Process of paddy drying was performed by first removing its moisture content in a fluidised bed dryer and then tempering with subsequent ambient air ventilation. The variables of operating condition were inlet air temperature, tempering time. The quality of paddy in terms of head rice yield has been investigated. It shows that tempering treatment provides better the head rice yield than that with no tempering. To maintain high quality, the moist paddy should not be reduced lower than 22.5% dry basis in first stage, corresponding to lower grain temperature of 100°C, with the following tempering for 30 minutes. Under this condition, the relative head rice yield is higher than 100%. The change of relative head rice yield can be described adequately by the second order polynomial of tempering time with the coefficients formed as a linear relation of final moisture content and grain temperature after fluidized bed drying (tempering temperature).