The present study was carried out at Bharatpur district of Eastern Rajasthan during Rabi 2015-16. Fennel is one of the most important seed spice crops of the country. The development of the agriculture is primarily depends on the application of the scientific technologies by making the best use of available resources. One of the major constraints of traditional fennel farming is low productivity because of non-adoption of advanced technologies. To increase the production, productivity and quality of agricultural produce, front line demonstrations were conducted at various farmer’s field. All the recommended practices were provided to the selected farmers. The data related to the cost of cultivation, production, productivity, gross return and net return were collected as per schedule and analyzed. Result of the present study revealed that the high yielding variety of fennel R.F.-143 recorded the higher yield (19.21 q/ha) as compared to farmers practice (16.50 q/ha) traditionally adopted by the farmers. The percentage increase in the yield over farmers practice 16.42 was recorded. The technology gap in terms of productivity (1.79 q/ha.) was computed. The technology index values 8.52 per cent was recorded. The result of the study indicated the gap existed in the potential yield and demonstration yield is due to soil fertility and weather conditions. By conducting front line demonstration (FLDs) of proven technologies, yield potential of fennel can be increased up to great extent. This will substantially increase the income as well as the livelihood of the farming community.