

COMMENTARY

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In response to Fleiss et al. (2022), climate change will affect palm oil yields in Malaysia very detrimentally by 2100 and less so before that date

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Abstract

Fleiss et al. (*CABI Agri Biosci* 3:59, 2022) suggest that palm oil yield from Malaysia oil palm will not be affected substantially by increased temperature from climate change with evidence from a misinterpretation of a paper co-authored by the current author. This current comment article provides evidence that suggest that yields will be much lower in the future.

Keywords: *Elaeis guineensis*, *Ganoderma boninense*, Global warming

Comment

I was very interested to read Fleiss et al. (2022) regarding the effect on palm oil yields from climate parameters in *CABI Agriculture and Bioscience*. The paper stated that climate conditions represented causing less than 1% of variation in total yield. There was speculation that the effects of temperature increase from climate change on yield would not be substantial and cited heat stress data in Paterson et al. (2015) to make the point that only the west coast of Peninsular Malaysia would be affected. However, this region of Malaysia has numerous plantations and so the effect of heat stress there would have a highly significant effect on overall yield in Malaysia and this appears to contradict the point Fleiss et al. made.

Also, Fleiss et al. do not consider the main conclusions of Paterson et al. (2015) which indicate heavily decreased yields. The decrease in suitable climate for growing oil palm from climate change will have a very detrimental

effect on yields (Paterson 2019, 2020). This includes the increasing disease incidence of the pathogen *Ganoderma boninense* which causes basal stem rot of oil palm, known to decrease yields substantially. The decrease in suitable climate is likely to cause increasing mortality of palm oil (Paterson 2020), again decreasing overall yield. The decrease in suitable climate for growing oil palm will be for a large area of Malaysia beyond the west coast of Peninsular Malaysia.

As climate change takes hold, there may be scope for growing oil palm east of Malaysia (Paterson 2021). A large decrease of suitable climate from climate change in 2100 was reported for Peninsular Malaysia and decreases were observed before 2100. However, more suitable climate toward the east of the region was observed. Hence yields from plantations towards the east in 2100 may be higher than those for Peninsular Malaysia. Suitable climate appeared slightly reduced towards the east of Sarawak and Sabah (Borneo Malaysia), although they were much more suitable than countries towards the west. Hence, climate change will have a large negative effect on yield and palm oil production, in contrast to the impression left by Fleiss et al. that the effect of an increase

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in temperature from climate change on yields would not be substantial. It is important that this is appreciated to encourage appropriate responses from governments to control climate change and to reduce the effects on palm oil production.

I look forward to a reply from Fleiss et al.

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Declarations

Competing interests

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