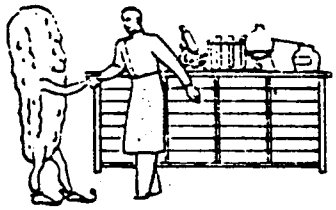

# RESEARCH

### "A METHOD FOR TESTING CUCUMBER SALT-STOCK BRINE FOR SOFTENING ACTIVITY"

by Thomas A. Bell and John L. Etchells, Food Fermentation Laboratory, Raleigh, N. C.
and
Ivan D. Jones, Department of Horticulture, N. C. Agricultural Experiment Station, Raleigh, N. C.

This publication gives step-by-step directions for testing commercial cucumber brines for the softening type spoilage caused by a pectinolytic and cellulolytic ($C_x$) agents (enzymes). These instructions are directed to workers in quality control laboratories of food plants and the results of the tests should give an early forecast as to possible salt-stock spoilage caused by softening. The tests may also be applied to genuine dills and overnight dills.

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### "NOTICE TO CUCUMBER PROCESSORS AND SEEDSMEN REGARDING RELEASE OF $F_1$ HYBRID SPARTAN CHAMPION"

by C. E. Peterson, Department of Horticulture, Michigan Agriculture Experiment Station, East Lansing, Mich.

"The Michigan Agricultural Experiment Station announces the release of a new hybrid pickling cucumber variety **SPARTAN CHAMPION,** pedigree MSU 713-5 x MSU 238. The monoecious pollen parent, MSU 238 was increased under contract with several seedsmen in 1960. Production of experimental quantities of this hybrid was authorized. It has been in yield and processing trials in Michigan for the past four years.

"The parent lines of Spartan Champion are resistant to cucumber mosaic and scab. The fruit is black-spined, light green, thick walled with a L/W ratio of 2. 8-3.0. Sex expression and yielding capacity are comparable to Spartan Dawn (MSU 713-5 x Spartan 27). Spartan Champion is not prominently warted compared with popular northern varieties such as Wisconsin SMR 15. The smoother fruits suffer less mechanical damage in handling and shipping.

"Spartan Champion is recommended for trial where scab and mosaic are serious and for shipping as green stock. The relatively small seed cavity also makes it promising for sliced packs and relish.

"The Michigan Agricultural Experiment Station does not have seed for sale but will attempt to supply small samples for trial. A limited supply of seed for 1964 trials may be secured from commercial seed producers."

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### "NOTICES TO CUCUMBER PROCESSORS AND SEEDSMEN REGARDING RELEASE OF $F_1$ HYBRID SPARTAN RESERVE"

by C. E. Peterson, Department of Horticulture, Michigan Agricultural Experiment Station, East Lansing, Mich.

"The Michigan Agricultural Experiment Station announces release of $F_1$ hybrid pickling cucumber **SPARTAN RESERVE,** pedigree MSU 7 x Spartan 27. The inbred seed parent, MSU 7, was increased under contract with several seedsmen in 1960. Production of experimental quantities of the hybrid MSU 7 x Spartan 27 was authorized.

"Spartan Reserve produces a black-spined prominently warted fruit, light green in color with an L/W ration of approximately 2.8. It is tolerant to cucumber mosaic and scab. In trials over the past three years, it has produced significantly higher yields than Wisconsin SMR 15 and SMR 18. Yields have averaged lower than Spartan Dawn but with fewer culls. It produces more fruits per plant than the regular monoecious varieties and fewer than Spartan Dawn. In brine stock evaluations Spartan Reserve has been rated better than Spartan Dawn, mainly because of the lower percentage of nubs.

"Spartan Reserve is recommended for commercial trial in areas where mosaic and scab are serious. It should be tested in areas where growers have not been able to produce satisfactory quality with Spartan Dawn or other gynoecious hybrids.

"The Michigan Agricultural Experiment Station does not have seed for sale but will attempt to supply small samples for trial. A limited supply of seed for 1964 trials may be secured from commercial seed producers.

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### "CUCUMBER BREEDING STUDIES IN ARKANSAS"

by J. L. Bowers and C. M. Bittle, Arkansas Agricultural Experiment Station J. L. Etchells, U. S. Food Fermentation Laboratory, Southern Utilization Research and Development Division, U.S.D.A., New Orleans, La.[1]

The cucumber investigations in Arkansas involve two different phases of work: (1) the actual breeding program which is carried out at Fayetteville and has as its ultimate goal the development of varieties and breeding lines on the basis of their salt stock qualities.

The cucumber program at Fayetteville covers work on breeding lines classified as: polyploids; male steriles, tendrilless types, gynoecious types, dwarf types and disease resistant.

Tetraploid plants have been obtained by treating the seed of a gynoecious line with colchicine. The ultimate goal in this phase of the program is to use the tetraploid female plants in developing triploid hybrids. Low fertility (poor seed set) must be overcome in order to obtain the objective.

The male sterile lines in our program also carry a high degree of female sterility which has not been overcome. The behavior of the male sterile plants in the field has given us a lead as to what would be desirable in triploid hybrids. A few of the male sterile plants set and developed around 20 fruit per plant, ranging in size from No. 4's down to small No. 1's. When this fruit was cut longitudinally no seed development was observed. This leads us to believe that a seedless triploid hybrid would be one of the characters desired in a variety for once-over harvest.

Three generations of backcrossing tendrilless type plants to those possessing good pickling qualities has resulted in some improvement in fruit shape. Progeny from these backcrosses still bear some misshaped fruit, indicating a need for further backcrossing to obtain well shaped fruit in a tendrilless type.

The gynoecious lines are being used in the development of hybrids which will possess multiple disease resistance and earliness. Hybrids tested in the program thus far have been early and productive, but did not possess any disease resistance. A moderate level of anthracnose and powdery mildew has now been obtained in a gynoecious line and it will be used as one of the parents in the development of future hybrids.

The dwarf lines developed at the station came from material supplied by Hardin at Gary, Oklahoma and Peterson at Michigan State. Another source for the dwarf character has appeared in the tetraploid plants. The nature of inheritance of this character will necessitate the crossing of a dwarf male parent with a gynoecious tetraploid seed parent in order to obtain a dwarf triploid hybrid.

Some progress has been made in incorporating anthracnose resistance into all breeding lines but it has been a slow process because the inheritance of this character is not simple but must involve several genes.

Evaluation of the salt stock samples taken from the trial plots at Hope in 1963 can be summarized as follows: 1. Ohio MR17, a very poor yielder was the only entry which received an over-all acceptability score slightly above 7.0 (good), 2. both Southern Pickler and Pixie were rated only fair, 3. several station anthracnose resistant lines: H63A-10, H63A-13, H63A-15, and H63A-20 were scored favorably for over-all acceptability, and 4. Only a few entries exhibited the desirable character of few bloaters and these were: SC-10-D, Ark #3, lines H63S-3,5,7 (mass) and H63S-4. Fruit of the latter two entries were taken from

(Continued on page 5, Col. 2)

Reviews of research papers published in Pikiepak do not constitute recommendations or endorsements, but are in keeping with the NPPA policy of service in bringing all possible information on pickles to the attention of the membership.

1. Dr. John L. Etchells has directed the salt stock evaluation work in this program.