

Supplementary Table S3. Table of Morphology characteristics of *Z. bungeanum*, *Z. armatum* and *Z. piperitum*.

Species	<i>Z.bungeanum</i>	<i>Z.armatum</i>	<i>Z.piperitum</i>
Type and height	Deciduous shrub or tree height 3-7m	Evergreen shrub or tree height 3-5m	Deciduous shrub height 3-5m
Prickle distribution	Stem and branch	Stem and branch	Stingless
Leaf	Oppositifolious,5-13 leaflets oval or lanceolate obsolete leaf wing serrated leaf margin	Oppositifolious,3-9 leaflets lanceolate usually apparent leaf wing obsolete serrated leaf margin	Oppositifolious,11-17 leaflets Lanceolate Leaf margins obtuse serrate
Flower	Unisexual flower panicle florescence:March to May	Unisexual flower,panicle florescence:April to May	Unisexual flower, Cymose panicles terminal florescence:April
Fruit	Red fruit for mature claret-colored fruit for mature fructescence: August	Green fruit for immature Red fruit for mature fructescence: September	Red fruit for mature fructescence: September to October
Flavour	Apparent aroma and spicy	Aromatic and pungent	Intensively aroma