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| **Abstract / Content summary** | Rice is an important staple food for nearly half the world’s population. In Malaysia, rice and paddy cultivation kickstarted in the early 60s with small-scale farming, which later expanded by leaps and bounds before emerging as the country’s utmost important food crop. Over the decades, Malaysian rice production system has been suffering from various challenges which include extreme weather conditions, poor soil fertility and nutrient management, farmers’ lack of awareness and knowledge, hesitancy against genetically-modified planting materials and poor deployment of technology. The national rice production and consumption, simply as self-sufficiency status staggers in between 67 and 70%. The Southeast Asia region has been an important rice export trader with Thailand, Vietnam and Cambodia, among the biggest rice-producing nations. Food security, under the context of sustaining international rice trading ties, succumbs to functional fluctuations of global supply chains. During the unprecedented COVID-19 pandemic, the containment period during the outbreak led to significant disruptions to the food production chain. During the early phase of the pandemic, Malaysia experienced a volatile rice import trend, facing difficulty to secure a committed rice trading partner. In this review, we discuss the trajectory of the rice and paddy industry in Malaysia since its inception, lab-to-field translated breeding strategies adopted for rice yield improvement, governmental participation and contribution (approaches, policies and programs) and technologies in use for rice production. Further, relevant cutting-edge technologies, agricultural methods and practices catered for modern Malaysian rice farming, with opportunities to improve and enhance crop health and resilience are included. The review findings inform new rice agricultural practices, suggest research directions toward sustainable rice farming and provide a comprehensive knowledge base to accelerate innovation, technology diffusion and technology adoption for a resilient rice production system in Malaysia. Keywords: agriculture, food security, policy, sustainability, Oryza sativa, rice and paddy, Malaysia |
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