Plant Tissue Culture References

These books are available in the Virginia Tech Library

Brookhaven National Laboratory. 1956. **Genetics in Plant Breeding.** SB123U47.
3000 copies printed, publication cost, $1.25 in 1956. Even in the 50"s, scientists were transferring genes from one species to another to improve disease resistance for instance, aegilops to wheat!

Highly technical and outdated, but reflects the best in plant breeding of the 1950's. . Article by James Mac Key has an interesting summary of mutation breeding in Europe, with informative (simple) tables to compare the different methods extant up to 1956.
Discussion 1930's colchicine treatment became almost a fad method to make polyploid plants.

George, R.A.T., ed. 1986. **Technical Guideline on Seed Potato Micropropagation and Multiplication.** Food and Agriculture Organization, Rome. callno: SB211P8T421986.

A small manual that describes, in operational detail, how Denmark conducts its potato propagation. Good diagrams and many photographs of the process (B/W). Contains methods for sterilizing, media formulations and making the culture, as well as a timeline for the overall process.

Jensen, N. F. 1988. **Plant Breeding Methodology.** Wiley, NYC. SB123J461988.

Written for the professional, this text goes into great detail about consideration s of factors such as plot size, mechanization of sowing and reaping, and the statistics and interpretation. Features such as basic genetics, crop characteristics, environment, experimental design, project management (including staffing) are all discussed. Just from reading the table of contents you get a glimpse of the interplay of basic science theory, practice and production (agronomy) that students rarely see. The final chapter is "101 ways to enrich your breeding program," a call for remembering to allow genetic diversity plus.

In fact, most seed planted today is really a mixture of different varieties, carefully formulated to provide yield, disease resistance and farming ease.

Kyte, L. **Plants from Test Tubes.** 1987, 1999. Timber Press. Portland, OR. new edition available SB123.6K991987.

The best suited for classrooms and as good a resource as Pierik. Excellent as a basal text for a plant tissue culture course or extended unit.

Has background information on methods, culture media and calculations and examples of tissues to culture. This books also has several chapters on the business of plant tissue culture to introduce students to the factors to consider, in language that is easy to understand, in contrast to the Jensen book (above).

Lawrence, W.J.C. 1968. **Plant Breeding.** St. Martins Press. New York. callno: SB123L391968A.

Plant improvement began at least 9000 years ago, when humans began saving and planting seed. Humans transported seed as they traveled, selected plants that were easier to grow and collect the seed from, and hybridized plants from different regions by gorwing them in the same fields. Through all these routes, humans were vectors of gene transfer.
In the 18th century, plant fanciers collected "sports" which we now call mutants. Domesticated sweet peas were among the first to be documented. Sugar beets were originally grown as fodder. In the 1840's the sugar content was about 7% As new methods for measuring sugar in the beet juice polarigraphically became available, variants that produced more sugar were quickly selected so that, by 1910, the sugar content of beets rose to 16% mutation breeding. Deliberate induced mutations are generated(randomly) by X-rays during the early 1900's. Later, chemical agents were used, after researchers discovered that DNA caries the information that can become mutated. Induced mutations were tricky, most were lethal. In England, X-ray induced varieties include pea and barley and white mustard (1950's and 1960s). In the US, a peanut variety that has better yield and stronger hull than its parent, was introduced in 1959.

Neuffer, M.G., Coe, E.H., Wessler, S.R. 1997 **Mutants of Maize.** CSHL Press. Cold Spring Harbor, NY. callno: SB191M2N391996.

Coffee-table in size, this book has remarkable color pictures, with a good introduction, diagrams and explanations of terms. Like an art museum catalog raisonne'. A comprehensive resource on the anatomy, molecular genetics and physiology of maize, with beautiful microscope and field pictures.

Pierik, R.L.M. 1987. **In Vitro Culture of Higher Plants.** Martinus Nijhoff Publishers. Dordrecht, NL.

An excellent advanced manual for the professional. I used this as the basal text for a 1 semester plant tissue culture course. Although it had no direct information on the plant we were studying, African violets, the information is so thorough that students were able to design their experiments by learning about the ranges of constituent concentrations, formulations, step-by-step procedures.

Written in Dutch English, some of the grammar is noticeably incorrect, but it's an excellent resource nonetheless.

Wang, K., Herrera-Estrella, A. and van Montagu, M., eds. 1995. **Transformation of Plants and Soil Microorganisms.** Cambridge University Press. callno: SB123.57T71995.

Rice (a monocot) was transformed successfully only around 1989-1991.
Highly technical reviews with good tables of methods, cell source and selection criteria.