



STUDIES ON SEED QUALITY PARAMETERS AND MYCOFLORA ASSOCIATED WITH BOLD AND SHRIVELED SEEDS OF LENTIL

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Abstract:

Seed quality parameters and mycoflora associated with bold and shriveled seeds of L-4076 and K-75 greengram CV was investigated during 2014. Both types of seeds yielded qualitatively similar fungi viz. *Alternaria alternata*, *Aspergillus flavus*, *Aspergillus niger*, *Cladosporium fulvum*, *Curvularia lunata*, *Fusarium moniliforme*, *Fusarium oxysporum*, *Penicillium citrinum* and *Rhizopus nigricans*, but for difference in their percentage of incidence. Percentage of seed colonized by fungi was more in shriveled seed in both cultivars. Bold seeds were superior with respect to seed quality parameters such as 100 seed weight, germination, plumule length, radicle length and seedling weight as compared to shriveled seeds.

Introduction:

Lentil is an important pulse crop cultivated throughout India. Seed of greengram is known to harbor several species of fungi (Rath and Mishra, 1986; Teggi and Hiremath, 1990). The invasion of fungi brings about the degradation of seed constituents, i.e. carbohydrates, protein, fat and vitamins, and accumulation of toxic metabolites. Thus rendering seeds unfit for useful purposes. Apart from this, the seed germination and seedling vigour is also considerably affected. Hence, the present investigation was carried out on greengram to study the effect of bold and shriveled seeds on seed quality parameters and invasion of fungal flora.

Material and Methods:

Seeds of two cultivars of Lentil viz. L-4076 and K-75 produced in 2014 was graded into two categories viz. bold and shriveled seeds. The fungal flora associated with the seeds were detected by the standard moist blotter and agar medium techniques as prescribed by ISTA (Anon, 1976). The different type of fungal growth on the seed were expressed in percentage. One these graded seeds were performed the following laboratory tests (1) 100 seed weight, (2) standard germination test (3) plumule length, (4) radicle length and (5) dry weight of seedling on 8th day of germination count (Anon, 1985).

Results and Discussion:

It might be seen from the Table 1 that nine species of fungi viz. *Alternaria alternata*, *Aspergillus flavus*, *Aspergillus niger*, *Cladosporium fulvum*, *Curvularia lunata*, *Fusarium moniliforme*, *Fusarium oxysporum*,

Penicillium citrinum and *Rhizopus nigricans* isolated from the bold and shriveled seeds of L-4076 and K-75. The incidence percentage of isolate fungal flora was higher in shriveled seeds was higher than those of bold seeds. Reddy and Subbayy (1980) reported that percentage of seed colonised by fungi in the discoloured shriveled seed of blackgram was higher than those of normal black colour. Among the two cultivars, L-4076 showed higher incidence percentage of fungal flora in bold and shriveled seeds than those of K-75.

100 seed weight of the bold seeds showed higher than shriveled seeds in both cultivars. Aguiar and Nakane (1983) also made similar observation. Similarly bold seeds were superior with respect to germination, Plumule length, radical length and seedling dry weight as compared to shriveled seeds. This might be due to increased activity of redox enzyme in bigger seeds helping in breaking down the complex food material into simple soluble sugar. Similar observations have been reported by Gurbanov and Bertii (1970). Probably reason for low germination in shriveled seeds may be the presence of immature seeds (Kalkannavar et al., 1989 and Charjan and Tarar, 1991). The increased root length and dry weight of seedling form bigger seeds of barley, might be due to efficient utilization of large food reservet and greater amount of production of energy. Similar observation has been made by Singh et al. (1982). Teggi and Hiremath (1990) resorted culture filtrates of *Aspergillus flavus*, *Altenaria alternata*, *Colletotrichum* sp. and *Cladosporium fulvum* affected the germination and seedling growth most severely.

Table-1 Mycoflora associated with bold and shrivelled seeds of Lentil CV. L-4076 and K-75

Sr. No.	Name of the fungi	L-4076		K-75	
		Bold seed	Shrivelled seed	Bold seed	Shrivelled seed
1	<i>Alternaria alternata</i>	5	11	5	10
2	<i>Aspergillus flavus</i>	6	19	4	18
3	<i>Aspergillus niger</i>	3	14	4	14
4	<i>Cladoporium fulvum</i>	3	13	4	14
5	<i>Curvularia lunata</i>	3	10	3	7
6	<i>Fusarium moniliforme</i>	4	14	3	10
7	<i>Fusarium oxysporum</i>	2	3	-	3
8	<i>Pencillium citrinum</i>	6	13	2	3
9	<i>Rhizopus nigricans</i>	5	15	3	15
Total incidence percentage of fungi		37	110	28	94

Table-2 Effect of bold and shrivelled seeds on quality parameters of Lentil CV. L-4076 and K-75

Category of seeds	100 seed weight (g)	Standard germination (g)	Plumule length (cm)	Radical length (cm)	Dry weight (g)
L-4076					
Bold	2.7	90	11.21	17.11	0.49
Shrivelled	1.6	50	5.41	8.54	0.34
K-75					
Bold	2.9	88	9.23	15.31	0.42
Shrivelled	1.7	41	4.82	7.49	0.31

The results suggest that it is desirable to avoid seed lots of lentil with higher percentage of shrivelled seeds for useful purposes.

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