Driven by the growth of the wind power industry during the last decade, the size of wind turbines has grown considerably and single-turbine power can nowadays reach a capacity of 8 MW with rotor diameters exceeding 160 m. Rain erosion is a considerable threat to the mechanical integrity of the blades in such equipment. To reduce expensive blade maintenance repairs and to avoid out-of-service periods, energy-absorbing blade coatings are required to protect rotor blades from rain erosion. In this work we describe the design, construction and evaluation of a laboratory setup for fast screening of up to 22 coating samples that is based on water jet slugs. Our objective is to study the effect of the parameters involved in the rain erosion process and to correlate our experimental results with data obtained with the complex and expensive whirling arm rig, which has become the industry standard method of test for rain erosion. Our results showed that water slug velocity and impact frequency are the most influential parameters in the coating erosion rate. Coating defects, often present on the specimens tested, appeared to play an important role in the erosion mechanism. Two particular experimental blade coatings were investigated using the proposed experimental design. The evaluation of the coatings under conditions where impact frequency and water hammer pressure were "matched" could not be directly correlated with the results obtained with the whirling arm rig. This result may be attributed, among other contributing factors, to the different contact modes in the two setups, i.e. the movement of coated panels against rain drops versus the movement of water drops against coated specimens. Additional factors that require further investigation are the specimen geometries and the potential significance of the presence of a thin water film on the coated surfaces. Our results endorse the complex nature of the rain erosion phenomenon, which is the result of the simultaneous combination of complex mechanisms and as such, it is difficult to reproduce at the laboratory scale.