

Table S1-1 Surveys of *Rosa* resources across Chinese regions.

| Region                  | Species  | Research contents   | References |
|-------------------------|--|---|------------|
| Northwest Hebei, China  | <i>R. davurica</i> , <i>R. sweginzowii</i> , <i>R. bella</i> , <i>R. acicularis</i> var. <i>glandulosa</i> , <i>R. xanthina</i>                      | Field survey and morphological characterization of <i>Rosa</i> species, assessment of resource distribution, and evaluation of economic reserves.   | [1]        |
| Eastern Liaoning, China | <i>R. xanthina</i> , <i>R. rugosa</i> , <i>R. maximowicziana</i> , <i>R. davurica</i> , <i>R. davurica</i> var. <i>ellipsodea</i>                    | Resource survey of major <i>Rosa</i> species, documenting species distribution, characteristics, and potential for economic utilization   | [2]        |
| Northeast Hebei, China  | <i>R. davurica</i> , <i>R. bella</i> , <i>R. acicularis</i> , <i>R. multiflora</i> , <i>R. xanthina</i> , <i>R. sweginzowii</i>                      | Resource survey of wild <i>Rosa</i> species in the Northeast Hebei mountain area, documenting their distribution and analyzing the chemical composition of their hips.  | [3]        |
| Gannan, China           | <i>R. davidii</i> , <i>R. sweginzowii</i> , <i>R. moyesii</i> , <i>R. hugonis</i> , <i>R. omeiensis</i> , <i>R. setipoda</i> , <i>R. willmottiae</i> | Field survey and ecological assessment of wild <i>Rosa</i> species across different altitudes and habitats in the Gannan Plateau, including canyons, forests, and grasslands, documenting species diversity and distribution. | [4]        |
| Gansu, China            | <i>R. roxburghii</i> , <i>R. davidii</i> et al. 32 species and 10 varieties/deformation  | Field survey and preliminary identification of <i>Rosa</i> species in Gansu Province, documenting species diversity, distribution, and potential uses   | [5]        |
| Anhui, China            | <i>R. xanthina</i> f. <i>normalis</i> , <i>R. rugosa</i> et al.  | Field survey and quantification of <i>Rosa</i> species, with assessment of biological traits, economic potential, and evaluation of current status and uses   | [6,7]      |
| Shandong, China         | <i>R. multiflora</i> , <i>R. multiflora</i> var. <i>cathayensis</i> et al. 9 species, 7 varieties and 1 deformation                                  | Field survey of <i>Rosa</i> species, evaluating their ornamental and landscape potential based on their distribution and morphological characteristics.   | [8]        |
| Sichuan, China          | 27 species, varieties and deformation  | Field survey of the types and distribution environment of Rosaceae resources in the Jiuding Mountain Area.  | [9]        |
| Zhejiang, China         | <i>R. roxburghii</i> , <i>R. cymosa</i> et al. 8 species, 4 varieties  | Ecological survey of <i>Rosa</i> species in Qingtian County, documenting their distribution and prevailing ecological conditions  | [10]       |
| Sichuan, China          | 40 species, 5 varieties  | Field survey of <i>Rosa</i> species in the Panxi region, documenting species diversity and distribution, with assessment of potential uses.   | [11]       |
| Tibet, China            | <i>R. omeiensis</i> , <i>R. tibetica</i> et al. 4 species, 1 deformation   | Floristic survey Rosaceae species in the Sejila Mountains, documenting species diversity and distribution conditions.   | [12]       |
| Xinjiang, China         | 14 species   | Field study survey of 14 wild <i>Rosa</i> species, quantifying their distribution and habitat factors.  | [13]       |
| Guangxi, China          | 14 species, 4 varieties  | Field survey of wild <i>Rosa</i> species, with assessment of potential applications in rose breeding.   | [14]       |
| Guizhou, China          | 42 species (Including following species)   | Field survey of <i>Rosa</i> species, documenting species distribution, with assessment of current uses.   | [15,16]    |
| Gansu, China            | 4 species  | Field survey of <i>Rosa</i> species in the Qilian Mountain Protected Area, with assessment of cutting propagation methods.  | [17]       |
| Taiwan                  | <i>R. transmorrisonensis</i> , <i>R. pricei</i> et al. 13 species  | Revising the classification of Taiwanese <i>Rosa</i> species based on extensive field observations and detailed morphological comparisons.  | [18]       |

Table S1-2 Focused research on specific *Rosa* species in China.

| Species   | Research contents   | References |
|---|---|------------|
| <i>R. beggeriana</i>  | Research and utilization of <i>R. beggeriana</i> in Cold resistance breeding of rose.   | [19]       |
|   | Supplementary information on the resources of <i>R. beggeriana</i> in Xinjiang, along with analysis of its phenotypic traits and genetic diversity. | [20]       |
| <i>R. laxa</i>  | Genetic diversity analysis of phenotypic traits in <i>R. laxa</i> in the Tianshan Mountains of Xinjiang.  | [21]       |
| <i>R. persica</i>   | Prediction of potential suitable areas and study of endangerment mechanisms.  | [22]       |
|   | Genetic diversity assessment of <i>R. persica</i>   | [23]       |
|   | Study of phenotypic variation and diversity in populations of <i>R. persica</i> .   | [24]       |
| <i>R. gigantea</i>  | Phenotypic diversity analysis of <i>R. gigantea</i> population in Liangwang Mountain.   | [25]       |
|   | SSR analysis of genetic diversity in the <i>R. gigantea</i> population.   | [26]       |
| <i>R. omeiensis, R. sericea</i>                                     | SSR analysis of population genetic diversity.   | [27,28]    |
| <i>R. sericea</i>   | Study of macromorphological and niche changes.  | [29]       |
|   | Study of the population genetic structure of <i>R. sericea</i> complex.   | [30]       |
|   | Phylogeographic study of <i>R. sericea</i> complex.   | [31,32]    |
| <i>R. brunonii</i>  | Analysis of phenotypic diversity in natural populations of <i>R. brunonii</i> .   | [33]       |
| <i>R. banksiae</i>  | Analysis of phenotypic diversity in natural populations of <i>R. banksiae</i> .   | [34]       |
| <i>R. soulieana</i>   | Study of genetic differentiation and the formation of geographic distribution patterns of <i>R. soulieana</i> .                                     | [35]       |
|   | Taxonomic system and phenotypic variation study of <i>R. soulieana</i> .  | [36]       |
|   | Analysis of phenotypic diversity in natural populations of <i>R. soulieana</i> .  | [37]       |
| <i>R. praelucens</i>  | Survey of distribution and study of population dynamics of <i>R. praelucens</i> .   | [38]       |
|   | Study of systematic position and hybrid origin of <i>R. praelucens</i> .  | [39]       |
| <i>R. chinensis</i> var. <i>Spontanea</i> and <i>R. lucidissima</i> | Study of systematic relationships and genetic diversity of <i>R. chinensis</i> var. <i>Spontanea</i> and <i>R. lucidissima</i> .                    | [40,41]    |
| <i>R. rugosa</i>  | Survey of <i>R. rugosa</i> genetic resources in China and study of variety classification.  | [42]       |
|   | Survey of wild <i>Rosa</i> resources and cultivation.   | [43]       |
|   | Evaluation of wild <i>Rosa</i> resources and study of their phylogenetic relationships with cultivated varieties.                                   | [44]       |
|   | Analysis of genetic diversity and molecular phylogeography of endangered wild <i>R. rugosa</i> in China.  | [45]       |
|   | Historical investigation of wild population dynamics, variety origins, and domestication pathways.  | [46]       |

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