

interaction can significantly reduce per-unit machinery costs in rice production (Fu and Yang, 2025). The third change is quality pressure. Rice production is no longer judged only by whether grain is harvested. It is increasingly judged by whether the product can meet expectations for stable quality, safe postharvest handling, and recognizable market identity (Tang et al., 2022).

This transformation has made the traditional “each household manages every step for itself” pattern less workable. Timing is especially important in rice. Seedling preparation, transplanting, pest control, harvesting, and drying all have narrow operational windows. Once labor becomes scarce and plots remain scattered, households face higher coordination costs even before actual field work begins. It is one thing to own land; it is another to ensure that all necessary services arrive on time, in sequence, and at an acceptable quality level. That distinction explains why the transformation of rice production is not only about scaling up land, but also about reorganizing services.

2.2 Demand for socialized agricultural services in rice farming

The demand for socialized agricultural services in rice farming has grown because these services solve problems that individual households increasingly struggle to solve alone. At its core, socialized service is a way of making modern production inputs and operations available without requiring every farmer to own every machine, dryer, nursery system, diagnostic skill, and postharvest facility. In a fragmented and labor-constrained environment, that is not a marginal convenience. It is often the only realistic path to timely and standardized production.

Recent evidence makes this quite clear. Agricultural socialized services have been shown to improve the technical efficiency of smallholder rice producers, especially where farmers face production bottlenecks in machinery access and management quality (Cai et al., 2024). Other studies show that socialized services can encourage the adoption of sustainable agricultural practices, reduce fertilizer input, promote land protection, and increase land productivity when service supply matches the production needs of farmers (Huan et al., 2022; Cheng et al., 2022; Yang and Li, 2022). The logic is straightforward. When production services become specialized, providers can invest in better equipment, accumulate operational experience, and spread fixed costs across a larger service area. Farmers, in turn, can buy access to capability rather than capability itself.

In rice farming, this demand is particularly strong because production stages are tightly connected. Delays in seedling supply affect transplanting; poor field management affects pest pressure and uniformity; slow harvesting increases losses; and inadequate drying can damage the value of grain already produced. It is therefore misleading to think of rice service demand as being limited to one or two isolated operations. A farmer may begin by demanding harvesting service, but what actually matters is often a chain: seedling, transplanting, spraying, harvesting, drying, and sometimes even marketing. Once this chain perspective is adopted, the value of a coordinated service system becomes obvious.

Another reason demand has increased is the changing economics of fixed investment. High-quality dryers, transplanting equipment, nursery facilities, storage systems, and repair capacity are expensive. Their value depends on scale, but many households cannot justify such investment on their own land area. This is exactly why service-platform models are expanding. They pool demand, reduce duplication, and turn capital-intensive technology into shared regional infrastructure. In that sense, socialized services do not simply help farmers save labor. They reduce the threshold for entry into modern agriculture.

2.3 Policy support for modern agricultural service centers in Zhejiang Province

Zhejiang Province has actively formalized this service logic through policy. In 2024, the provincial government issued opinions on accelerating the construction of modern agricultural service centers, making clear that these centers should serve as important platforms for full-process agricultural services, including mechanized operation, centralized seedling raising, postharvest drying, storage, processing, technical guidance, and training. The policy direction is important because it does not treat service centers as isolated infrastructure projects. It treats them as nodes in a regional agricultural service network.