

## **Developing a Peanut Maturity Profile Board for Malawi. D.L. JORDAN\* and R.L.**

BRANDENBURG, North Carolina State University, Raleigh, NC 27695; N. PUPPALA, New Mexico State University, Las Cruces, NM 88003; G. MACDONALD, University of Florida, Gainesville, FL 32611; J. RHOADS and D. HOISINGTON, University of Georgia, Athens, GA 30602; A. EMMOTT, London, UK; J. CHINTU, DARS-Chitedze Research Station, Chitedze, Malawi; and W. MHANGO, LUANAR, Lilongwe, Malawi.

Timely digging (lifting in the Malawi context) of peanut is critical to realize optimum yield, quality attributes and economic return. Pod mesocarp color, determined either through the hull scrape method (using a small knife or pressure washer with a turbo nozzle with rotating output) or the shell out method, can be used as an indicator of pod and kernel maturity. The number of days after planting as well as heat unit accumulation using growing degree calculations (in some cases combined with the relationship of water stress) are also used as predictors of when to dig peanut. Each of these approaches has strengths and limitations in this process. In addition to yield and quality, disease, risk of aflatoxin, weather conditions including possible freeze damage and tropical weather events, and ability to effectively dig peanuts due to soil moisture conditions without excessive pod loss in the process are also considered by growers when making these decisions. In the US where electricity or fuel are readily available, peanut growers and their advisors often use pressure washers fitted with a rotating or turbo nozzle to remove the exocarp of the pod to reveal the color of the mesocarp. Pods are then placed on laminated charts with based on mesocarp color to estimate the distribution of pod and kernel maturity for the sample. When electricity or fuel or a pressure washer with the appropriate nozzle is not available, a small knife can be used to scrape away the exocarp and reveal the mesocarp color. Alternatively, pods can be shelled to reveal the mesocarp color due to friction between the developing kernel and the endocarp which can reveal the mesocarp color. The latter two approaches are time consuming and discriminating among mesocarp colors is more difficult compared with using a pressure washer (most notably between brown and black mesocarp colors.) In countries where resources are limited (electricity, fuel, water) either the hull scrape method with a knife or the shell out method most likely is more appropriate to for a broader audience. These approaches when used in conjunction with days after planting can be used to fine-tune timing of digging (lifting).

A profile board is currently being developed for Malawi using examples of pods shelled by hand to reveal mesocarp color. Potential differences in yield are provided for several samples representing intervals prior to optimum maturity, currently at optimum maturity, and after optimum maturity. The impact of canopy defoliation caused by leaf spot disease and other stresses and potential for aflatoxin contamination will be discussed on the profile board. The initial draft of the profile board was used in Malawi in workshops during March 2019 with agronomists and the farmers they support and leaders in the peanut research community in Malawi. Based in these interactions the draft profile board was modified to reflect the needs of peanut growers and groups that support them in Malawi.