



**Case Title:**

**Name:**

**Organization:**

**Summary:**



1. **WHAT:** What is the general context in which the case takes place? What organizational or development challenge(s) or opportunities prompted you to collaborate, learn, and/or adapt?

2. What two CLA Sub-Components are most clearly reflected in your case?



**3. HOW: What steps did you take to apply CLA approaches to address the challenge or opportunity described above?**

#### 4. RESULTS: Choose one of the following questions to answer.

We know you may have answers in mind for both questions; However please choose one to highlight as part of this case story

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crop_no	Parameter_code
x	PHENO_IDSL
x	PHENO_DLC
x	PHENO_DLO
x	PHENO_TMAX
x	PHENO_TOPT1
x	PHENO_TOPT2
x	PHENO_TBASE
x	MAX_DURATION
x	BBCH_01
x	BBCH_10
x	BBCH_xx

crop_no	parameter_code	parameter_value	parameter_description
1	PHENO_IDSL	8	Critical daylength for phenological development
1	PHENO_DLC	0	Switch for enabling photoperiodicity on phenolog...
1	PHENO_TMAX	47	Maximum temperature oC
1	PHENO_TOPT2	35	Upper optimal temperature oC
1	PHENO_TOPT1	30	Lower optimal temperature oC
1	PHENO_TBASE	8	Base temperature oC
1	PHENO_DAO	16	Optimal daylength for phenological development
1	BBCH_01	0	seed sowing
1	BBCH_10	90	seedling emergence
1	BBCH_21	620	1st leaf (Vegetative stage)
1	BBCH_39	850	1st flowering (Flowering stage)
1	BBCH_49	1750	harvest (Maturity stage)
1	MAX_DURATION	150	Maximum length growing season
2	PHENO_IDSL	8	Critical daylength for phenological development
2	PHENO_DLC	0	Switch for enabling photoperiodicity on phenolog...
2	PHENO_TMAX	40	Maximum temperature oC
2	PHENO_TOPT2	28	Upper optimal temperature oC
2	PHENO_TOPT1	22	Lower optimal temperature oC
2	PHENO_TBASE	7	Base temperature oC
2	PHENO_DAO	16	Optimal daylength for phenological development
2	BBCH_01	0	seed sowing
2	BBCH_10	150	seedling emergence
2	BBCH_21	700	1st leaf
2	BBCH_39	560	1st flowering
2	BBCH_49	50	1st harvest
2	BBCH_59	200	1st harvest
2	BBCH_61	0	seed sowing

id	crop	season	stage	growth	BBCH	D	DAO	DLC	DLO	Tmax	Topt1	Topt2	Tbase	MaxDur	BBCH	Day	Tsum
1	Pakistan	Hwarf-1	Seed sowing	1	014	0											
2	Pakistan	Hwarf-1	Seed sowing	1	014	0											
3	Pakistan	Hwarf-1	Seed sowing	1	014	0											
4	Pakistan	Hwarf-1	Seedling emergence	10	15-20												
5	Pakistan	Hwarf-1	Seedling emergence	10	15-20												
6	Pakistan	Hwarf-1	Seedling emergence	10	15-20	30-Dao											
7	Pakistan	Hwarf-1	Seedling ready for transplanting (4/5 true leaves)	15	21-75	0											
8	Pakistan	Hwarf-1	Adaptive vegetative stage	41	70-104	10											
9	Pakistan	Hwarf-1	Growing Stage	51	105-124	20											
10	Pakistan	Hwarf-1	Maximum vegetative stage	61	125-139	40-50											
11	Pakistan	Hwarf-1	Maximum vegetative stage	61	125-139	70-80											
12	Pakistan	Hwarf-1	Maximum vegetative stage	61	125-139	120-130											
13	Pakistan	Hwarf-1	Maximum vegetative stage	61	125-139	130-139											
14	Pakistan	Hwarf-1	Maximum vegetative stage	61	125-139	140-149											
15	Pakistan	Hwarf-1	Maximum fruiting stage	81	236-275	180-190											
16	Pakistan	Hwarf-1	Last harvesting stage	99	276-305	230-240											
17	Pakistan	Hwarf-2	Seed sowing	1	014	0											
18	Pakistan	Hwarf-2	Seed sowing	1	014	0											
19	Pakistan	Hwarf-2	Seed sowing	1	014	0											
20	Pakistan	Hwarf-2	Seedling emergence	10	15-20												
21	Pakistan	Hwarf-2	Seedling emergence	10	15-20												
22	Pakistan	Hwarf-2	Seedling emergence	10	15-20	30-Dao											
23	Pakistan	Hwarf-2	Seedling ready for transplanting (4/5 true leaves)	15	21-75	0											
24	Pakistan	Hwarf-2	Adaptive vegetative stage	41	70-104	10											
25	Pakistan	Hwarf-2	Growing Stage	51	105-124	20											
26	Pakistan	Hwarf-2	Maximum vegetative stage	61	125-139	40-50											
27	Pakistan	Hwarf-2	Maximum vegetative stage	61	125-139	70-80											
28	Pakistan	Hwarf-2	Maximum vegetative stage	61	125-139	120-130											
29	Pakistan	Hwarf-2	Maximum vegetative stage	61	125-139	130-139											
30	Pakistan	Hwarf-2	Maximum vegetative stage	61	125-139	140-149											
31	Pakistan	Hwarf-2	Maximum fruiting stage	81	236-275	180-190											
32	Pakistan	Hwarf-2	Last harvesting stage	99	276-305	230-240											

BBCH_ID	stage name	start day	end Day
1	Seed sowing	0	14
10	Seedling emergence	15	20
15	Seedling ready for transplanting (4/5 true leaves)	21	75
41	Adaptive vegetative stage	76	104
51	Growing Stage	105	124
61	Maximum vegetative stage	125	235
81	Maximum fruiting stage	236	275
99	Last harvesting stage	276	305

crop_n	parameter_coc	parameter_val	parameter_description
25	BBCH_01	0	Seed sowing
25	BBCH_10	45	Seedling emergence
25	BBCH_15	450	Seedling ready for transplanting (4/5 true leaves)
25	BBCH_41	880	Adaptive vegetative stage
25	BBCH_51	1220	Growing Stage
25	BBCH_61	1350	Maximum vegetative stage
25	BBCH_81	2500	Maximum fruiting stage
25	BBCH_99	4000	Last harvesting stage
25	MAX_DURATION	305	Maximum length growing season
25	PHENO_DLC	8	Critical daylength for phenological development
25	PHENO_DLO	16	Optimal daylength for phenological development
25	PHENO_IDSL	0	Switch for enabling photoperiodicity on phenological development
25	PHENO_TBASE	10	Base temperature oC
25	PHENO_TMAX	50	Maximum temperature oC
25	PHENO_TOPT1	35	Lower optimal temperature oC
25	PHENO_TOPT2	49	Upper optimal temperature oC

**5. ENABLING CONDITIONS:** How have enabling conditions - resources (time/money/staff), organizational culture, or business/work processes - influenced your results? How would you advise others to navigate any challenges you may have faced?