EFFECT OF BRUCHID INFESTATION ON SEED QUALITY OF CHICKPEA

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Abstract: Experiment was conducted to study the effect of bruchid infestation on 100 seed weight, viability, vigour and incidence of fungal flora of chick-pea during period 2010. The bruchid infested chick-pea seeds we collected from one year old crop seeds under following categories viz. , (i) one holed, (ii) two holed, (iii) hole near micropyle, (iv) multi holed and (v) normal seeds. The 100 seed weight, viability and vigour were significantly more in the normal seeds which is closely followed by one holed, two holed, hole near micropyle and multi holed seeds. The maximum incidence percentage of fungal flora was found on multi holed seeds as compared to other damaged and normal seeds.

Keywords: Bruchid, Chickpea, Seed quality

Introduction:

Chickpea (*Cicer arietinum* L) is an important pulse crop of Maharashtra. Like other food grains, chickpea is also stored for varying periods before consumption or next planting season. During storage seeds are badly damaged by bruchids (Yadav, 1985). It's infestation, either originates in the field or in storage and causes serious loss to the seeds. Bruchids being internal feeders, derive their food from cotyledon and lead to gradual loss of the seed. Yadav (1985) reported that chickpea was found to be suitable host to bruchids. In view of this, these studies were conducted to investigate the effect of bruchid infestation on 100 seed weight, viability, vigour and incidence of fungal flora in chickpea.

Materials and Methods:

One year old seed of chickpea, cv. G-5 were collected from state Seed Testing Laboratory, Nagpur during April 2004. Bruchid infested seeds were taken out from the sample and graded into five categories on the basis of hole made by bruchids as (i) one holed, (ii) two holed, (iii) hole near micropyle, (iv) multi holed and (v) normal seeds. These seeds from each category were separated out for studies on 100 seed weight, germinability and vigour purposes. The germination medium was rolled towel paper.

Results and Discussion:

The data presented in Table-1 indicated that the 100 seed weight varied significantly and

it was highest in normal seeds (24.47 g) which was closely followed by one holed (21.82g two holed (19.86g), hole near micropyle (18.13g) and multi holed (15.38g) infested seeds. The 100 seed weight decreased with increasing infestation of bruchids. Since the bruchids have been eaten of major portion of the cotyledons which leads to reduction in weight of the seed and in turn affects the seedling establishment because of lack of stored food and is in conformity with the findings of Yadav (1985) and Narayanswamy (1985). The germination followed the same trend of 100 seed weight. It was highest in normal seeds (73% followed by one holed (50%), two holed (38%), hole near micropyle (28%) and multi holed (15%). This might be due to infested germ of seeds by bruchid. Seed failed to germinate and thus seed germinability decreased with an increase of seed infestation obtained similar results and he noticed that normal seeds showed highest vigour index than infested seeds. The fungi *Aspergillus* sp., *Curvularia* sp., *Fusarium* sp., *Penicillium* sp. And *Rhizopus* sp. Were found to be associated with different categories of seeds. The maximum percentage incidence of fungal flora was found on multi holed seeds followed by two holed, hole near micropyle, one hole and normal seeds. *Aspergilli* was predominant over all other fungi and ranged from 31 to 100% in case of normal to multi holed infested seeds. Dominance of *aspergilla* on

stored grain has been earlier reported by Maheshwari et al. (1985).

The isolated fungi were most inhibitory to germination and seedling vigour (Teggi and Heremath, 1990). The storage fungi directly damaged seed germ and indirectly enhanced the multiplication of storage insects (Kaurav and Prakash, 1980). Yadav and Pant (1975) suggested the role of metabolic wastes of insects in bringing down germination. This indicated that because of infestation of bruchids the 100 seed weight, germinability and vigour decreased drastically and percentage incidence of fungal flora increased. Similar results were also reported by Khare (1972), shivankar et al. (1990) and Lambat et al. (2014).

Table-1: The Effect of bruchid infestation on seed weight, germination vigour and incidence percentage of fungal flora in Chickpea seeds.

Category of seed	100 seed weight (g)	Germination (%)	Vigour index	Percentage fungi encountered on gram seed				
				1	2	3	4	5
Normal	24.47	73	1826	31				13
One holed	21.82	50	928	39	7	2	21	
Two holed	19.86	39	842	62	9		35	16
Hole near micropyle	18.13	28	671	60	4	2	29	12
Multi holed	15.38	15	427	100	10	6	32	10
SE (m)	0.61	3.07						
CD at 5%	1.69	9.21						

*1= *Aspergillus* sp, 2 = *Curvularia* sp, 3 = *Fusarium* sp, 4= *Penicillium* sp, 5 = *Rhizopus* sp.

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