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Strides in groundnut crop improvement and new challenges

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Groundnut is grown in 22.2 million ha in more than 100 countries in the world with a total production of 34.5 million t and an average productivity of 1.55 t ha^{-1}(FAO, 2006). Asia accounts for 55.2% of the global area and 66.7% of the global production of the crop compared to 40.3% of the area and 25.6% of the production in Africa. During 1980-2006 period, the global groundnut area grew by 1.0%, yield by 2.4% and production by 3.4% annually. During the same period, the growth rates for Asia were 0.6%, 3.2% and 3.8%, respectively and for Africa, they were 2.2%, 1.5% and 3.7%, respectively. In Asia, it was the yield, which contributed to increased production, but in Africa, the increased production came largely through area expansion.

In spite of significant progress made in improving productivity and quality of groundnut through conventional breeding, there remains a large gap in potential yield and realized yield at farm level, particularly in rainfed agriculture. On a global scale, foliar diseases (rust, late leaf spot and early leaf spot), aflatoxin contamination and drought continue to remain major challenges in groundnut production. In addition to these, groundnut rosette disease in Africa is also a major production constraint. Very often resistance breeding requires a sacrifice in yield potential. In situations where the gap between realized yield and yield potential is large, genetic resistance is a preferable option. When a pathogen attack leads to plant death, a high degree of resistance will be required but in cases where a plant is 'stressed' by a pathogen, a moderate level of resistance may suffice. A long-term sustainable effort is required to deploy resistance and other genes from wild Arachis resources in cultivated groundnut. It is expected that newly emerging technologies such as genetic engineering and genomics will provide a new impetus in crop improvement efforts in near future.