removed the possibility of harvesting the cotton a few hours after applica-
tion of the material, thus making it no better than many of the defoliants
already being used.

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## HARVEST SCHEDULING

Marshall M. Machado, Research Associate in Agricultural Engineering


Plot experiments and Extension Service recommendations have suggested
the timing of operations for defoliant application and harvest usually as a
percent bolls-open.  Application of these recommendations indicates the need
for a good method of accurately determining crop maturity.

A method of determining the crop maturity rate and a yield prediction
method would permit evaluation of alternative harvest schedules.  Such an
evaluation several weeks prior to actual harvest would permit the cotton
grower to make and to act upon selected harvest schedules.

To establish a method of determining crop maturity and to use the crop
maturity curve for making yield predictions were objectives of this study.
Samples were taken from the buffer rows of Marana Field A-3 on Deltapine 5540
cotton for the 1966 and 1967 crops.  A sample consisted of 13'-1" of one 40"
row.

Percent bolls-open figures were computed weekly by dividing the number
of bolls-open by the total number of bolls in the sample.  A cumulative crop
maturity curve was developed from this data.  The crop maturity curve was
approximately linear in the range used for making the yield predictions,
6 to 40 days after 20% bolls-open.  Predicted yield was computed by multi-
plying the expected number of bolls-open on the pick date by the average boll
weight.

Statistical interpretation of the data showed that yield predictions
made for the period from 6 to 40 days after 20% bolls-open have a potential
accuracy of within 10% of the actual yield.  Harvest schedules developed at
20% bolls-open allow optimization of return and scheduling the sequence of
fields to be harvested.


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## A COMPUTER PROGRAM FOR COTTON

H. N. Stapleton, Agricultural Engineer


During the past year we have been able to develop a program for the
digital computer which "simulates" the cotton plant.  When completely developed,