Summary

Plant based glycerides are parts of human food, sources of renewable energy, and feedstock to many other commercially useful products. Manipur in the North–East of India has hills, wet lands and a hill locked valley. The state is a biodiversity hot spot and rich in wide varieties of plants. There are large number of plants which bear oil rich seeds, and most of them are yet to be scientifically investigated.

Twenty four non-conventional oilseeds are collected from the wild. *Thevetia peruviana* kernel has the highest oil content of 57.75 wt%, the second highest being *Citrus maxima* kernel with oil content of 49.88 wt%. Least oil content is found with *Cassia tora* seeds (4.13 wt%). Out of 24 plant species studied 3 species have more than 40 wt% of oil in their seeds / seed kernels, 8 species have more than 30 wt% oil, 4 species have more than 20 wt% and remaining 9 species have less than 20 wt% of oil in their seeds.

All the oil samples are transparent and pale to light yellow in colour. Refractive index, density, acid value, iodine value, saponification value are some of the physicochemical properties which have been experimentally determined for all the oil samples. Acid values of the seedoils are in the range of 0.405 - 1.702 mg KOH / g of oil, lowest for *Thevetia peruviana* (0.405 mg KOH) and highest for *Cucumis sativus* (1.702 mg KOH). High iodine values for the seedoils (70.20 to 183.42 g I₂ / 100g of oil) suggest unsaturated nature of the oils. *Melia azedarach* seedoil with iodine value 56.12 has the lowest degree of unsaturation. The saponification values of the studied seedoils are in the range of 165.28 - 194.10 mg KOH / g.

All the seedoil samples have been successfully transesterified into corresponding fatty acid methyl ester (FAMEs) using a solid catalyst derived from the trunk of *Musa balbisiana* Colla (one variety of banana plant). Analysis of the FAMEs was done to indentify the fatty acids present in the seedoils. All the seedoil samples have the presence of palmitic acid (C16 : 0) and stearic acid (C18 : 0), but oleic acid (C18 : 1) and linoleic acid (C18 : 2) were absent respectively in eight and thirteen samples out of twenty four samples studied. Arachidic acid (C20 : 0) is present in low concentration in ten samples, gondolic acid (C20 : 1) only in three and behenic acid (C22 : 0) only in five samples. None of the samples recorded presence of fatty acids with carbons fewer than sixteen or more than twenty two.
Cetane indexes are calculated theoretically for all the FAME mixtures, and they are found in the range of 46.58 to 73.6 against minimum requirement of 40. Thus all the samples are expected to work well in diesel engines.

Glyceride composition of ten oil samples has been analyzed. Most of the glycerides have a mix of fatty acids (inhomogeneous glycerides). Only three glycerides having only one fatty acid residue (homogenous glycerides) have been observed. LLL and OOO are present in all the oil samples, LLL in the range 10.52 to 29.12%, and OOO in the range 0.93 to 18.23%. PPP is present only in two oil samples in the range 3.12 to 4.31%.