

## Identification of Low lipase Lines of Oil Palm.

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Oil Palm (*Elaeis guineensis*) is the world's most important oil crop. The mesocarp of the fruit contains a very strong triacylglycerol lipase activity, which physiological function remains to be established. The lipase activity is induced upon abscission and wounding of the fruit and strongly impacts on oil quality. This obliges farmers to harvest frequently and to heat the fruit bunches immediately after harvest. We have devised a simple and quantitative lipase assay that alleviates the difficulties due to the lack of stability of the enzyme. This assay was used to quantify lipase activity in various tree lines presently used for breeding. While some fruits exhibited activities higher than 800  $\mu\text{mol}$  fatty acids released per minute per gram dry weight, we identified 3 lines with barely detectable lipase activity.

The effect of wounding on lipase activity was assessed by submitting the fruits to a freeze/thaw cycle. Fruits with high lipase activity contained up to 55% free fatty acids (FFA) one hour after thawing, while the FFA content of fruits with low lipase activity did not exceed 7.3%. These values are lower than the ones recorded on fruits of the close species *E. oleifera*, which is known to produce an oil with low FFA content.

To mimic harvest conditions, FFA content was determined from detached, fallen fruits. All fruits from low lipase lines contained less than 2% FFA, while most of the high lipase lines had levels above the limit (5%) set by the FAO/WHO for edible oil.

Because these low lipase lines are elite trees already used for producing seeds, it should be possible, in a few years, to start to provide farmers with new, low lipase seeds of oil palm.

### References:

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