

## Peculiar Features of Flowering and Seed Formation in Groundnut

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### INTRODUCTION

Agriculture plays a vital role in the economy of Assam contributing about 35% to the State Domestic Product. The Assam government has, therefore, assigned very high priority to agriculture. This was reflected through a quantum of jump in the production of main crop of Assam i.e., rice upto 51.25 lakh MT per annum. In an agrarian state like Assam, which is predominant by rice crop, the oilseeds production had increased its area upto 5%, surpassing pulses, having an area coverage of only 2.3% of the total cropped area. Although the major oilseed crops grown in Assam are rapeseed (toria), the other oilseed crops cultivated mainly during *rabi* season are sunflower, groundnut and niger, whereas, sesamum and soybean are cultivated during *kharif* season. The rapeseed and mustard cover an area of about 2.25 lakh hectares (71%) of the total oilseeds coverage area (2015-16). The overall productivity of oilseeds in Assam is around 644 kg/ha (2015-16), which is slightly more than half of the national average (1095 kg/ha). In Assam, the oilseeds are grown mostly under *rainfed* condition with low level of modern agro technique. Although regular flood, drought, heavy population pressure on land and infrastructural weakness are impediment to growth, yet the farmers have started to increase production through technological innovations and appropriate government policies. In respect of oil seeds, although the state is deficit, there is scope to mop up the deficit and become surplus. The cultivation of groundnut in *rabi* season in some pockets of North Bank Plains Zone of Assam is gaining popularity as oilseed crop. Therefore, an experiment as well as demonstration plot was carried out under All India Coordinated Research Project on Dryland Agriculture, Biswanath Chariali Centre of Assam Agricultural University in the *rabi* season of 2020.

Among the oilseeds crops, groundnut (*Arachis hypogaea*. L) family Leguminosae has first place in India and the oil is primarily used in the manufacture of vegetable oil (vanaspati ghee). The groundnut seed contains about 45% oil and 26% protein and the kernel as a whole is highly digestible. Groundnut is a good source of all B vitamins except B<sub>12</sub> alongwith rich source of thiamin, riboflavin, nicotinic acid and vitamin E. Although groundnut is an oil and protein rich energy giving crop, but usually grown under energy-starved conditions of low soil fertility and *rainfed* areas. In north-east India, the crop is mainly used as snack food and cultivated area is limited mainly due to acidic nature of soil as well as less popularity as oilseed crop compared to toria in terms of preference of consumption. In Assam, groundnut can be grown in all the three seasons *viz.*, *kharif* (June-July), *rabi* (Mid September-Mid October) and *summer* (Mid January -February). The production technology of the crop for each season is already developed and included in state package of practices published jointly by Assam Agricultural University and Department of Agriculture, Assam. In the *kharif* season (July to September) of Assam, *Sali* rice is the main crop grown throughout the state in medium and low land situations due to which farmers are less interested to grow other crops than rice in *kharif* season. Moreover, due to monsoon, Assam experienced heavy rainfall from July to September (more than 1000 mm) and there is every possibility of water stagnation even in upland situation for a few days. So, *rabi* season may be the best option for groundnut cultivation in Assam. Groundnut variety “Kadiri 6” having duration of about 130-140 days was collected from Agricultural Research Station, Ananthapuramu - 515001, Andhra Pradesh under AICRP on Dryland

Agriculture, Biswanath Chariali Centre of Assam Agricultural University. The crop was sown on 27.11.2020 and harvested on 02.05.2021.

The most peculiar phenomenon of the groundnut crop observed was the manner of flowering and seed formation. (Photograph attached). Groundnut is predominantly a self pollinated crop and pollination takes place early in the morning. As soon as the fertilization is complete, the flower fades. Flowers are borne in the axils of the leaves. Flower color of the variety was yellow to orange. Flowers open early in the morning as soon as they receive light. Pollination occurs just before the flowers open. After pollination the pollen tube grows resulting in fertilization. After fertilization the flower withers and in doing so activates the growth and the intercalary meristem, becomes active at the base of the ovary. A stalk-like structure (the gynophores) that bends downward and forces the ovary into the soil. The gynophores are referred to as peg which generally becomes visible within 4-6 days after fertilization. Peg extension is slow at first and takes about 5-6 days to penetrate the bracts. The peg carrying the ovary pushes itself into the soil. The peg bears the ovary with the fertilized ovule at its tips. The peg typically reaches and penetrates the soil surface in about 8-14 days after fertilization. Once the peg enters the soil and penetrates to a depth of 4-5cm, the tip of the ovary begins to develop and takes up a horizontally position and develops into a pod. This is the most striking features of seed formation and technically it is known as pegging. Pegging is a characteristic of growth of the embryo in groundnut. Groundnut is a rare example of the reproductive strategy called geocarpy, in which the seeds form and ripen in the ground beneath the plants.



**Figure 1: Photographs of pegging in Groundnut Variety (Kadiri-6) in the demonstration plot of AICRPDA Biswanath Chariali**



**Figure 2: General view of the demonstration plot at AICRP on Dryland Agriculture Research field of Biswanath Chariali Centre, AAU, Assam**