



STORAGE MYCOFLORA OF OILSEEDS: A REVIEW

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ABSTRACT

Present paper deals with the review of storage seed mycoflora

KEYWORDS: Seed, seed borne-fungi, marathwada



INTRODUCTION

In Maharashtra state, oil seeds are developed in both Kharif and Rabbi seasons. Out of which groundnut (*Arachishypogaea* L.), sunflower (*Helianthus annus* L.), safflower (*Carthamustinctorius* L.), (sesame *indicum* L.) and soybean (*Glycin max* L.) are major oil seed crops. Subsequent to collecting seeds are put away in various capacity conditions and if these capacity conditions are not legitimate different microorganisms like infections, microbes, organisms and nematode are collaborated with these seeds. Among these microorganisms, parasites assume a prevailing job in diminishing quality and longevity of the seeds. Organisms cause different irregularities to the seeds like stained seeds, harmed seeds, contracted seeds, undersized,

spoiled seeds and decreased in germinability. Parasitic living beings assumes huge job in disease, changing quality and life span of seeds during the capacity [1]. Such seeds are not fit for human utilization and rejected at mechanical level. This eventually influence on the yield and economy of the nation. To encourage the perusers to take a gander at their territories of intrigue all the more effectively, the information in the present survey have been composed in different segments as pursues:

GROUNDNUT (*ARACHISHYPOGAEA* L.)

Groundnut (*Arachishypogaea* L.) Groundnut (*Arachishypogaea* L.) is called as the 'Lord of oilseeds'. It is one of the most significant nourishment and money yields of India as far as generation. India is the second biggest maker of groundnuts after China. It represented 35.99 percent of the oilseeds creation of the nation during 2007-08. Gujarat is the

biggest maker contributing 25 percent of the all out generation pursued by Tamil Nadu (22.48 percent), Andhra Pradesh (18.81 per penny), Karnataka (12.64 percent) and Maharashtra (10.09 percent) during 2006-07. Groundnut contains on a normal 40.1 percent of fat and 25.3 percent of protein and is a rich wellspring of calcium, iron what's more, nutrient B complex like thiamine, riboflavin, niacin and nutrient A. It is utilized not just as a noteworthy preparing vehicle for different nourishment things yet additionally for assembling of cleansers, beauty care products, shaving creams and ointments. Truth be told, it assumes a crucial job in the oilseed economy of India. The significant groundnut-delivering nations of the world are India, China, Nigeria, Senegal, Sudan, Burma and the USA. Out of the absolute territory of 18.9 million hectares and the all out generation of 17.8 million tons on the planet, these nations represent 69% of the territory

and 70% of the generation. India involves the position, both in respect to the territory and the generation on the planet. About 7.5 million hectares is put under it every year and the generation is around 6 million tons. 70% of the territory and 75% of the generation are concentrated in the four conditions of Gujarat, Andhra Pradesh, Tamil Nadu and Karnataka. The oil substance of the seed fluctuates from 44 to 50 percent, contingent upon the assortments and agronomic conditions. Groundnut oil is consumable oil. It discovers broad use as a cooking medium both as refined oil and Vanaspati Ghee. It is additionally utilized in cleanser making and producing beautifying agents and oils, olein, stearin and their salts. Parts are likewise eaten crude, broiled or improved. They are rich in protein and nutrients A, B and a few individuals from B2 gathering. Their calorific worth is 349 for every 100 g. The remaining oilcake contains 7 to 8 percent of N, 1.5 percent of P₂O₅ and 1.2 percent of K₂O and is utilized as a compost. It is a significant protein supplement in cows and poultry proportions. It is additionally expended as confectionary item. The cake can be utilized for assembling fake fiber. The haulms (plant stalks) are encouraged (green, dried or silaged) to animals. Groundnut shell is utilized as fuel for assembling coarse sheets, stopper substitutes and so forth. Groundnut is additionally of incentive as pivot crop. Being a vegetable with root knobs, it can integrate barometrical nitrogen and in this way improve soil ripeness.

STORAGE SEED MYCOFLORA

It is obvious from the writing that during stockpiling oilseeds increment in their mycoflora and its segments were observed to be variable with state of capacity. In this connection, *Rhizopus* spp., *Penicillium* spp. what's more, *Sclerotiumbataticola* and *Fusarium* spp. were disengaged from put away groundnut [2] while, same species aside from *Fusarium* and *Sclerotiumbataticola* on groundnut seed were announced [3]. Hundred examples of groundnut seeds were screened [4]. Perceptions of these examples uncovered that they were tainted with different organisms viz., *Aspergillus* spp., *Rhizopus* sp., *Penicillium* spp., *Macrophomina* sp. what's more, *Fusarium* sp. extended from 0.0 to 100, 0.0 to 80, 0.0 to 20 and 0.0 to 15% individually. Then again a few organisms were segregated [5] separated from before laborers. They identified *Alternariaalternata*, *Mucor* sp., *Chaetomium* sp., *Stemphylium* sp., *Fusariumsolani*, *F. oxysporum*, *F. moniliforme* from groundnut while, capacity organisms like *Alternariacitri*, *Macrophominaphaseolina*, *Rhizoctoniasolani*, *Fusariumsolani*, *F. oxysporum*, *Aspergillusflavus* and *A. niger* were discovered overwhelming on groundnut [6].

SOYBEAN (GLYCIN MAX L.)

Soybean [(*Glycin max* L.) Merrill] is developed as business yields and assumes a significant job in Indian economy. It is third significant oilseed crop alongside groundnut and mustard. Soybean is developed in practically every one of the parts and is third real oilseed harvest of India [7]. In Maharashtra soybean yield is developed in both in Kharif and Rabbi seasons for its business significance. Ubiquity of this harvest is because of plenitude (43%) superb protein and a rich wellspring of oil with high unsaturated fats and with no cholesterol [8]. Soybean is named "poor storer" as it loses suitability radically under warm and muggy conditions. Under hot and damp stockpiling conditions, oilseeds much of the time become attacked by capacity growths [9; 10 and 11]. Within the sight of seed-borne pathogens, a few sorts of variations from the norm happened in the seed. Such seeds are dismissed by seed industry and horticulture [12]. Parasites are the real reason for decay in put away grains and seeds in the innovatively progressed nations, since creepy crawlies and rodents are successfully controlled [13]. Examinations on soybean demonstrated the event of enormous number of

capacity growths in connection to capacity period [14]. There are a few reports, as soybean contains 20% oil, which lift the life of pathogenic parasites bringing about biodeterioration.

STORAGE SEED MYCOFLORA

Capacity seed mycoflora In appropriate capacity conditions make the soybean seed vulnerable to capacity growths. A few pathologists have announced the related mycoflora of soybean during capacity. Capacity organisms like *Aspergillus niger*, *Curvularia lunata*, *Colletotrichum* sp., *Fusarium oxysporum*, *F. solani* and *Penicillium* sp. were observed to be related with soybean seeds [15]. Correspondingly, from sixteen assortments of soybean from various territories *Macrophomina phaseolina*, *Fusarium* sp. also, *Aspergillus* sp. were predominantly happened on soybean cultivars were accounted for [16] while, *Aspergillus flavus*, *A. amstelodami*, *A. sydowi*, *A. versicolor*, *A. niger* and *A. terreus* were confined from soybean [17]. *Fusarium* spp. viz., *F. moniliforme*, *F. subglutinans*, *F. semitectum*, *F. proliferatum*, *F. clamydosporum*, *F. avenaceum* and *F. acuminatum* from 140 tests of put away sorghum were additionally recouped. Comparative outcomes were likewise detailed [18]. Soybean cultivars were screened against diverse capacity conditions, where they found that field growths were supplanted by capacity organisms like, *Aspergillus*, *Penicillium*, *Rhizopus*, *Mucor* and *Chaetomium* and so on. Additionally, *Aspergillus*, *Rhizopus*, *Penicillium*, *Curvularia*, *Fusarium*, *Alternaria* spp. were disengaged from put away soybean seeds [19]. Then again, soybean cultivar was screened for seed mycoflora where just two species from *Aspergillus* genera viz., *Aspergillus flavus*, *A. niger* and *Alternaria alternata* were predominant [20]. Essentially, maize tests appeared high occurrence of *Fusarium moniliforme*, *Verticillium albo-atrum*, *Trichoderma harzianum* and *Sclerotium rolfsii* [21]. While, niger seeds were contaminated by *Aspergillus flavus*, *A. fumigatus*, *Alternaria alternata* and *Chaetomium* sp. [22].

SUNFLOWER (HELIANTHUS ANNUS L.)

Storage seed mycoflora

Sunflower (*Helianthus annuus* L.) is fundamentally developed for its oil. Sunflower was presented in India as an oilseed crop just because in 1969. In 2008-09, world sunflower seed generation was 33.3 million tons, around 8.5% of the absolute oilseeds creation of world. European Union, Russia, Ukraine, Argentina, United States, China, India and Turkey are the significant makers of sunflower seed in the world market. Nation astute, generally creation of Russia is the most elevated pursued by Ukraine. EU-27 is considered as the biggest maker of sunflower seed in world when the creation everything being equal part states is assembled. Sunflower oil is solid and normal palatable oil known for its light and unscented characters, wealthy in Vitamin E, sunflower oil is gotten from sunflower seed conveying about 45- half oil content. The protein substance is around 25% and sunflower dinner is utilized as a protein source in creature feed readiness. The oil is utilized for culinary purposes, in arrangement of vanaspati ghee and in the production of cleansers and beautifying agents. Sunflower oil is considered as sound oil. It is particularly prescribed for heart patients. Its cake is wealthy in protein and is utilized as a cows and poultry feed. Sunflower oil is the non-unstable oil communicated from sunflower seeds. Sunflower oil is normally utilized in nourishment as a singing medium. A few specialists put forth the rundown of capacity growths of sunflower. In this respect, sunflower seeds were screened to think about the occurrence of parasites which gave the event of *Alternaria alternata*, *Aspergillus flavus*, *A. niger*, *Curvularia lunata*, *Fusarium moniliforme*, *Penicillium citrinum*, *Macrophomina phaseolina* and *Rhizopus nigricans* with sunflower seeds [23]. Same kinds of parasites including types of *Cladosporium* and *Drechslera* have been accounted for from

sunflower seeds [24 and 25]. Sunflower seeds are exceptionally debased with parasites which assault the plants at various phases of improvement and in this way during collecting and capacity [26 and 27]. *Absidiacorymbifera*, *Alternariaalternata*, *Aspergillusflavus*, *A. niger*, *A. terreus*, *Chaetomiumbostrychodes*, *C. globosum*, *Emericellandidulans*, *Fusariumpallidoroseum*, *F. solani*, *Macrophominaphaseolina*, *Penicillium spp.*, *Rhizoctoniasolani* and *Rhizopusstolonifer* were dominantly disconnected from sunflower [28]. A few other pathogenic organisms were likewise separated, for example, *Curvularialunata*, *Myrotheciumruridum*, *Phomaoleracea* and *Verticilliumdahliae* from sunflower seeds. As of late, 13 phytopathogenic parasitic species counting *Alternariaalternata*, *A. helianthi*, *Aspergillusflavus*, *A. fumigatus*, *A. niger*, *Curvularialunata*, *Drechsleratetramera*, *Fusariumsolani*, *F. moniliforme*, *Macrophominaphaseolina*, *Mucormucedo*, *Penicillium* and *Rhizopus spp.* from put away sunflower assortments were detached [29].

SAFFLOWER (CARTHAMUSTINCTORIUS L.)

Storage seed mycoflora

Capacity seed mycoflora The significant safflower (*Carthamustinctorius L.*) developing nations, other than India are the USA, Mexico, Ethiopia, Spain, USSR what's more, Australia. In India, it possesses 590,000 hectares with a generation of almost 130,000 tons. Over 98% of the territory is gathered in the conditions of Maharashtra (04.4%), Karnataka (26.0%) and Andhra Pradesh (8.0%). The harvest is presently developed basically for its seeds which yield oil, however at one time it used to be developed for the extraction of a color moreover. The seeds are palatable and are eaten in the wake of broiling. Their oil substance shifts from 24 to 36 percent, contingent upon the assortment, soil, atmosphere and different conditions. The cold-squeezed oil is brilliant yellow and is utilized for culinary purposes, or on the other hand for making cleanser. The oil gotten by dry hot refining is dark and sticky and is utilized distinctly for lubing admirably ropes and calfskin products presented to water. Safflower oil has likewise great kicking the bucket properties and hence it is utilized in the production of paints, varnishes and tile. It tends to be blended with white paint with no in the wake of yellowing impacts. The cake, especially from decorticated seed is utilized as a concentrated cows feed and that from undecorticated seed is once in a while utilized as a fertilizer. During harvest disease was for the most part included by the field parasites, counting *Alternaria sp.*, *Curvularia sp.* and so on. Their number diminished continuously during capacity, since they were supplanted by capacity organisms, mostly by various types of *Aspergillus* as found by before laborers [30 and 31]. Same growths including types of the genera *Fusarium*, *Phoma*, *Bipolaris* and *Colletotrichum* have been accounted for from grain form [32]. From put away safflower, same parasites were affirmed where eleven parasitic species were disconnected from various genera for example *Alternaria*, *Curvularia*, *Fusarium*, *Rhizopus*, *Aspergillus*, *Chaetomium* and *Helminthosporium* from safflower [33].

SESAME (SESAME INDICUM L.)

Storage seed mycoflora

India, China, Sudan, Mexico, Turkey, Burma and Pakistan are the significant (*Sesame indicum L.*) creating nations. India positions first, both in the region and creation of sesame in the world. The yearly region put under it in India is around 2-5 million hectares (45 percent of the world hectareage) and the aggregate generation is almost 52 thousand tons. Sesame is developed on 21 lakh hectares in just eight states, viz. Uttar Pradesh (673,000), Rajasthan (562,000), Madhya Pradesh (345,000), Andhra Pradesh (237,000) Maharashtra (139,000), Gujarat (118,000), Tamil Nadu (117,000) and Orissa (103,000).

Among different states just Karnataka has a sizable region (68,000) under sesame. In the rest of the states it is become distinctly on a little zone and henceforth is an extremely minor yield there. The sesame seed is a rich wellspring of consumable oil. Its oil content by and large shifts from 46 to 52 percent. Its grains might be eaten broiled, blended with sugar or as sweet meats. Sesame oil is utilized as a cooking-oil in southern India. It is additionally utilized for blessing the body, for assembling perfumed oils and for restorative purposes. Sesame-cake is a rich wellspring of protein, starches and mineral supplements, for example, calcium and phosphorus. The cake is eatable and is eaten eagerly by common laborers. It is additionally a significant and nutritious feed for milch cows. Sesame seed is being assaulted by a few parasitic pathogens; a considerable lot of them are seed-borne [34]. Seed-borne pathogens like *Alternariadanthicola*, *Aspergillusflavus*, *A. ustus* and *Macrophominaphaseolina* were distinguished on sesame [35]. *Alternariasesami*, *A. sesamicola*, *A. tenuis* and *A. longissima* were distinguished in Korean seed tests of *Sesamumindicum* [36]. So also, *Aspergillusflavus*, *A. niger*, *Curvularialunata*, *Fusariummoniliforme*, *Penicilliumrubrum* and *Rhizopusnigricans* were confined from sesame seeds [37] while, sesame seed were observed to be as it were related with *Penicilliumcitrinum* and *Fusarium sp.* [38]. On the other hand, *Cercosporasesami*, *Alternariasesamicola*, *Curvularialunata* and *Fusarium spp.* were accounted for from sesame [39]. From this writing overview plainly out of five oilseeds, parcel of work have been done on confinement of soybean seed mycoflora.

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