sweetgum. For. Prod. Jour. 19(8):45-48.

Zobel, B. J. 1969. Industrial tree improvement in the South--A success story. Forest Industries (April). pp. 30-32.

Zobel, B. J. 1969. Industrial tree improvement in the South--The need and results. Symposium, Canadian Pulp and Paper Research Institute of Canada.3 pp.

Zobel, B. J., Kellison, R. C. and Matthias, M. 1969. Genetic improvement in forest trees--growth rate and wood characteristics in young loblolly pine. Proc., Tenth South. Conf. on Forest Tree Improvement, Houston, Texas. pp; 59-75.

Zobel, B. J., Roberds, J. H. and Ralston J. 1969. Dry wood weight yields of loblolly pine. Jour. For. 6(11):822-824.

1968

Bergman, A. 1968. Variation in flowering and its effect on seed cost--A study of seed orchards of loblolly pine. Tech. Rept. No. 38, School of Forest Resources, N. C. State University, Raleigh. 63 pp.

Franklin, E. C. 1968. Artificial self-pollination and natural inbreeding in *Pinus taeda* L. Ph.D. thesis, School of Forest Resources, NCSU, Raleigh. Pp. 1-131

- Gladstone, W. T. 1968. Responses of earlywood and latewood from loblolly pine to kraft pulping. Ph.D. Thesis, N.C.S.U., Raleigh, 123pp.
- Gregory, J. D. 1968. The effects of fertilization and irrigation on the flowering and seed production of two loblolly pine (*Pinus taeda* L.) seed orchards. M. S. Thesis, School of Forest Resources, NCSU, Raleigh. Pp. 1-86.
- Shelbourne, C. J. A. and Ritchie, K. S. 1968. Relationships between degree of compression wood development and specific gravity and tracheid characteristics in loblolly pine (*Pinus taeda* L.). Holzforschung 22-6, pp. 185-190.
- Von Wedel, K. W., Zobel, B. J. and Shelbourne, B. J. 1968. Prevalence and effects of knots in young loblolly pine. Forest Products Journal 19(9):97-103.
- Woessner, R. A. 1968. A juvenile assessment of wide crosses of loblolly pine select trees indigenous to different geographical areas. Ph. D. thesis, NCSU, Raleigh. 148pp.
- Zobel, B. J. 1968. Trends of land use in the South. Soil Conservation Society of America, Kentucky, February. 5pp.
- Zobel, B. J. 1968. Is genetics the key to increased timber production? Southern Pulpwood Conservation
- Zobel, B. J. 1968. Management of seed orchards. Nurserymen's Conference, Stone Mountain, Georgia, August.
- Zobel, B. J. 1968. Development of forest management in southeastern United States. Proceedings of meetings held in Stellenbosch University and at the Government Experiment Station, Pretoria, South Africa, October. 5pp.
- Zobel, B. J. and Maki, T. E. 1968. Forestry developments to meet future fiber needs. Proc., Forest Engineers Conf., American Assn. of Agricultural Engineers, Michigan State University, September. 5pp.
- Zobel, B. J., Stonecyher, R. W. and Browne, C. 1968. Inheritance of spiral grain in young loblolly pine. Forest Science 14(4):376-379.

1967

- Johnson, J. W. and McElwee, R. L. 1967. Geographic variation in specific gravity and three fiber characteristics of sweetgum. Proc., 9th Southern Conf. on Forest Tree Improvement, Knoxville, Tenn. June. Pp. 50-54.
- Kellison, R. C. 1967. Geographic variation of yellow-poplar within North Carolina. Tech. Report. No. 33, pp. 1-41.
- Kinloch, B. 1967. Genetic variation in susceptibility to fusiform rust in control- and wind-pollinated progenies of loblolly pine. Ph.D. Thesis, School of forest Resources, NCSU, Raleigh. Pp. 1-49.
- Land, S. B. 1967. Interspecific variation in sea-water tolerance of loblolly pine (*Pinus taeda* L.). M. S. Thesis, School of forest Resources, NCSU, Raleigh. pp 1-97
- Ledig, F. T., 1967. Variation in photosynthesis and respiration in loblolly pine progenies. Ph.D. Thesis, N. C. State University, School of Forestry, Raleigh, N.C.
- Quijada Rosas, M. 1967. Variation and relationships of wood characteristics of longleaf pine in North Carolina. M.S. Thesis, School of Forest Resources, NCSU, Raleigh. Pp. 1-91.
- Roberds, J. H., Zobel, B. J. and Kellison, r. C., 1967. Progeny testing in the N. C. State University-Industry Tree Improvement Program. IUFRO Meeting, Munich.
- Saylor, L. C. 1967. Variability of chromosome structure and behavior in southern pine hybrids. Proc. Ninth Southern Conf. For. Tree Improvement, Knoxville, Tenn. Pp. 95-100.
- Saylor, L. C. and Koenig, R. L. 1967. The slash-x-sand pine hybrid. Sil Gen., 16(4):134-138.

- Von Wedel, K. W., Zobel, B. J. and Shelbourne, C. J. A. 1967. Knotwood in loblolly pine. Tech. Report No. 36, School of forest Resources, N. C. State University, Raleigh. pp. 1-45
- Zobel, B. J. 1967. Cooperative university and industry programs. Southern Forest Tree Improvement Conference, Knoxville, Tenn.
- Zobel, B. J. 1967. Mexican Pines. FAO-IPB Technical Symposium on Exploration, Utilization and Conservation of Plant Gene Resources. FAO, Rome, Sept. pp. 1-13.
- Zobel, B. J. and Kellison, R. C. 1967. Southern pulpwood supply outlook clouded. Pulp and Paper 41(27):28-31.
- Zobel, B. J. and Kellison, R. C. 1967. Seed orchard establishment and operations and their relationship to insect problems. 12th Annual southern forest Insect Conference, Charlottesville, VA.
- Zobel, B. J. and Matthias, M., Roberds, J. and Kellison, R. 1967. Moisture content of southern pine trees. Proc., 4th for. Biol. Conf., TAPPI, Canada. Pp. 11-35. Also Tech. Report No. 37, School of Forest Resources, N. C. State University. Pp. 1-44.

1966

- Cole, D. E., Zobel, B. J. and Roberds, J. H. 1966. Slash, loblolly and longleaf pine in a mixed natural stand; a comparison of their wood properties, pulp yields and paper properties. Tappi 49(4):161-166.
- Franklin, E. C., 1966. Photoelectric seed counter for forestry research. For. Sci. 12(3):362-364.
- Kang, Ke Won, 1966. Relationship between loblolly and pond pine in North Carolina. Ph.D. thesis, N. C. State University, School of Forestry, Raleigh, N. C.
- Nikles, D. G., 1966. Comparative variability and relationships of Caribbean pine (*Pinus caribaea*) and slash pine (*P. elliottii*). Ph. D. Thesis, N. C. State University, School of Forestry, Raleigh, N. C.
- Perry, T. O. and Baldwin, G., 1966. Genetic variation in winter breakdown of the photosynthetic apparatus of evergreens. For. Sci. 12(3):298-300.
- Perry, T. O., Wang, Chi-Wu and Schmitt, D. M. 1966. Height growth for loblolly pine provenances in relation to photoperiod and growing season. Sil. Gen. 15(3):61-64.
- Saylor, L. C. and Smith, B. W., 1966. Meiotic irregularity in species and interspecific hybrids of *Pinus*. Amer. Jour. Bot. 53(5):453-468.
- Shelbourne, C. J. A., 1966. Studies in the inheritance and relationships of bole straightness and compression wood in southern pines. Ph.D. Thesis, N. C. State University, School of forestry, Raleigh, N. C.
- Stonecypher, R. W., 1966. Estimates of genetic and environmental variances and covariances in a natural population of loblolly pine (*Pinus taeda* L.). Tech. Bull. No. 5, Southlands Experiment Forest, International Paper Company. Pp. 1-128.
- Stonecypher, R. W. and Zobel, B. J., 1966. Inheritance of specific gravity in five year old seedlings of loblolly pine. Tappi 49(7):303-305.
- Wheeler, E. Y., Zobel, B. J., and Weeks, D. L., 1966. Tracheid length and diameter variation in the bole of loblolly pine. Tappi 49(11):484-490.
- Whitesell, C. D., Zobel, B. J. and Roberds, J. 1966. Specific gravity and tracheid length and of loblolly pine in Maryland and Delaware. Tech Rept. No. 29. School of Forestry, N. C. State University, Raleigh. pp. 1-11.
- Zobel, B. J., Stonecypher, R., Browne, C. and Kellison, R. C., 1966. Variation and inheritance of cellulose in southern pines. Tappi 40(9):383-387.

Zobel, B. J. and Kellison, R. C., 1966. The future of southern hardwoods. Proc., 45th annual Meeting, S. A. F., Appalachian Section, Raleigh, N. C. pp. 35-37.

1965

- Barefoot, A. C., Hitchings, R. G., and Ellwood, E. I. 1965. Wood Characteristics and Kraft Paper Properties of Four selected Loblolly Pines. III. Effect of fiber morphology in pulps examined at a constant permanganate number. Third For. Biol. Conf., Tappi, Madison, Wis.
- Beineke, W. f. and Perry, T. O. 1966. Genetic variation in ability to withstand transplanting shock. Proc., South. For. Tree Impr. Conf., Savannah.
- Duffield, J. W. 1965. Some influences of genetics on the thinking of foresters. In Forestry in Science and Society. Univ. of Calif., School of Forestry. 66 pp. multilith.
- Ledig, F. T. 1965. Genetic differences in relative growth of shoot and root systems in *Pinus taeda* L. seedlings as measured by the shoot-root ratio and the allometric formula. M.S. Thesis, N. C. State School of Forestry.
- Ledig, F. T. and Perry, T. O. 1965. Physiological genetics of the shoot-root ratio. Proc. SAF, Detroit.
- Posey, C. E. 1965. The effects of fertilization upon wood properties of loblolly pine (*Pinus taeda* L.) Tech. Report 22, School of Forestry, N. C. State. Pp. 1-59
- Roberds, J. H. 1965. Patterns of variation in several characteristics of sweetgum (*Liquidambar styraciflua* L.) in North Carolina. M. S. Thesis, N. c. State University, School of Forestry, Raleigh, N.C.
- Stonecypher, R., Cech, F. and Zobel, B. J., 1965. Estimates of components of variance and covariance in root and shoot characteristics of loblolly pine after one growing season. Proc., Eighth South. Conf. on Forest Tree Improvement. Pub. #24, Comm. on South. For. Tee Impr. pp.86-95.
- Taft, K. 1965. An investigation of the genetics of seedling characteristics of yellow poplar (*Liriodendron tulipifera* L.) by means of a diallel crossing scheme. Ph.D. Thesis, N. C. State University, School of Forestry, Raleigh, N.C. pp. 1-57.
- Taras, M. A. 1965. Some wood properties of slash pine (*Pinus elliottii* Engelm.) and their relationship to age and height within the stem. Ph.D. Thesis, N. C. State School of Forestry. Pp. 1-157.
- Taylor, F. 1965. A study of the natural variation of certain properties of the wood of yellow poplar (*Liriodendron tulipifera*) within trees, between trees and between geographic areas. Ph.D. Thesis, N. C. State, School of Forestry.
- Webb, C. D. 1965. Natural variation in specific gravity, fiber length and interlocked grain of sweetgum (*Liquidambar styraciflua* L.) Ph.D. Thesis, N. C. State, School of Forestry.
- Woessner, R. A. 1965. Growth, form and disease resistance in four year old control and five year old open pollinated progeny of loblolly pine selected for use in seed orchards. Tech Rept. 28, School of Forestry, N. C. State University, Raleigh, pp. 1-67.
- Zobel, B. J., 1965. Inheritance of fiber characteristics in hardwoods—a review. Vol. 2, Proc., Meeting of Section 41, IUFRO, Melbourne, Victoria, Australia. Pp. 1-14.
- Zobel, B. J., 1965. Inheritance of spiral grain. Vol. 1, Proc., Meeting of Section 41, IUFRO, Melbourne, Victoria, Australia. pp 1-9
- Zobel, B.J. 1965. Variation in specific gravity and tracheid length for several species of Mexican Pine. Sil. Gen. 14(1):1-2.
- Zobel, B. J. and Kellison, R. C. 1965. Biological research by forest industries. Jour. For. 63(6):424-429.

Zobel, B. J. and Kellison, R. S. 1965. Production seed orchards. Forest Farmer 24(6):6, 7, 18 & 19.

Zobel, B. J., Ralston, J. and Roberds, J. 1965. Wood yields from loblolly pine stands of different age, site and stand density. Tech. Rept. No. 26, School of Forestry, N. C. State University, Raleigh, pp. 1-22.

1964

Barefoot, A. C., Hitchings, R. G. and Ellwood, E. L. 1964. Wood characteristics and kraft paper properties of four selected loblolly pines. Tappi 47(6):343-356.

Byrd, V. L. 1964. An investigation of the effect of wood chemical constituents on kraft paper properties of four selected loblolly pines. M.S. Thesis, N. C. State University, School of Forestry. Pp. 1-113.

Castillo, Z., Jaime. 1964. Analysis of the yield of some coffee varieties grown in Columbia and Brazil. M.S. Thesis, N. C. State University. Pp. 1-84.

Kinloch, B. B., Jr. 1964. Evaluation of resistance to fusiform rust (*Cronartium fusiforme*) in loblolly pin (*Pinus taeda*). M.S. Thesis, N. C. State School of Forestry and Department of Pathology. Pp. 1-62.

Perry, T.O. 1964. Soil compaction and loblolly pine growth. Tree Planters Notes.

Perry, T.O. and Roberts, A. Y. 1964. Volume formulas for loblolly pine seedlings in the vicinity of Raleigh, North Carolina. Jour. of For. 62:185-187.

Saylor, L.C. 1964. Karyotype analysis of Pines – group Lariciones. Silvae Genetica 13(6) :165-170.

Schmitt, D.M. 1964. Self-sterility in sweetgum (*Liquidambar styraciflua* L.) Ph.D. Thesis, N. C. State. Pp. 1-104.

Schmitt, D. and Perry, T. O. 1964. Self sterility in sweetgum. For. Science 10:302-305.

Stonecypher, R., Cech, F. and Zobel, B. J. 1964. Inheritance of specific gravity in two and three year old seedlings of loblolly pine Tappi 47(7) :405-407.

Zobel, B. J. and McElwee, R. L. 1964. Seed orchards for the production of genetically improved seed. Silvae Genetica 13(1):4-11.

Zobel, B. J. and Kellison, R. C. 1964. The Cooperative Industry-N. C. State Tree Improvement Program. Proceedings, Region 8, Forest Nurserymen's Conf. pp. 99-102.

1963

Conkle, M. T. 1963. The determination of experimental plot size and shape in loblolly and slash pines. Tech. Rept. No. 17. School of Forestry, N. C. State College, pp. 1-51.

Hamrick, J. L. 1963. Environmental and genetic control of bark thickness in loblolly pine. Mimeographed Student Report. pp. 1-17.

Franklin, C. 1963. Drought resistance in loblolly pine (*Pinus taeda*) seedlings at ages 0 to 3 months. Mimeographed student report. pp. 1-29.

Kinloch, b. B. 1963. Observations on the effects of fusiform rust on specific gravity and fiber length in the wood of loblolly pine. Mimeographed Student Rept. Pp. 1-9.

Maki, T. E. 1963. Proceedings, special Field Institute in Forest Biology. School of Forestry, N. C. State. Pp. 1-248.

McElwee, R. L. 1963. Genetics in wood quality improvement. Presented at Gulfport, Miss. Southern Forest Tree Improvement Committee. June, 1963.

McElwee, R. L. and Zobel, B. J. 1963. Variation in wood properties of pond pine. Forest Genetics Workshop, SAF, Macon, Ga.

Namkoong, G. 1963. The statistical analysis of introgression. Ph.D. Thesis. Pp. 1-87.

- Perry, T. O. 1963. Differences in protein constituents in dormant and vegetative pine tissue. AIBS Bulletin 13:73-75.
- Saylor, L. C. and McElwee, R. L. 1963. Collecting pine material in Mexico for provenance trials and wood studies (Members, 1962 collecting team, mss. Prepared by L.C. Saylor and R. L. McElwee). Tech. Report No. 18. pp 1-22.
- Zobel, B. J. 1963. Breeding for wood properties in forest trees. World Consul. Of For. Gen., Stockholm. Pp. 1-31 (Chapter 7 of Final Report).
- 1962**
- Cech, F. C., Barber, J. C. and Zobel, B.J. 1962. Comments on "Who wants tree seed certification, and why?" Journal of Forestry 60(3): 208-210.
- Goggans, J. F. 1962. The correlation, variation and inheritance of wood properties in loblolly pine (*Pinus taeda* L.) Tech. Rept. No.14. School of Forestry, N. C. State, pp. 1-135.
- McElwee, R. L. and Zobel, B. J., 1962. Some wood and growth characteristics of pond pine. Proc. For. Genetics workshop, SAF, Macon, Ga. Pub. #22, southern For. Tree Impr. Committee. Pp. 19-25.
- McElwee, R. L. and Zobel, B. J., 1962. Some wood and growth characteristics of pond pine. Proc. For. Gen. SAF Workshop. Macon, GA p. 18-25.
- Perry, T.O. 1962. Racial variation in the day and night temperature requirements of red maple and loblolly pine. Forest Science 8:336-344.
- Taft, K. A. 1962. The effect of controlled pollination and honeybees on seed quality of yellow poplar (*Liriodendron tulipifera* L.) as assessed by X-ray photography. Tech. Rept. No. 13, School of Forestry, NC State College, pp. 1-21.
- Zobel, B. J. 1962. Impact of forest genetics on plantation management. Am. Pulpwood Association, Gulfport, Miss.
- Zobel, B. J. 1962. Wood quality improvement through better trees. LSU Tenth Ann. For. Symposium. Pp. 35-40.
- Zobel, B. J. and Haught, E. A. 1962. Effect of bole straightness on compression wood of loblolly pine. Tech. Rept. No. 15, School of For., N. C. State College, pp. 1-5.
- Zobel, B. J., Cole, D. E. and Stonecypher, R. W. 1962. Wood properties of clones of slash pine. 1963 Proc. For. Gen. Workshop, SAF, Macon, Ga. Pub. #22, Southern For. Tree Impr. Committee. Pp. 32-39.
- 1961**
- Goggans, J. F. 1961. The interplay of environment and heredity as factors controlling wood properties in conifers-with special emphasis on their effects on specific gravity. Tech. Rept. #11, School of Forestry, N. c. State College, Raleigh. pp. 1-56.
- Perry, T. O. 1961. Physiological genetic variation in plant species. Sixth Southern Conference on Forest Tree Improvement. Gainesville, Fl. Pp. 60-64.
- Saylor, L. C. 1961. A karyotype analysis of selected species of *Pinus*. Silvae Genetica 10(3):77-83.
- Steinhoff, R. J. 1961. An investigation of the nutrient and dry matter content concentrations in the foliage of loblolly pine (*Pinus taeda* L.), MS Thesis, School of Forestry, N. C. State College, Raleigh
- Taft, Kingsley A. 1961. The effect of controlled pollination and honeybees on seed quality of yellow poplar (*Liriodendron tulipifera* L.) as assessed by X-ray photography. MS Thesis.
- Thorbjornsen, E. 1961. Variation patterns in natural stands of loblolly pine. Sixth South. Conf. on Forest Tree Improvement, Gainesville, Fla. Pp. 25-44.

- Van Buijtenen, J.P., Zobel, B. J., and Joranson, P. N. 1961. Variation of some wood and pulp properties in an even-aged loblolly pine stand. *Tappi* 44(2):141-144.
- Webb, C. D. 1961, Field grafting loblolly pine. Tech. Rept. #10. School of Forestry, NC State College, Raleigh, pp. 1-33.
- Zobel, B. J. 1961. Development of better poles by forest tree breeding. South Atlantic Wood Pole Conference, Raleigh, N.C. :pp.19-37.
- Zobel, B. J. 1961. Inheritance of wood properties in conifers. *Silvae Genetica* 10(3):65-70.
- Zobel, B. J. 1961. Pines in the tropics and subtropics. Sect. 22, 13th IUFRO Congress, Vienna. Pp. 1-13.
- Zobel, B. J. 1961. The Consultant's concern with wood quality. *Consultant* 6(2):4-10.
- Zobel, B. J., Goggans, F. and Maki, T.E. 1961. Wood properties affected by fertilizers. *Forest Farmer*, May. Pp.6-7, 18.
- Zobel, B. J., Goggans, F. Maki, T.E. and Henson, F. 1961. Some effects of fertilizers on wood properties of loblolly pine. *Tappi* 44(3):186-192.
- Zobel, B. J., McElwee, R. L. and Browne, C. 1961. Interrelationships of wood properties of loblolly pine. Sixth south For. Tree Improvement Conf., Gainesville, Fla. Pp. 142-162.
- 1960**
- Cech, T. C. and Zobel, B. J. 1960. What is inherited—how can we tell. *Forest Farmer*, July, pp. 2.
- McElwee, R. L. 1960. An analysis of the factors contributing to the flight patterns of loblolly pine pollen. MS Thesis, N. C. State College, Raleigh, pp. 1-64.
- Perry, T. O. 1960. Pruning of slash and loblolly pine grafts. *Journ. For.* 58(4):323.
- Perry, T. O. 1960. The inheritance of crooked stem form in loblolly pine (*Pinus taeda* L.). *Jour. of For.* 58(12):943-947.
- Perry, T. O. and Wang, Chi Wu 1960. Genetic variation in the winter chilling requirement for date of dormancy break for *Acer rubrum*. *Ecology* 41:785-790.
- Sluder, E. R. 1960. A yellow poplar seed source study. MS. Thesis, N. C. State College, Raleigh, pp. 1-39.
- Thorbjornsen, E. 1960. Variation in loblolly pine (*Pinus taeda* L.), Ph.D. Thesis, School of Forestry, n. C. State College, Raleigh, pp. 1-188.
- Wang, Chi-Wu, and Perry, T. O. 1960. Pollen dispersion of slash pine (*Pinus elliottii* Engelm.) with special reference to seed orchard management. *Silvae Genetica* 9(3):65-92.
- Zobel, B. J. 1060, Narrowing the genetic base. Symposium on "Possible Consequences of Southern Pine Monocultures." 4th Conf. on South. Indus. Forest Management, Duke University, pp. 32-35.
- Zobel, B.J. 1960. Seed sources for direct seedling. Symposium – Direct Seeding in the South, Duke Univ. pp. 27-30.
- Zobel, B. J. 1960. Selection and breeding coniferous trees with superior wood characteristics. 5th World for. Cong., Seattle, Washington. 10pp.
- Zobel, B. J. 1960. Tree improvement and the southern forest industries. 7th Northeastern For. Tree Imp. Conf. :9-13.
- Zobel, b. J., Henson, F. and Webb, C. 1960. Estimation of certain wood properties of loblolly and slash pine trees from breast height sampling. *For. Sci.* 6(2):155-162.
- Zobel, B. J., Thorbjornsen, E. and Henson, F. 1960. Geographic, site and individual tree variation in wood properties of loblolly pine. *Silvae Genetica* 9(6):155-162.
- 1959**

- Barber, J. C. and Zobel, B. J. 1959. Comments on "Genetic Variation within Geographic Ecotypes of Forest Trees and Its Role in Tree Improvement." *Jour. of For.* 57(6) :439-441.
Zobel, B.J., Webb, C.D. and Henson, F. 1959. Core or juvenile wood of loblolly and slash pine trees. *Tappi* 42:345-356.

1958

- Zobel, B. J., Barber, J., Brown, C. L. and Perry, T. O. 1958. Seed orchards – their concept and management. *Jour. of For.* 56(11):815-825.
Zobel, B. J., Maki, T. E. 1958. Comments on "Annual variation in seed crops of loblolly pine" (with reply from K.F. Wenger, defending and modifying original thesis) *Jour. For.* 56(2):144-146.
Zobel, B. J. and McElwee, R. L. 1958. Variation of cellulose in loblolly pine. *Tappi* 41(4):167-170.
Zobel, B. J. and McElwee, R. L. 1958. Natural variation in wood specific gravity of loblolly pine and an analysis of contributing factors. *Tappi* 41(4):158-161.

1957

- Zobel, B. J., 1957. Inheritance of wood properties in pine. *Proc. 4th South. Conf. on Forest Tree Improvement.* Tech. Paper 17, pp. 27-29.
Zobel, B. J., 1957. Results of research on genetic phases of wood properties of loblolly pine. *3rd. Lake States Tree Impr. Conf.*, Sept.:16-64.
Zobel, B. J. and Cech, F. C. 1957. Pines from Nuevo Leon, Mexico. *Madono* 14(4):133-144.