

The UNIVARIATE Procedure  
Variable: fecund

line=NS

Basic Statistical Measures			
Location		Variability	
Mean	33.37200	Std Deviation	8.94201
Median	34.40000	Variance	79.95960
Mode	.	Range	36.90000
		Interquartile Range	9.70000

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.983892	Pr < W	0.9498
Kolmogorov-Smirnov	D	0.11463	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.037842	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.21906	Pr > A-Sq	>0.2500

Quantiles (Definition 5)	
Level	Quantile
100% Max	51.8
99%	51.8
95%	47.4
90%	42.4
75% Q3	37.9
50% Median	34.4
25% Q1	28.2
10%	20.3
5%	19.3
1%	14.9
0% Min	14.9

Test for normality assumption  
The null hypothesis is that the data (the 25 fecundities) form a random sample from a normal distribution. The large P-value .9498 shows supports for the normality assumption.

The distribution is slightly skewed to the left but reasonably symmetric (see the Shapiro-Wilk test to confirm that this is not a problem)  
med-min=19.5  
max-med=17.4

Extreme Values			
Lowest		Highest	
Order	Value	Order	Value
1	14.9	21	41.7
2	19.3	22	41.8
3	20.3	23	42.4
4	22.6	24	47.4
5	23.4	25	51.8

The UNIVARIATE Procedure  
Variable: fecund

line=RS

Basic Statistical Measures			
Location		Variability	
Mean	25.25600	Std Deviation	7.77239
Median	23.60000	Variance	60.41007
Mode	20.30000	Range	31.60000
		Interquartile Range	9.00000

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.949559	Pr < W	0.2450
Kolmogorov-Smirnov	D	0.139336	Pr > D	>0.1500
Cramer-von Mises	W-Sq	0.076663	Pr > W-Sq	0.2253
Anderson-Darling	A-Sq	0.473402	Pr > A-Sq	0.2288

Quantiles (Definition 5)	
Level	Quantile
100% Max	44.4
99%	44.4
95%	38.7
90%	38.6
75% Q3	29.3
50% Median	23.6
25% Q1	20.3
10%	14.9
5%	14.8
1%	12.8
0% Min	12.8

Test for normality assumption

The null hypothesis is that the data (the 25 fecundities) form a random sample from a normal distribution. The large P-value .2450 shows supports for the normality assumption.

The distribution is somewhat skewed to the right but reasonably symmetric (see the Shapiro-Wilk test to confirm that this is not a problem)

med-min=10.8  
max-med=20.8

Extreme Values					
Lowest			Highest		
Order	Value	Freq	Order	Value	Freq
1	12.8	1	20	29.6	1
2	14.8	1	21	34.6	1
3	14.9	1	22	38.6	1
4	16.4	1	23	38.7	1
5	19.7	1	24	44.4	1

The observation 44.4 is a mild outlier. The gap from 38.7 is 5.7

The UNIVARIATE Procedure  
Variable: fecund

line=SS

Basic Statistical Measures			
Location		Variability	
Mean	23.62800	Std Deviation	9.76847
Median	22.50000	Variance	95.42293
Mode	.	Range	37.70000
		Interquartile Range	14.20000

Tests for Normality				
Test	Statistic		p Value	
Shapiro-Wilk	W	0.939562	Pr < W	0.1446
Kolmogorov-Smirnov	D	0.153393	Pr > D	0.1312
Cramer-von Mises	W-Sq	0.070113	Pr > W-Sq	>0.2500
Anderson-Darling	A-Sq	0.457935	Pr > A-Sq	0.2463

Quantiles (Definition 5)	
Level	Quantile
100% Max	48.5
99%	48.5
95%	39.0
90%	38.4
75% Q3	30.2
50% Median	22.5
25% Q1	16.0
10%	12.2
5%	11.6
1%	10.8
0% Min	10.8

Test for normality assumption  
The null hypothesis is that the data (the 25 fecundities) form a random sample from a normal distribution. The large P-value .1446 shows supports for the normality assumption.

The distribution is somewhat skewed to the right (see the Shapiro-Wilk test to confirm that this is not a problem)  
med-min=11.7  
max-med=26

Extreme Values			
Lowest		Highest	
Order	Value	Order	Value
1	10.8	21	32.9
2	11.6	22	33.4
3	12.2	23	38.4
4	12.8	24	39.0
5	14.6	25	48.5

The observation 48.5 is a mild outlier. The gap from 39.0 is 9.5

The TTEST Procedure

Variable: fecund

sample means and standard deviations

line	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
RS		25	25.2560	7.7724	1.5545	12.8000	44.4000
SS		25	23.6280	9.7685	1.9537	10.8000	48.5000
Diff (1-2)	Pooled		1.6280	8.8270	2.4967		
Diff (1-2)	Satterthwaite		1.6280		2.4967		

check for common population variance:  
 The ratio of the sample standard deviations  $7.7724/9.7685 = .7956$  is between 1/2 and 2 so the assumption of a common population variance is OK

pooled sample standard deviation

line	Method	Mean	95% CL Mean	
RS		25.2560	22.0477	28.4643
SS		23.6280	19.5958	27.6602
Diff (1-2)	Pooled	1.6280	-3.3919	6.6479
Diff (1-2)	Satterthwaite	1.6280	-3.3984	6.6544

95% confidence interval for  $\mu_{(RS)} - \mu_{(SS)}$

Method	Variances	DF	t Value	Pr >  t
Pooled	Equal	48	0.65	0.5175
Satterthwaite	Unequal	45.693	0.65	0.5176

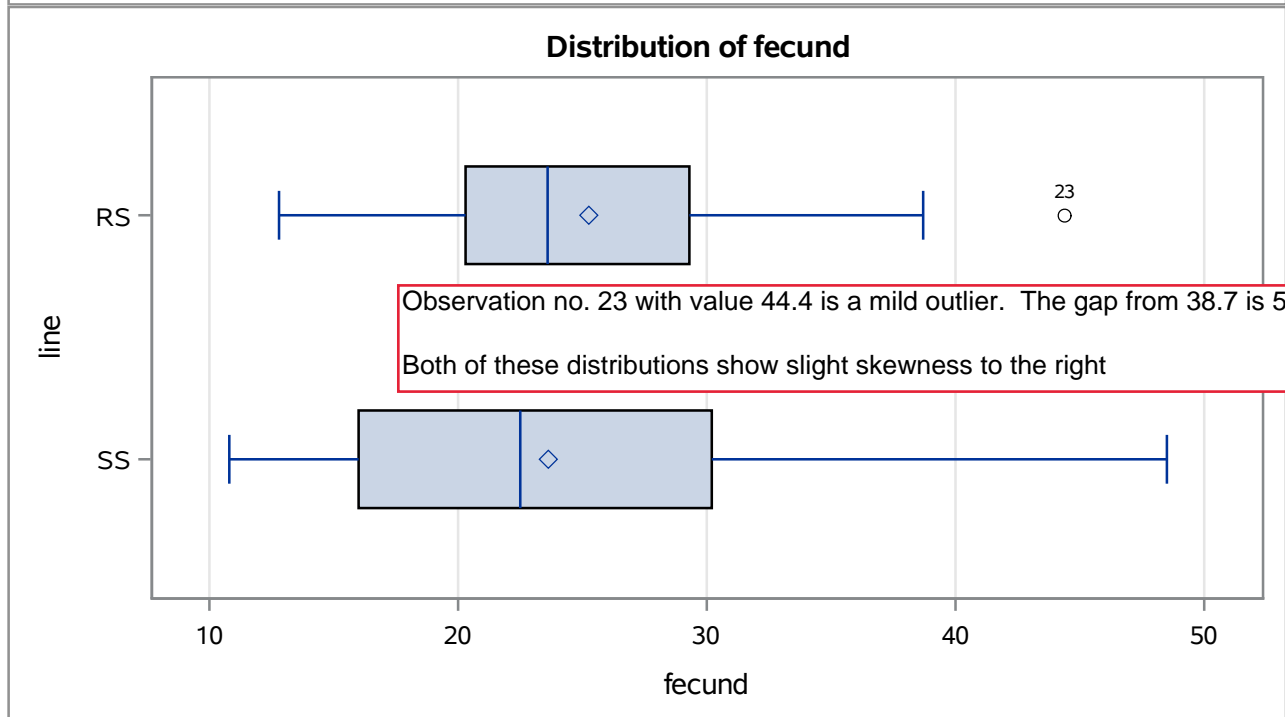
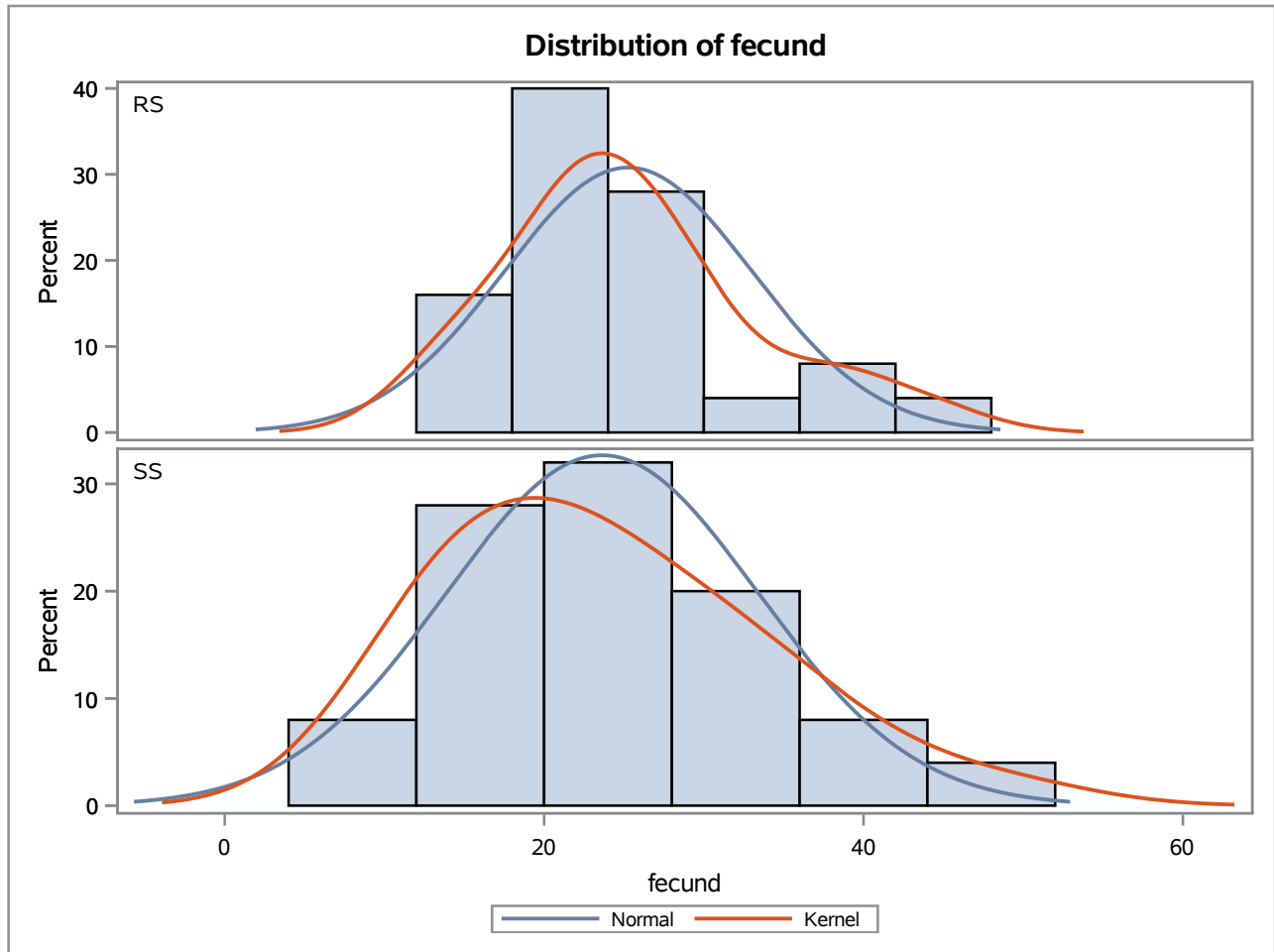
.5175 is the P-value for  $H_1: \mu_{(RS)} \neq \mu_{(SS)}$

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	24	24	1.58	0.2698

The TTEST Procedure

Variable: fecund

Histograms with smoothed histograms (fitted density curves "kernel") and fitted normal density curves for each sample.

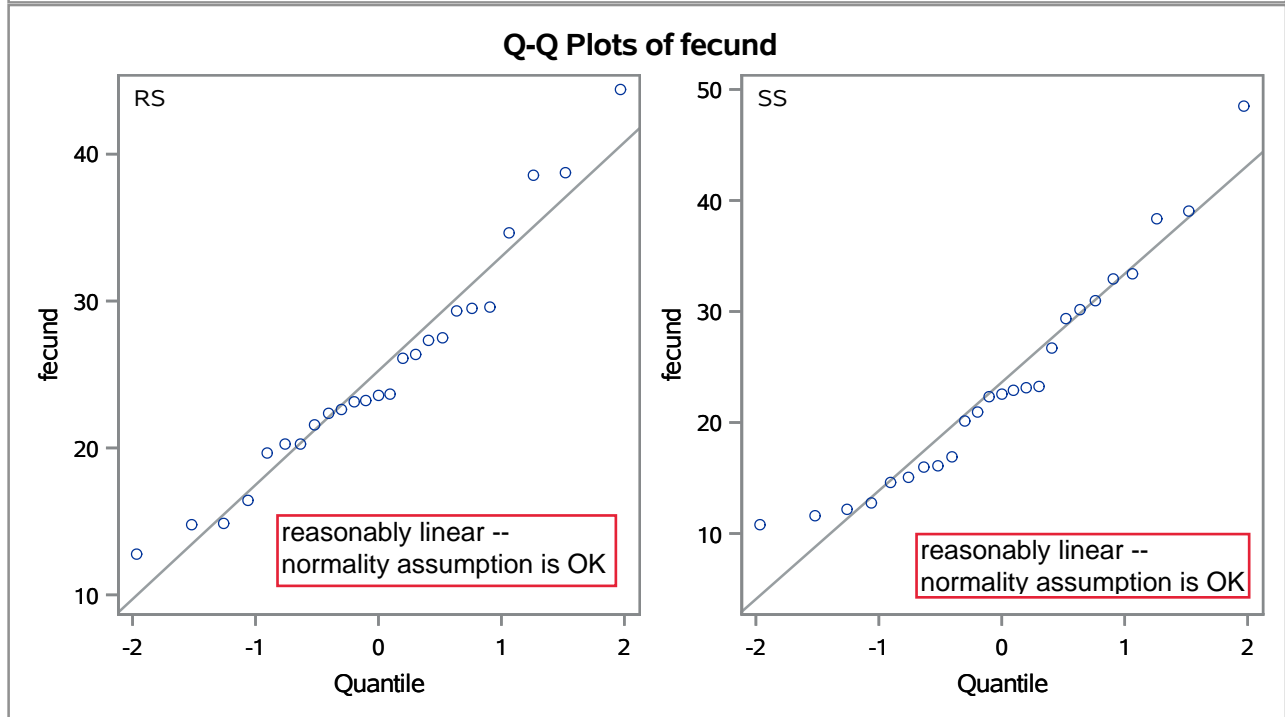
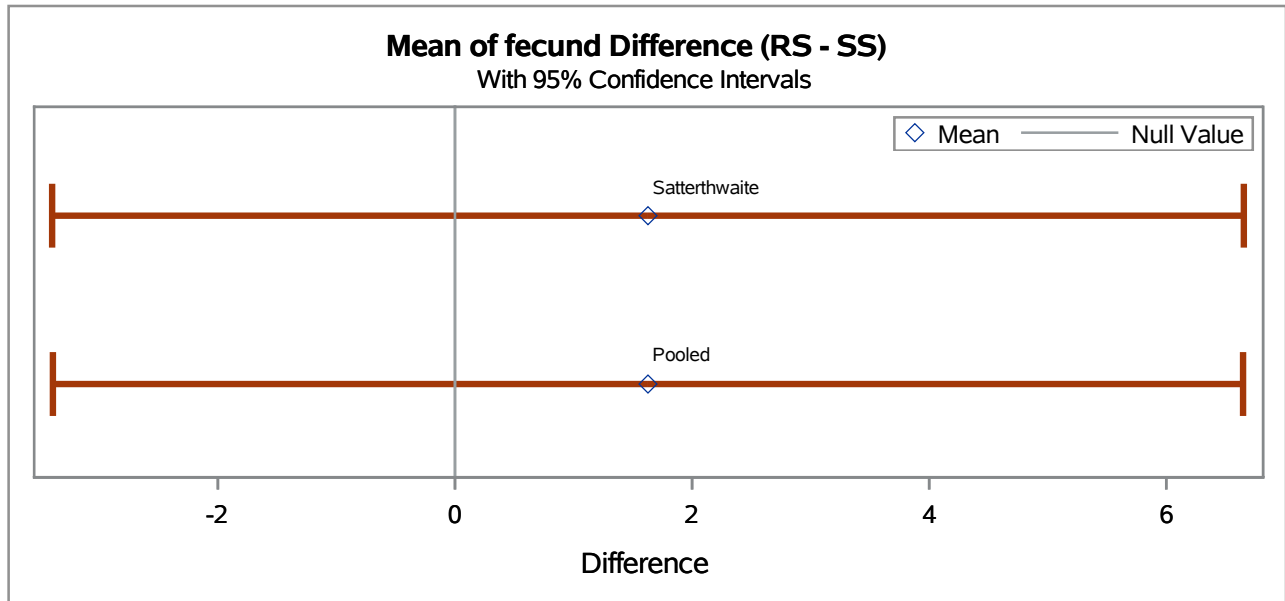


Observation no. 23 with value 44.4 is a mild outlier. The gap from 38.7 is 5.7.

Both of these distributions show slight skewness to the right

The TTEST Procedure

Variable: fecund



The TTEST Procedure

Variable: fecund

sample means and standard deviations

line2	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
NS		25	33.3720	8.9420	1.7884	14.9000	51.8000
S		50	24.4420	8.7751	1.2410	10.8000	48.5000
Diff (1-2)	Pooled		8.9300	8.8303	2.1630		
Diff (1-2)	Satterthwaite		8.9300		2.1768		

check for common population variance:

The ratio of the sample standard deviations  $8.9420/8.7751 = 1.0190$  is between 1/2 and 2 so the assumption of a common population variance is OK

pooled sample standard deviation

line2	Method	Mean	95% CL Mean	
NS		33.3720	29.6809	37.0631
S		24.4420	21.9481	26.9359
Diff (1-2)	Pooled	8.9300	4.6192	13.2408
Diff (1-2)	Satterthwaite	8.9300	4.5516	13.3084

95% confidence interval for  $\mu_{(NS)} - \mu_{(S)}$

Method	Variances	DF	t Value	Pr >  t
Pooled	Equal	73	4.13	<.0001
Satterthwaite	Unequal	47.305	4.10	0.0002

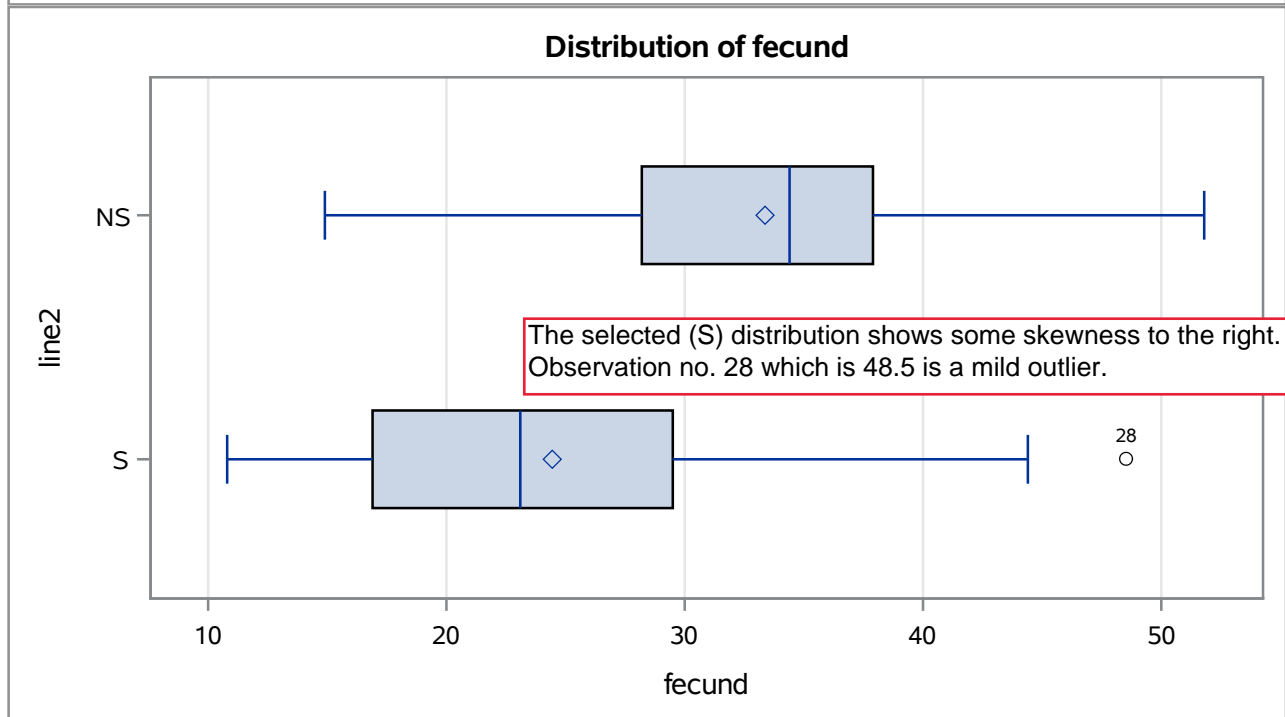
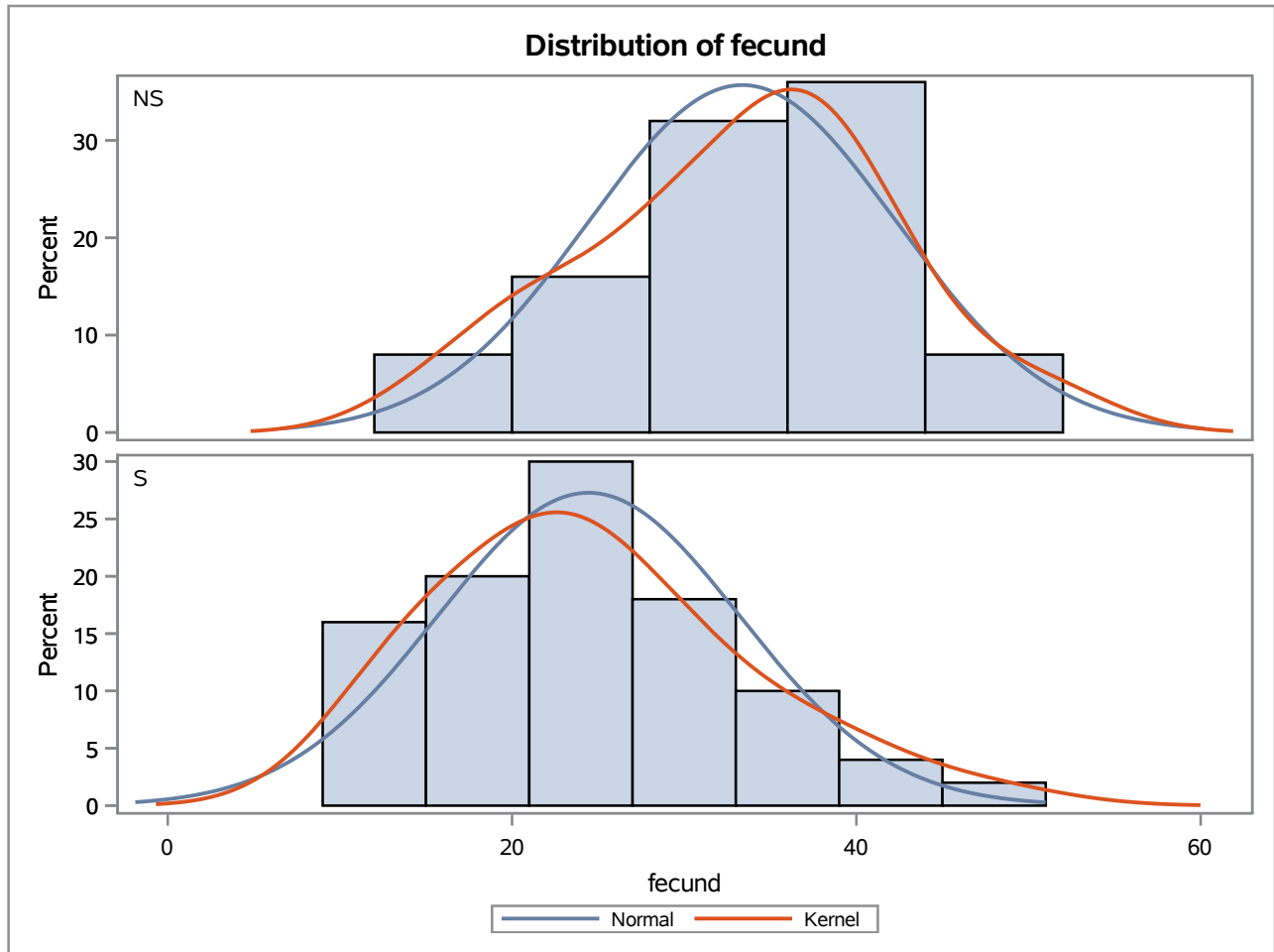
The P-value for  $H_1: \mu_{(NS)} \neq \mu_{(S)}$  is < .0001

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	24	49	1.04	0.8833

The TTEST Procedure

Variable: fecund

Histograms with smoothed histograms (fitted density curves "kernel") and fitted normal density curves for each sample.





The TTEST Procedure

Variable: fecund

