LECTURE SCHEDULE 11

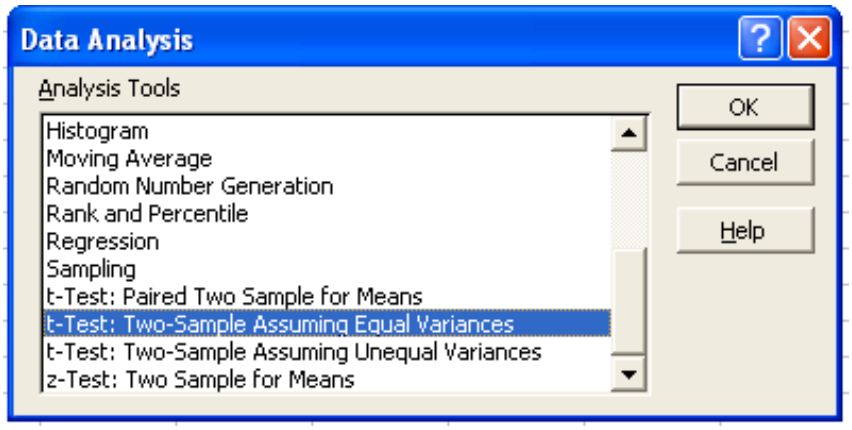
t-test for two samples and ANOVA with One-way classification

t-test for two samples

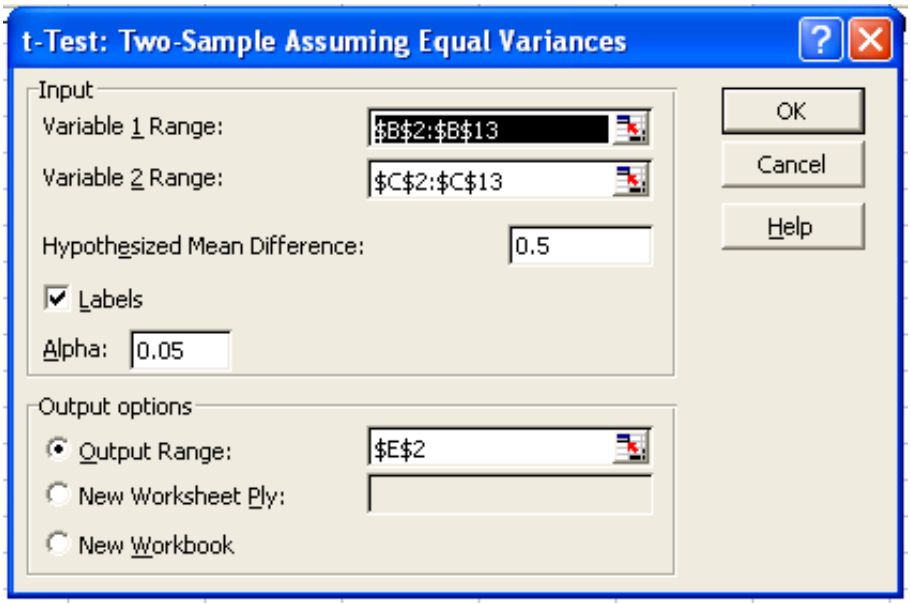
- **t-test for two samples assuming equal variances:**
- Example: Perform t-test for two samples assuming equal variances for yield of food in kg/ha in Kharif and Rabi season from 1996-97 to 2006-07.
- The data is entered in Excel sheet as shown below:

	A	B	C	D	E	F	G	H	I	J	K
1	Perform t-test for two samples assuming equal varinces: yield of food in kg/ha in Kharif and Rabi season from 1996-97 to 20										
2	Year	Kharif	Rabi								
3	96-97	89	104								
4	97-98	94	109								
5	98-99	94	116								
6	99-2000	78	105								
7	2000-01	93	120								
8	2001-2002	95	119								
9	2002-2003	92	130								
10	2003-2004	106	131								
11	2004-2005	104	134								
12	2005-2006	105	142								
13	2006-2007	110	145								

- Choose t-Test: Two-Samples assuming Equal Variances in the Data Analysis window:



- In the t-Test: Two-Samples assuming Equal Variances window enter the Variable 1 Range and Variable 2 Range.
- Check the Labels option
- Hypothesized mean difference be 0.5
- Let Alpha value be 0.05
- Set output range as E2.



- The result will be displayed from E2 as shown below:

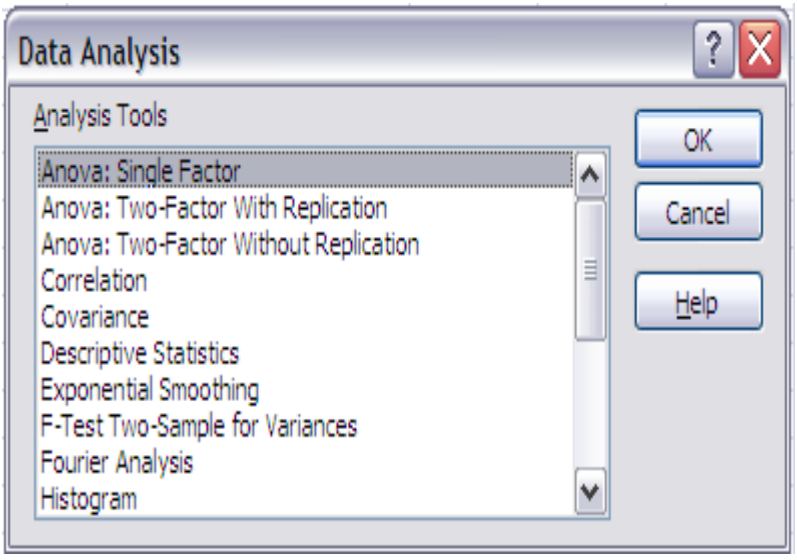
	A	B	C	D	E	F	G	H	I	J	K
1	Perform t-test for two samples assuming equal varinces: yield of food in kg/ha in Kharif and Rabi season from 1996-97 to 2C										
2	Year	Kharif	Rabi		t-Test: Two-Sample Assuming Equal Variances						
3	96-97	89	104								
4	97-98	94	109			*Kharif*	*Rabi*				
5	98-99	94	116		Mean	96.36364	123.1818				
6	99-2000	78	105		Variance	84.65455	203.3636				
7	2000-01	93	120		Observatio	11	11				
8	2001-2002	95	119		Pooled Va	144.0091					
9	2002-2003	92	130		Hypothesi	0.5					
10	2003-2004	106	131		df	20					
11	2004-2005	104	134		t Stat	-5.33873					
12	2005-2006	105	142		P(T<=t) on	1.59E-05					
13	2006-2007	110	145		t Critical o	1.724718					
14					P(T<=t) tw	3.17E-05					
15					t Critical tv	2.085962					
16											

ANOVA(Analysis od Variances) with One-way Classification

- Example: Perform ANOVA One Way Classification for yield of food in kg/ha in three seasons from 1996-97 to 2006-07
- The data is entered in Excel sheet as follows:

	A	B	C	D	E	F	G	H
1	Perform ANOVA One Way Classification for yield of food in kg/ha in three seasons from 1996-97 to 2006-07							
2	Year	SEASON1	SEASON2	SEASON3				
3	96-97	89	104	130				
4	97-98	94	109	134				
5	98-99	94	116	135				
6	99-2000	78	105	135				
7	2000-01	93	120	142				
8	2001-2002	95	119	143				
9	2002-2003	92	130	144				
10	2003-2004	106	131	150				
11	2004-2005	104	134	152				
12	2005-2006	105	142	154				
13	2006-2007	110	145	160				

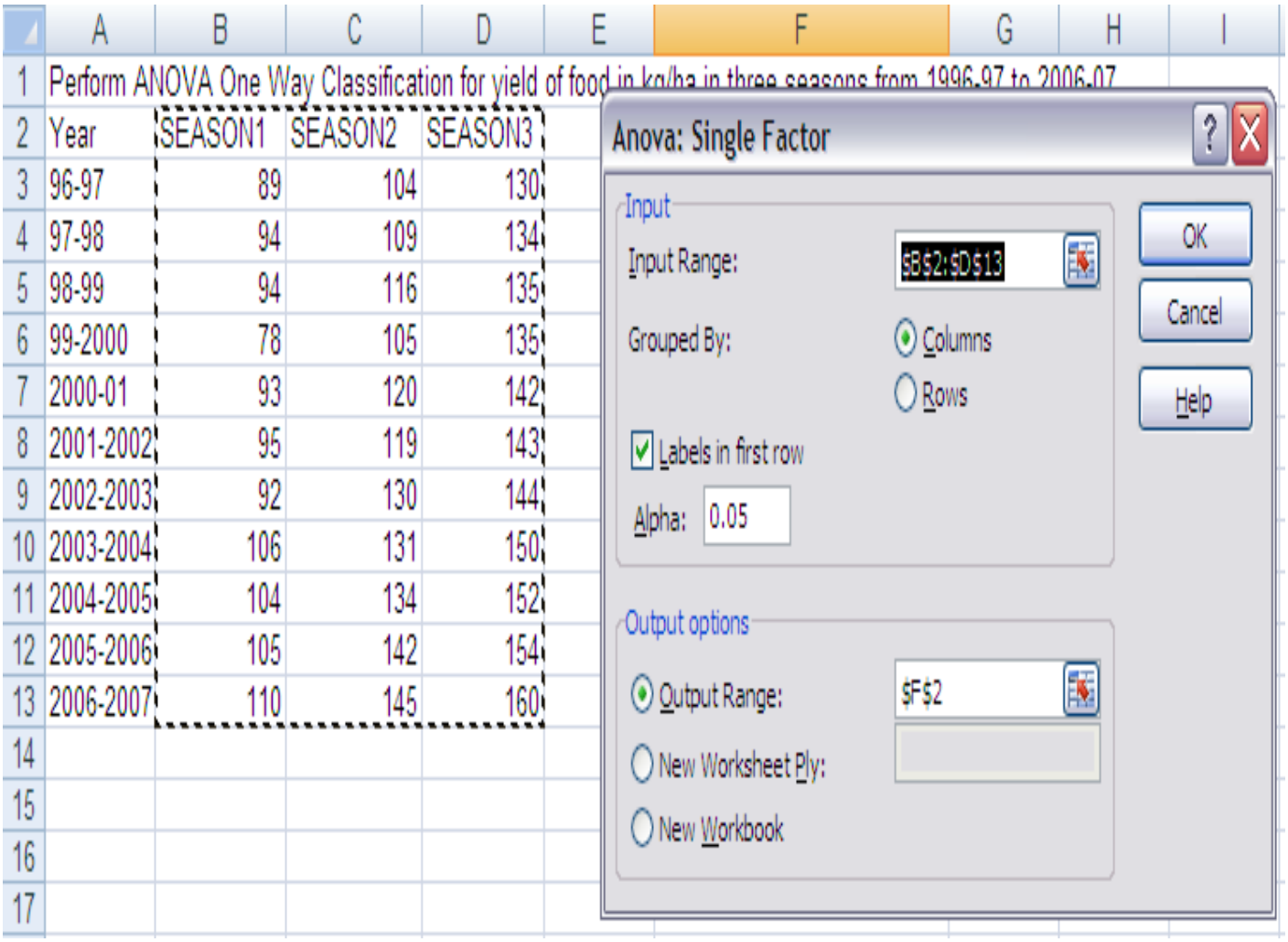
- Choose ANOVA: Single Factor from Data Analysis window.



- In the ANOVA: Single Factor window enter the input range. The input range in the example is B2:D13

- Choose Group by Columns

- Check Labels in the first row
- Output range is set to F2 as follows:



- The result of the ANOVA with One-way classification is displayed from F2 as shown below:

	A	B	C	D	E	F	G	H	I	J	K	L
1	Perform ANOVA One Way Classification for yield of food in kg/ha in three seasons from 1996-97 to 2006-07											
2	Year	SEASON1	SEASON2	SEASON3		Anova: Single Factor						
3	96-97	89	104	130								
4	97-98	94	109	134		SUMMARY						
5	98-99	94	116	135		*Groups*	*Count*	*Sum*	*Average*	*Variance*		
6	99-2000	78	105	135		SEASON1	11	1060	96.36364	84.65455		
7	2000-01	93	120	142		SEASON2	11	1355	123.1818	203.3636		
8	2001-2002	95	119	143		SEASON3	11	1579	143.5455	91.67273		
9	2002-2003	92	130	144								
10	2003-2004	106	131	150								
11	2004-2005	104	134	152		ANOVA						
12	2005-2006	105	142	154		*Source of Variation*	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
13	2006-2007	110	145	160		Between Groups	12320.06	2	6160.03	48.67141	3.82E-10	3.31583
14						Within Groups	3796.909	30	126.5636			
15												
16						Total	16116.97	32				