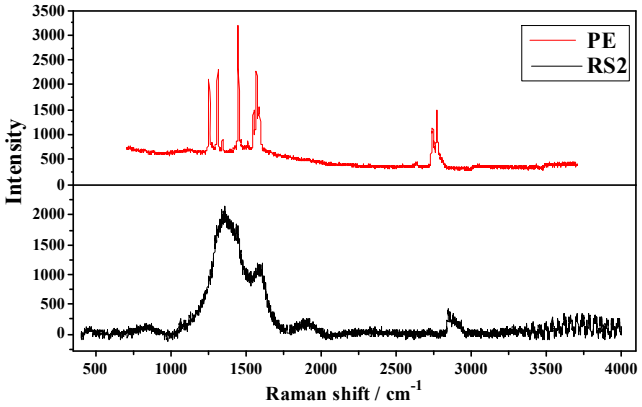
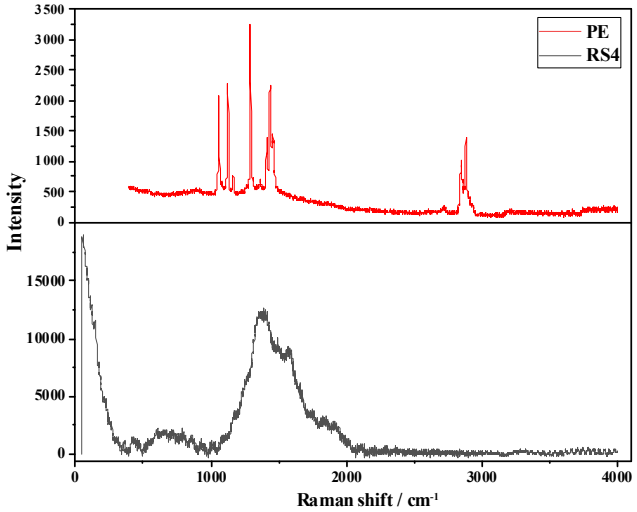
Supplementary Material

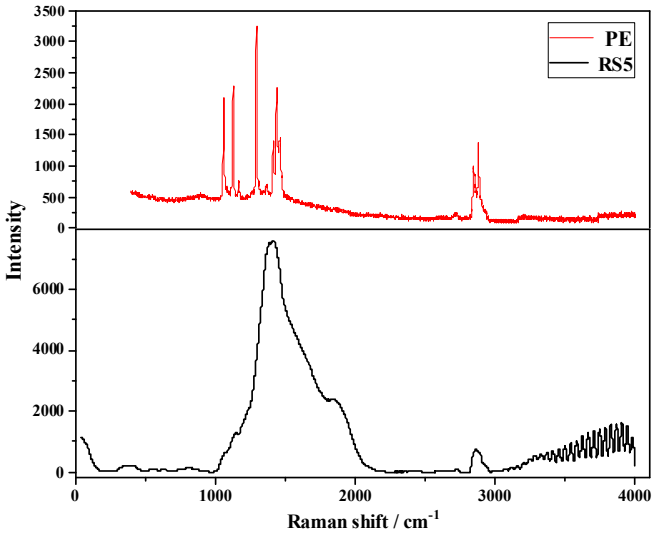
Figure S1. Raman spectra of all tested samples



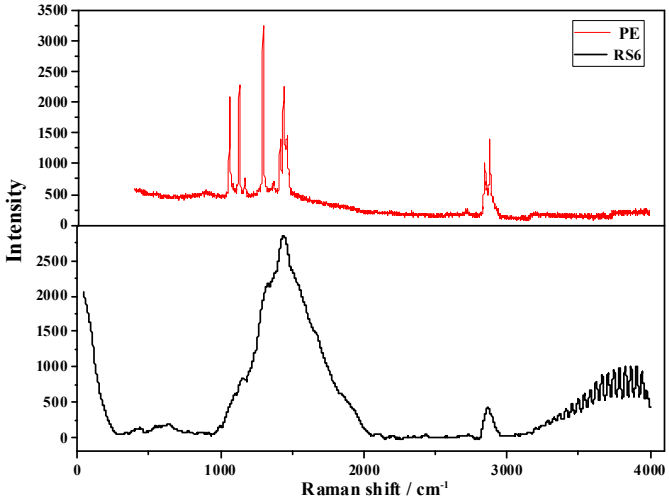
Sample RS2 was identified as PE



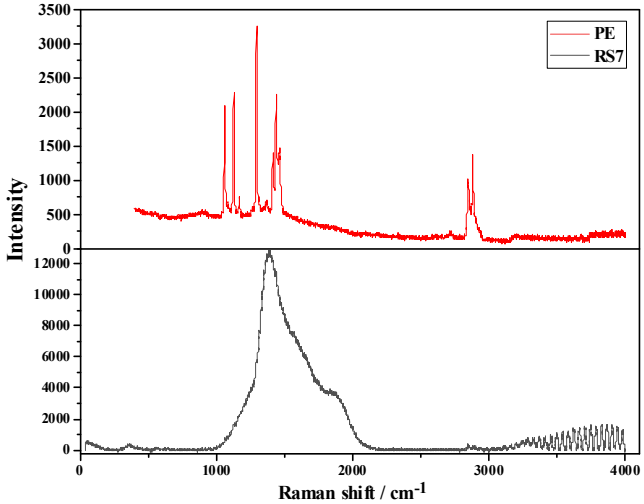
Sample RS4 was identified as PE



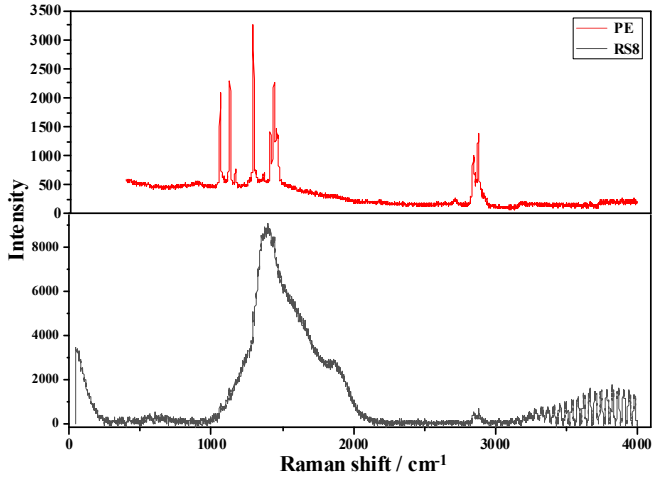
Sample RS5 was identified as PE



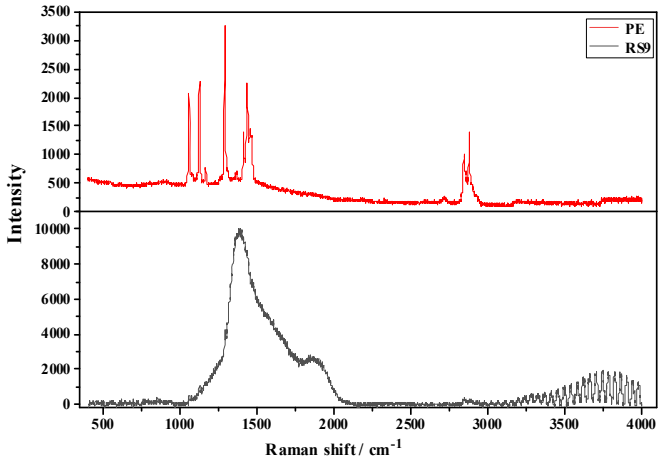
Sample RS6 was identified as PE



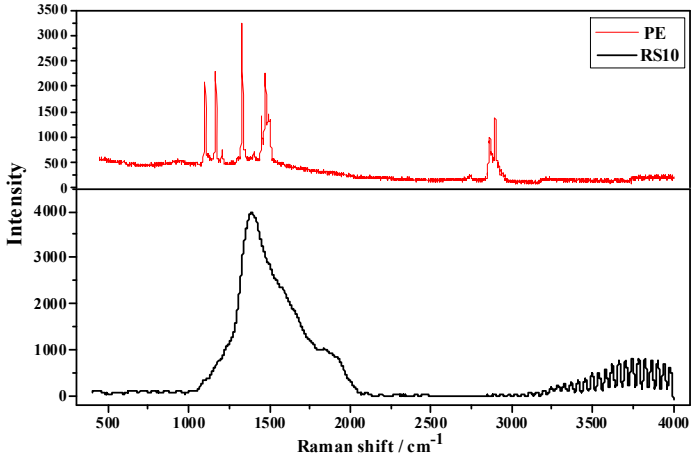
Sample RS7 was identified as PE



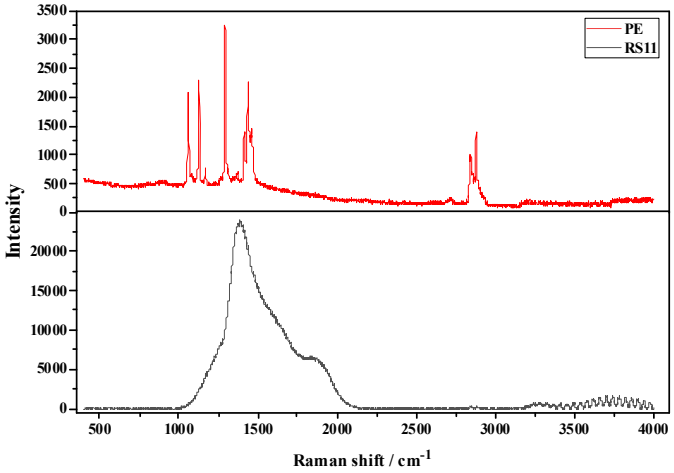
Sample RS8 was identified as PE



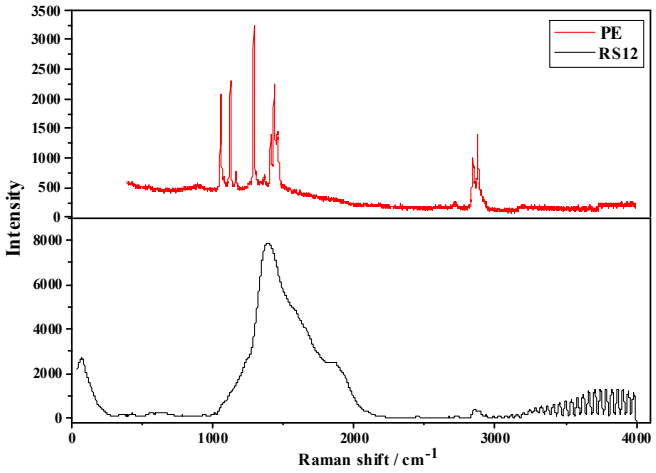
Sample RS9 was identified as PE



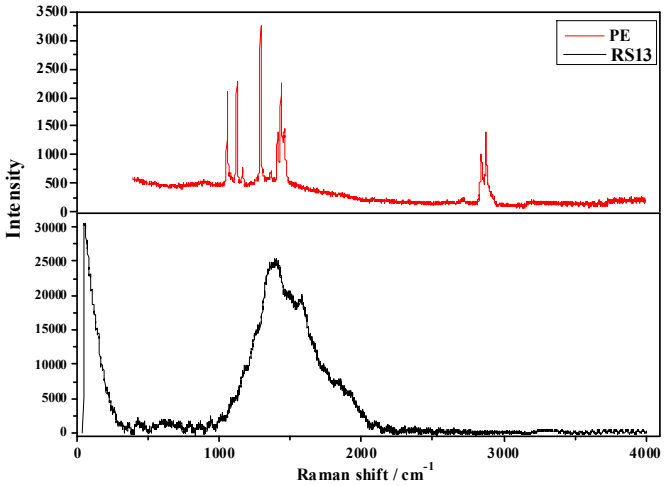
Sample RS10 was identified as PE



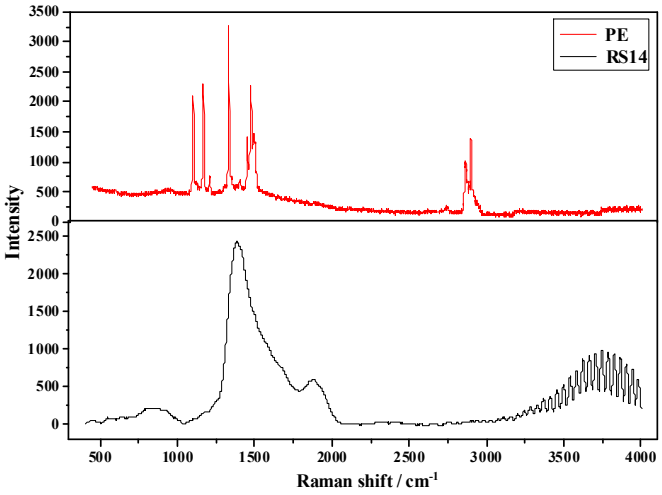
Sample RS11 was identified as PE



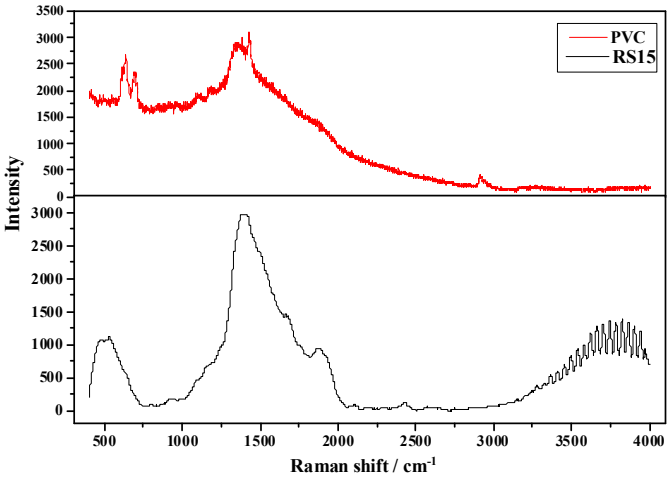
Sample RS12 was identified as PE



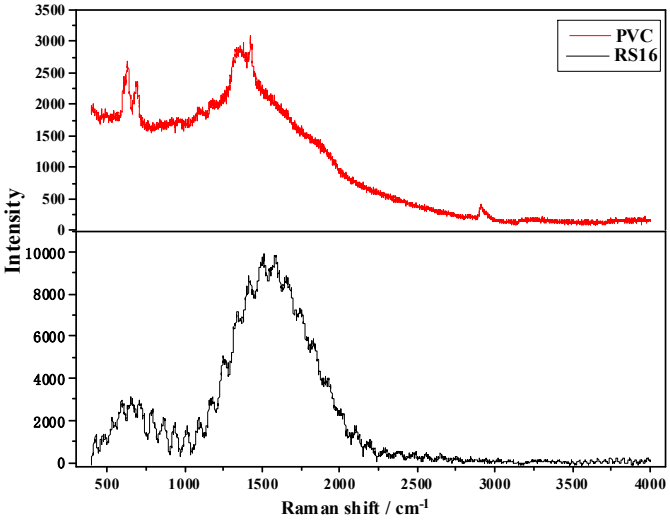
Sample RS13 was identified as PE



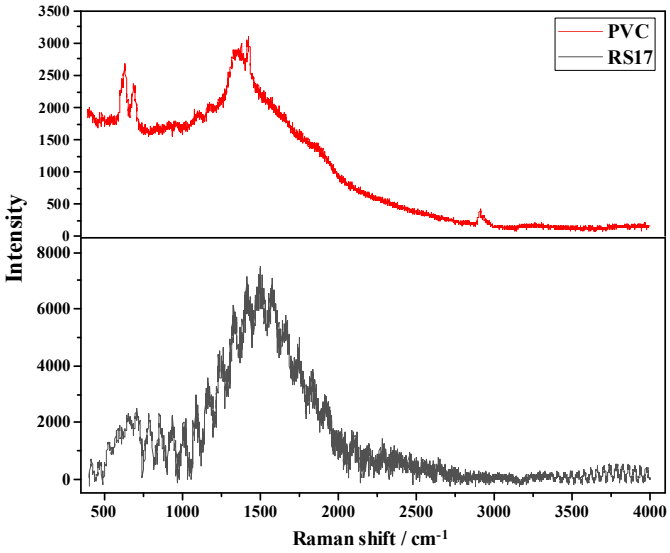
Sample RS14 was identified as PE



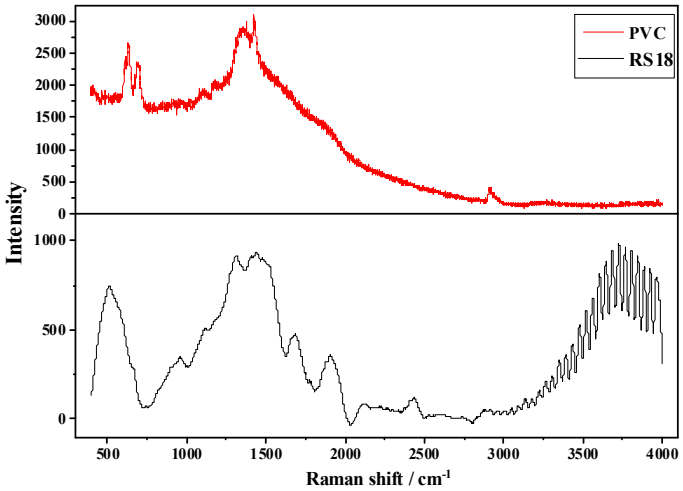
Sample RS15 was identified as PVC



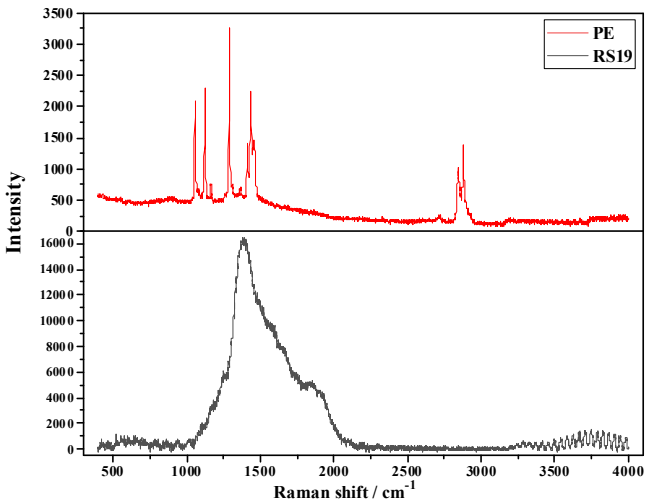
Sample RS16 was identified as PVC



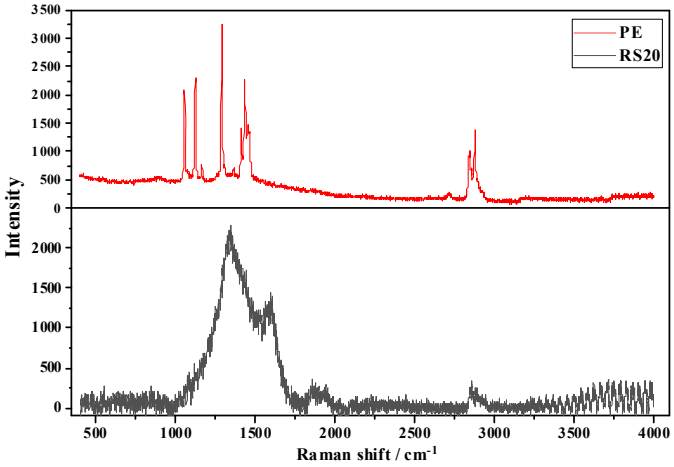
Sample RS17 was identified as PVC



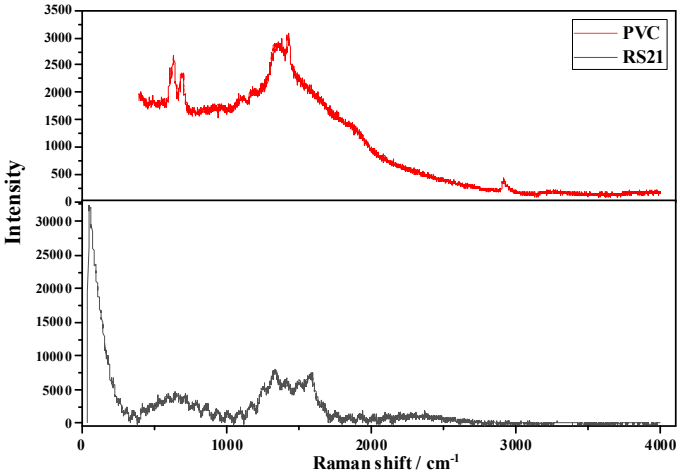
Sample RS18 was identified as PVC



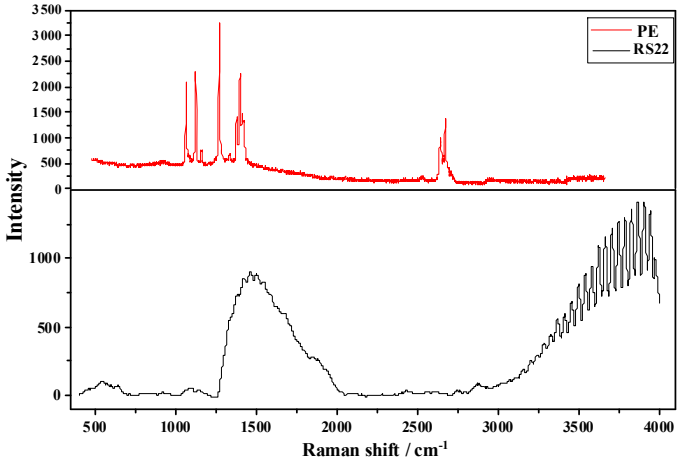
Sample RS19 was identified as PVC



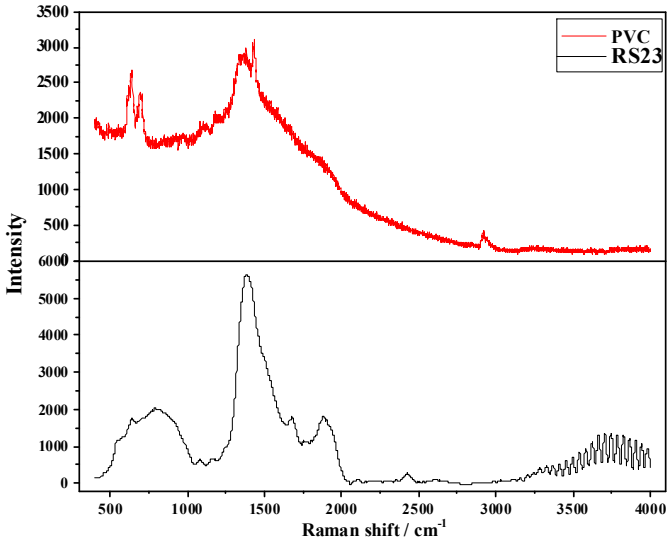
Sample RS20 was identified as PVC



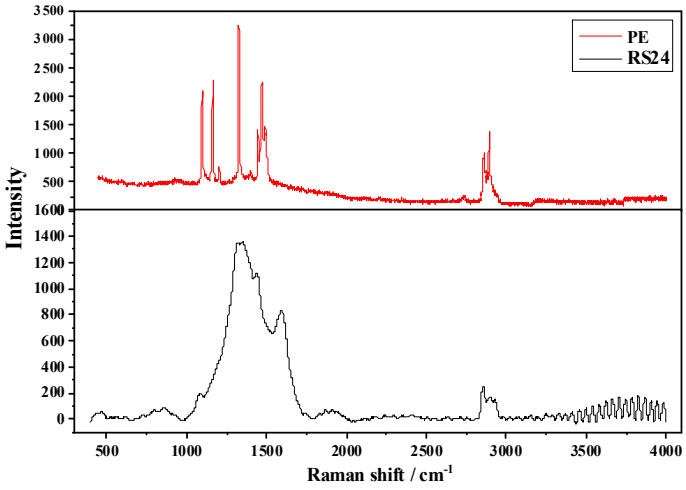
Sample RS21 was identified as PVC



Sample RS22 was identified as PVC



Sample RS23 was identified as PVC



Sample RS24 was identified as PE

Table S1. The questionnaire information about sampling sites

Sampling sites	Latitude and longitude	Annual precipitation	Planting pattern	Soil texture	Irrigation method	Crop type	Mulching time (years)	Mulch film amount (kg/year)	Abundance of PF(particles· kg-1)
S1	104.3937, 29.3846	1108.8	Garden	Clay	Without irrigation	Corn	10-20years	2.5	500
S2	104.5278, 29.3219	1108.8	Garden	Loam	Furrow irrigation	Corn	10-21years	12	167
S3	104.4233, 29.3742	1108.8	Garden	Loam	Without irrigation	Vegetable	10-22years	7	1158
S4	104.4525, 29.2551	1108.8	Garden	Sandy soil	Without irrigation	Peanut	More than 20 years	7.2	350
S5	104.2842, 28.9213	1100	Garden	Sandy soil	Without irrigation	Peanut	More than 21 years	5.5	183
S6	104.2842, 28.9213	1100	Garden	Sandy soil	Without irrigation	Vegetable	More than 22 years	535	158
S7	104.2928, 28.9821	1100	Garden	Sandy soil	Furrow irrigation	Vegetable	10-20years	400	217
S8	104.2751, 29.1925	1100	Garden	Sandy soil	Without irrigation	Corn	More than 20 years	4	300
S9	105.7222, 28.8570	1154.9	Garden and field	Sandy soil	Without irrigation	Vegetable	5-10years	42	108
S10	105.7252, 28.8312	1154.9	Field	Sandy soil	Without irrigation	Vegetable	10-20years	30	50
S11	104.1085, 31.0057	980	Field	Loam	Furrow irrigation	Vegetable	10-20years	440	192

Sampling sites	Latitude and longitude	Annual precipitation	Planting pattern	Soil texture	Irrigation method	Crop type	Mulching time (years)	Mulch film amount (kg/year)	Abundance of PF(particles· kg-1)
S12	104.0793, 30.9484	980	Field	Loam	Furrow irrigation	Vegetable	The following 5 years	490	267
S13	102.2577, 26.7386	1200	Field	Loam	Furrow irrigation	Tobacco	The following 5 years	75	108
S14	102.4492, 26.7420	1200	Garden and field	Loam	Furrow irrigation	Tobacco	More than 20 years	15	208
S15	104.4148, 30.9342	1100	Garden	Loam	Without irrigation	Vegetable	10-20years	1800	258
S16	104.7148, 30.6190	800	Garden	Sandy soil	Without irrigation	Vegetable	The following 5 years	2100	167
S17	106.5350, 30.6129	1010	Garden and field	Loam	Furrow irrigation	Vegetable	The following 5 years	1000	225
S18	106.5540, 30.6222	1010	Garden	Loam	Furrow irrigation	Corn	The following 5 years	0	92
S19	106.6586, 30.5989	1080	Garden	Loam	Sprinkler irrigation	Vegetable	5-10years	588	258
S20	106.6651, 30.5935	1473.5	Garden	Loam	Sprinkler irrigation	Corn	5-10years	0	208

Table S2. The differences in the abundance of PF in different sampling sites

Sampling sites	Mean value	5% significant level	1% significant level
S1	500.00	a	A
S2	166.67	b	B
S3	1158.33	c	C
S4	350.00	d	D
S5	183.33	de	DE
S6	158.33	ef	DEF
S7	216.67	ef	DEF
S8	300.00	fg	EFG
S9	108.33	gh	FG
S10	50.00	gh	GH
S11	191.67	gh	GH
S12	266.67	ghi	GHI
S13	108.33	hi	GHI
S14	208.33	i	HI
S15	258.33	i	HI
S16	166.67	i	I
S17	225.00	j	J
S18	91.67	j	J
S19	258.33	j	JK
S20	208.33	k	K

Table S3. Selection of representative samples in sampling sites

Sampling site	Representative Sample
S1	RS1
S2	RS4
S3	RS5
S4	RS16
S5	RS20
S7	RS19
S9	RS23
S10	RS21
S11	RS10、RS13
S12	RS3、RS12
S13	RS22
S14	RS24
S15	RS8、RS9
S16	RS2、RS18
S17	RS6、RS7
S18	RS11、RS17
S19	RS14
S20	RS15

File S1. The code of "forestplot" package in R ver 3.5.1.

```
library(randomForest)

library(rfPermute)
#library(rfUtilities)


getwd
setwd("C:/Users/Administrator/Desktop")
frichness = read.table("Random1.txt", header=T, row.names= 1, sep="\t")
set.seed(1234)
frichness.rfP <- rfPermute(residue~ ., data = frichness, ntree = 5000, na.action = na.omit,
nrep = 50, num.cores = 1)
imp <- data.frame(round(importance(frichness.rfP),2))# View the result
imp <- imp[order(imp$MeanDecreaseAccuracy, decreasing = TRUE), ]# Put the results in
order.
imp_data <-as.data.frame(imp[2:11,])
```