Genetically modified crops are superior in their nitrogen use efficiency - A meta-analysis of three major cereals

Mengjiao Li ¹, Jili Xu ¹, Zhiyuan Gao ¹, Hui Tian ¹,*, Yajun Gao ¹,*,& Khalil Kariman²

¹ Key Laboratory of Plant Nutrition and Agri-environment in Northwest China, Ministry of Agriculture, College of Natural Resources and Environment, Northwest A&F University, Yangling, Shaanxi, China

² School of Agriculture and Environment, The University of Western Australia, Crawley, WA 6009, Australia

Corresponding authors:
1. Hui Tian, tianh@nwsuaf.edu.cn
2. Yajun Gao, yajungao@nwafu.edu.cn
Supplementary Table 8. Summary of results from the meta-analyses on yield, shoot biomass, shoot N utilization efficiency (SNUe), N uptake efficiency (NUpE), grain N utilization efficiency (GNUE), and partial factor productivity of N (PFPN) by using the complete dataset and by using one random observation per study.

| Parameters     | Dataset                     | $n$  | $\log_{10} R$ (%) | 95% CI               | P     |
|----------------|-----------------------------|------|-------------------|----------------------|-------|
|                |                             |      |                   | Min.                 | Max.  |       |
| **Yield**      | Complete dataset            | 870  | 0.1546            | 0.1289               | 0.1804| < 0.001 |
|                | One random observation per study | 109  | 0.1663            | 0.0832               | 0.2493| < 0.001 |
| **Shoot biomass** | Complete dataset            | 533  | 0.0960            | 0.0583               | 0.1336| < 0.001 |
|                | One random observation per study | 52   | 0.1582            | 0.0206               | 0.2957| < 0.05  |
| **SNUE**       | Complete dataset            | 107  | -0.0682           | -0.0906              | -0.0459| < 0.001 |
|                | One random observation per study | 17   | -0.0925           | -0.1630              | -0.0220| < 0.05  |
| **NUpE**       | Complete dataset            | 193  | 0.1510            | 0.1139               | 0.1882| < 0.001 |
|                | One random observation per study | 23   | 0.2430            | 0.1133               | 0.3727| < 0.001 |
| **YNUE**       | Complete dataset            | 53   | -0.0517           | -0.0890              | -0.0143| < 0.01  |
|                | One random observation per study | 11   | -0.0878           | -0.1655              | -0.01  | < 0.05  |
| **PFPN**       | Complete dataset            | 268  | 0.0905            | 0.0632               | 0.1179| < 0.001 |
|                | One random observation per study | 29   | 0.1035            | 0.0293               | 0.1776| < 0.01  |