Table S1. Discrete element model parameters for entire-plant rice.

Parameter	Value	Data Sources
Density of main stem/ (kg·m^{-3})	196	
Elastic modulus of main stem/ (Pa)	3.20×10^{8}	
Poisson's ratio of main stem	0.40	[1]
Coefficient of static friction (main stem - main stem)	0.44	
Coefficient of static friction (main stem - steel)	0.363	
Coefficient of static friction (main stem - sub stem)	0.56	[2]
Coefficient of rolling friction (main stem - main stem)	0.07	[1]
Coefficient of rolling friction (main stem - steel)	0.208	
Coefficient of rolling friction (main stem - sub stem)	0.032	[2]
Collision restitution coefficient (main stem - main stem)	0.230	[1]
Collision restitution coefficient (main stem - steel)	0.357	
Collision restitution coefficient (main stem - sub stem)	0.440-	[2]
Normal stiffness coefficient of main stem/ (N/m)	1.516×10^{12}	
Tangential stiffness coefficient of main stem/ (N/m)	1.516×10^{12}	
Critical normal stress of main stem/(Pa)	$1.275\ 10^{11}$	[3]
Critical tangential stress of main stem/(Pa)	$1.275\ 10^{11}$	
Bonding radius of main stem/(mm)	4.4	
Density of sub stem/(kg m^{3})	181	
Elastic modulus of sub stem/(Pa)	1.50×10^{8}	
Poisson's ratio of sub stem	0.4	
Coefficient of static friction (sub stem - sub stem)	0.75	
Coefficient of static friction (sub stem - steel)	0.55	[2]
Coefficient of rolling friction (sub stem - sub stem)	0.046	
Coefficient of rolling friction (sub stem - steel)	0.0035	
Collision restitution coefficient (sub stem - sub stem)	0.320	
Collision restitution coefficient (sub stem - steel)	0.355	
Normal stiffness coefficient of sub stem/ (N/m)	1.5×10^{10}	
Tangential stiffness coefficient of sub stem/ (N/m)	1.0×10^{10}	
Critical normal stress of sub stem/(Pa)	5.0×10^{8}	[3]
Critical tangential stress of sub stem/(Pa)	5.0×10^{8}	
Bonding radius of sub stem/(mm)	0.7	
Bonding radius of rice rachis/(mm)	0.35	
Density of rice grain/(kg m^{3})	1150	[4]
Elastic modulus of rice grain/(MPa)	3707	[2]
Poisson's ratio of rice grain	0.25	[5]
Coefficient of static friction (rice grain - rice grain)	0.39	
Coefficient of static friction (rice grain - steel)	0.50	
Coefficient of static friction (rice grain - main stem)	0.65	
Coefficient of static friction (rice grain - sub stem)	0.60	
Coefficient of rolling friction (rice grain - rice grain)	0.015	[2]
Coefficient of rolling friction (rice grain - steel)	0.010	
Coefficient of rolling friction (rice grain - main stem)	0.020	
Coefficient of rolling friction (rice grain - sub stem)	0.020	
Collision restitution coefficient (rice grain - rice grain)	0.42	
Collision restitution coefficient (rice grain - steel)	0.57	[5]
Collision restitution coefficient (rice grain - main stem)	0.395	[2]
Collision restitution coefficient (rice grain - sub stem)	0.420	

References

1. Jia, H.; Deng, J.; Deng, Y.; Chen, T.; Wang, G.; Sun, Z.; Guo, H. Contact Parameter Analysis and Calibration in Discrete Element Simulation of Rice Straw. *International Journal of Agricultural and Biological Engineering* **2021**, *14*, 72–81, doi:10.25165/ijabe.v14i4.6435.
2. Xu, C.; Xu, F.; Tang, H.; Wang, J. Determination of Characteristics and Establishment of Discrete Element Model for Whole Rice Plant. *Agronomy* **2023**, *13*, 2098, doi:10.3390/agronomy13082098.
3. Tang, H.; Xu, C.; Zhao, J.; Wang, J. Stripping Mechanism and Loss Characteristics of a Stripping-Prior-to-Cutting Header for Rice Harvesting Based on CFD-DEM Simulations and Bench Experiments. *Biosyst Eng* **2023**, *229*, 116–136, doi:10.1016/j.biosystemseng.2023.03.023.
4. Massah, J.; Khazaei, J. Simultaneous Measurement of Rice Grain Friction Coefficient and Angle of Repose Using Rotating Cylinders. *J Appl Bot Food Qual* **2022**, 60-66 Pages, doi:10.5073/JABFQ.2022.095.008.
5. Wang, J.; Xu, C.; Xu, Y.; Wang, Z.; Qi, X.; Wang, J.; Zhou, W.; Tang, H.; Wang, Q. Influencing Factors Analysis and Simulation Calibration of Restitution Coefficient of Rice Grain. *Applied Sciences* **2021**, *11*, 5884, doi:10.3390/app11135884.