**Table S1.** Chemical composition of peanut vine, wheat bran, and corn meal used for co-silage in this study (%, as DM basis)

| Items | DM | CP | CF | NDF | ADF | HC | CEL | ADL | Ash |
|---|---|---|---|---|---|---|---|---|---|
| PV | 93.83 | 10.70 | 25.41 | 37.29 | 28.17 | 9.12 | 21.02 | 6.09 | 12.60 |
| WB | 87.06 | 18.41 | 9.79 | 46.63 | 11.92 | 34.71 | 11.27 | 0.02 | 6.71 |
| CM | 87.73 | 10.41 | 1.33 | 8.71 | 2.42 | 6.28 | 2.13 | 0.05 | 2.42 |

[1] PV:peanut vine; WB: wheat bran; CM: corn meal; DM: dry matter; CP: crude protein; CF: crude fiber; NDF: neutral detergent fiber; ADF: acid detergent fiber; HC: Hemicellulose; CEL: Cellulose; ADL: acid detergent lignin.

**Table S2.** Counts of lactic acid bacteria and yeasts in TTX, DBN, and JNK inoculants, respectively. (CFU/g)

| Inoculant | Lactic acid bacteria | Yeasts |
|---|---|---|
| TTX | $3.8\times10^{10}$ | ND |
| DBN | $1.26\times10^{12}$ | ND |
| JNK | $2.15\times10^{10}$ | $2.49\times10^{11}$ |

**Table S3.** Contents of total nitrogen (TN), true protein nitrogen (TPN), and nonprotein nitrogen (NPN) of peanut vine, wheat bran, and corn meal, respectively.

| Items | TN (g/kg) | TPN (g/kg TN) | NPN (g/kg TN) |
|---|---|---|---|
| PV | 16.06 | 698.01 | 301.99 |
| WB | 25.65 | 744.64 | 255.36 |
| CM | 14.60 | 821.23 | 178.77 |

[1] PV:peanut vine; WB: wheat bran; CM: corn meal; TN: total nitrogen; TPN: true-protein nitrogen; NPN: nonprotein nitrogen.

**Table S4.** General information of sequence bacteriome and mycobiome

| Inoculation | substrate | Reads | OTUs | Coverage |
|---|---|---|---|---|
| Bacteriome | | | | |
| CON | WB | 74335 | 133 | 0.9996 |
| | CM | 77561 | 109 | 0.9996 |
| DBN | WB | 70506 | 87 | 0.9997 |
| | CM | 76822 | 61 | 0.9997 |
| TTX | WB | 73897 | 122 | 0.9995 |
| | CM | 71978 | 114 | 0.9995 |
| JNK | WB | 82714 | 128 | 0.9996 |
| | CM | 75520 | 94 | 0.9997 |
| Mycobiome | | | | |
| CON | WB | 93388 | 210 | 0.9998 |
| | CM | 97118 | 176 | 0.9999 |
| DBN | WB | 98663 | 189 | 0.9998 |
| | CM | 101365 | 222 | 0.9998 |
| TTX | WB | 97392 | 199 | 0.9998 |
| | CM | 91846 | 158 | 0.9999 |
| JNK | WB | 45294 | 114 | 0.9997 |
| | CM | 44527 | 140 | 0.9996 |

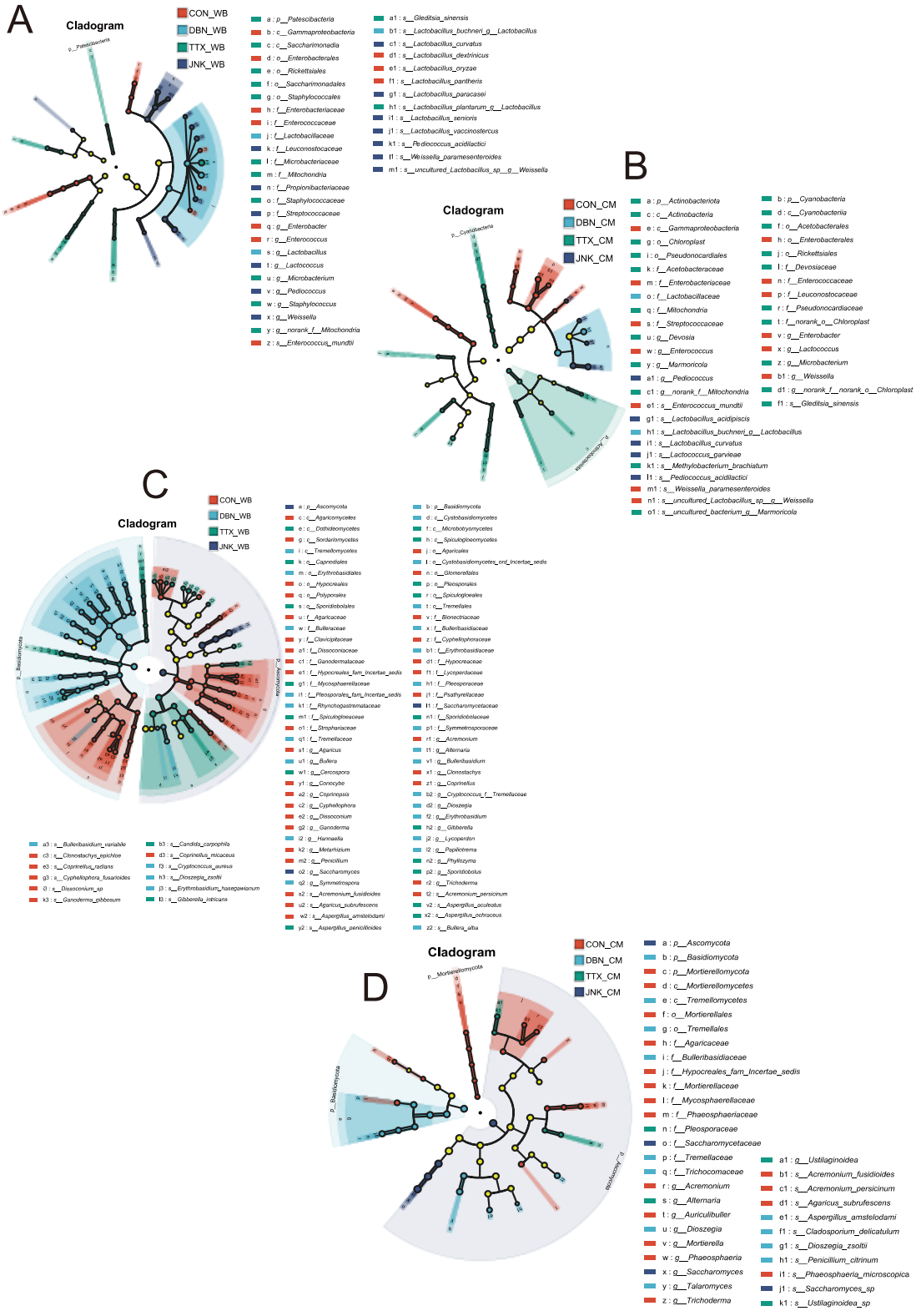


**Figure S1**. The LEfSe analysis of bacteriome and mycobiome for PV-WB silage (A and C) and PV-CM silage (B and D).