



Figure 3 Grain drying line and postharvest facilities at Mashan Agricultural Service Center (Photoed by Xinfeng Ren)

In Mashan's case, the efficiency effect appears not only in machine deployment, but in service organization. The center provides specialized teams, centralized seedlings, coordinated field operations, rapid harvest dispatch, drying, storage, and simple processing. That integrated structure lowers the number of separate transactions farmers must manage by themselves. It also reduces the risk that one weak link will delay the next. For example, the value of machine transplanting rises when seedling supply is standardized; the value of harvesting rises when drying capacity is immediately available; and the value of production increases when technical guidance accompanies physical operations.

Recent studies from southern China suggest that agricultural socialized services raise technical efficiency among smallholder rice producers and can improve grain yield per unit area through pathways such as greater machinery use, more moderate scale operation, and more grain-oriented planting structure. These mechanisms are particularly relevant to Mashan, which operates through both nearby "nanny-style" services and broader regional service provision (Cai et al., 2024; Liao et al., 2025).

4.2 Enhancement of high-quality rice production quality

High-quality rice production depends on more than high yield. It requires good seedlings, orderly field development, timely harvest, sound drying, and stable postharvest handling. In recent years, rice research has increasingly emphasized this combination of yield, grain quality, process quality, and consumer quality. Tang et al. (2022) linked long-term improvements in Chinese rice production to coordinated advances in varieties and management, while Li et al. (2024) showed that drying conditions shape processing and nutritional outcomes.

Mashan's mechanized chain supports quality in several ways. Centralized seedling cultivation improves the consistency of field establishment. Mechanized transplanting makes crop growth more uniform. Technical guidance helps farmers respond more quickly to pest pressure. Combine harvesting reduces delays at maturity. Centralized drying reduces the instability of household sun drying and better protects grain at high moisture. Finally, a local processing line makes it easier to turn paddy into a recognizable rice product under local brand management.

The center's internal materials further report that the registered "Xinfeng" rice brand won the Silver Award in the 2024 "Zhejiang Good Rice" competition. Even though the branding result itself is not a scientific measure, it is meaningful in an applied production study because it suggests that mechanized service capacity is being connected to quality recognition in the marketplace. Zhejiang's official rice-brand promotion program also shows that the province evaluates rice not just on output, but on physicochemical quality, eating quality, safety indicators, and the traceability of production processes. Viewed in that light, Mashan's brand result is best understood as the downstream expression of upstream production standardization.