

5 Economic, Ecological and Social Benefits of Qianjiang 661

5.1 Contribution to farmers' income

For farmers, the most immediate question is simple: does winter rapeseed add dependable value after rice? In many rice regions, the answer depends less on a spectacular rapeseed yield ceiling than on whether the crop can be planted on time, harvested with manageable cost, and sold without forcing major disruptions in the next rice cycle. A practical cultivar therefore contributes to income not only through seed output, but through lowering operational risk.

Qianjiang 661 appears to fit this income logic. The variety's reported value lies in stable field performance, compatibility with local rotation calendars, and suitability for large-scale or service-based operations. These features matter because they protect the realizable income of the farm. A cultivar that is biologically promising but too risky to manage under labor scarcity or tight seasonal timing may underperform economically even when its plot potential looks strong.

Income diversification also matters. Rotation with rapeseed spreads production across seasons and products, softening the dependence of farm cash flow on a single crop. In production systems where rice remains the main anchor crop, a competent winter rapeseed cultivar can serve as an additive profit source rather than a competitor.

5.2 Contribution to winter farmland utilization

The economic and agronomic significance of winter land use is often underestimated because it is easy to focus only on the main summer crop. Yet winter utilization is one of the clearest ways to improve the annual productivity of a field. In regions suitable for double cropping, leaving land idle after rice means accepting both a missed production opportunity and a lower annual return on land, machinery, and management capacity.

Qianjiang 661 contributes to winter utilization if it can be deployed without requiring excessively complex field preparation or labor-intensive management. In that regard, its promotion value comes from being operationally usable, not just biologically interesting. For local governments and extension services, this matters because winter land-use improvement is often a policy objective tied to food and oilseed security as well as to rural efficiency.

5.3 Ecological benefits in rotation systems

The ecological benefits of rice-rapeseed rotation do not mean the system is automatically low-input or problem-free. Rather, compared with prolonged winter fallow or overly simplified annual sequences, it can improve the ecological functioning of farmland. Crop diversification is widely linked to ecological intensification, especially where system redesign allows farms to make better use of biological processes and temporal complementarity (Bommarco et al., 2013; Gurr et al., 2016). In practical terms, winter rapeseed cover can reduce the bare-soil period, help capture residual nutrients, and contribute residues that differ from those produced by rice. These processes do not automatically guarantee higher soil fertility, but they can strengthen the ecological basis of annual production. More broadly, research on agricultural sustainability repeatedly shows that diversified systems are often more resilient than simplified ones, especially under environmental stress and management uncertainty (Pretty, 2008; Lin, 2011).

For Qianjiang 661, the ecological value is therefore inseparable from system fit. A rapeseed cultivar that fails under local conditions cannot deliver ecological benefits at scale. A cultivar that establishes reliably and is actually planted can.

5.4 Contribution to regional oilseed security

Regional oilseed security is an easily overlooked but important dimension of rotation systems. Rapeseed is not just another winter crop in China; it is one of the few large-scale edible-oil crops that can be widely integrated into existing paddy landscapes in the Yangtze region. That gives it policy significance beyond farm-level profit. China remains a major rapeseed and rapeseed-oil producer, and the stability of domestic oilseed production continues to matter in a global market marked by trade volatility and structural import dependence in vegetable oils.