

# Modelling the geographical origin of rice cultivation in Asia using the Rice Archaeological Database

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An extensive database of archaeological evidence for rice across Asia, including 400 sites from mainland East Asia, Southeast Asia and South Asia (see [1] for an earlier version) is used to compare several models for the geographical origins of rice cultivation and infer the most likely region(s) for its origins and subsequent outward diffusion.

The approach is based on regression modelling (eg. [2]) wherein goodness of fit is obtained from a quantile regression [3] of the archaeologically inferred age versus a least-cost distance from the putative origin(s). The Fast Marching method [4] is used to estimate the least-cost distances based on simple geographical features (cf. [5] and [6]) and the efficiency of different goodness of fit indices were compared using Monte Carlo simulations.

The origin region that best fits the archaeobotanical data is also compared to other hypothetical geographical origins derived from the literature, including from genetics, archaeology and historical linguistics. The model that best fits all available archaeological evidence is a dual origin model with two centres for the cultivation and dispersal of rice focused on the Middle Yangtze and the Lower Yangtze valleys (cf. [7] and [8]).

## References

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