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Effect of botanical seed pelleting on okra CV Aruna

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Abstract
The field experiment was conducted at Elumathur in Erode district, Tamil nadu, during (2019-2020) to evaluate the effect of botanical extracts on seed quality of okra cv. Aruna. Seed pelleting is commonly accompanied to make sure and increase yield in lots of agricultural crops. Genetically and physically natural seeds of aruna was treated with diverse botanical powders *viz*., neem leaf powder, prosopis leaf powder, pungam leaf powder, notchi leaf powder,fly ash and termite soil @ 200 g/kg seed. Observations were recorded on seed quality parameters *viz*., germination, root length, shoot length, dry matter production (10 seedlings) and vigour index. Primarily based on the outcomes, it turned into discovered that okra cv aruna seeds handled with fly ash powder @ 200g/kg recorded higher values of germination, root length, shoot length, dry matter production and vigour index when compared to other treatments and control.

Keywords: seed pelleting, botanical leaf powders, okra, aruna variety

Introduction
Okra [Abelmoschus esculentus (L.) Moench] is a member of the family malvaceae and local of south africa and asia. It's far annual vegetable crop grown in tropical and subtropical elements of the world. Seed being the simple input in agriculture, manufacturing and supply of pleasant seeds to the farmers is important to achieve self-sufficiency in any crop. Numerous techniques were initiated to enhance the productivity of okra. One among them is seed pelleting with botanicals with the intention to provide a preliminary boost for germinating the seeds and developing seedlings that may placed forth higher root and shoot growth and thereby enhance the drought tolerance ensuing in accelerated yield. The value concerned in seed pelleting is much less but the benefit to the farmers is more. Fly ash is generated at some point of the combustion of coal in coal fired thermal power plants and paper industry, wherein coal is used as raw material. The awareness of nearly all elements found in fly ash is higher than in soil. In agricultural research, it's been suggested that fly ash at superior price can be applied as a fertilizer (Patil *et al*., 1999). Hence, a look at became formulated to clarify records on the use of seed pelleting on seed yield in okra.

Materials and Methods
Genetical and physical pure seeds of okra cv. Aruna was obtained from Kerala Agriculture University, had been imposed for seed pelleting treatments. The field experiments have been completed at Elumathur in Erode district, Tamil nadu, during (2019-2020). Seeds had been pelleted with powders crafted from leaves of pungam, neem, notchi, prosopis, flyash, termite soil @ 200 g/ kg of seed, the usage of maida as adhesive @10% and dried in shade condition. T_0 - control (unpelleted), T_1 - Neem leaf powder @ 200 g /kg, T_2 - Prosopis leaf powder @ 200 g /kg, T_3 - Pungam leaf powder @ 200 g /kg, T_4 –Notchi leaf powder @ 200 g /kg, T_5 –Fly ash @ 200 g /kg, T_6 – Termite soil @ 200 g/kg. The treatments were evaluated for seed quality parameters *viz*., germination (%), root length (cm), vigour index and dry matter production. The experiment was arranged randomized factorial layout with 3 replications. Seed had been taken into consideration germination when the radical turned into twice the length of the seed. Seed were evaluated for germination percent germinability was recorded 15 days after sowing (DAS) and numbers of seed germinated expressed as percentage. At 7 DAS seedlings from each replication have been cautiously removed at random. Shoot length measured from the collar region to the tip of the longest leaf. Root duration became measured from the base of the stem to the end of the longest root. The seedling vigor index turned into calculated the use of the components of Abdul-baki and Anderson (1973). Facts had been analyzed as in keeping with Panse and Sukhathme (1999) using the f-test to determine importance among treatments.

Seed pelleting is one of the techniques which results in enhancing the physiological and biological nature of seed which are beneficial for direct sown condition. Pelleted seeds perform higher than that of the unpelleted seeds due to their influence in enriching the efficiency of rhizosphere soil for manufacturing of high-quality seedlings. Seed pelleting is a one among a management exercise/device which alone or in mixture with other practices may

want to bring about a fairly correct degree of reduction of inoculum ability and at the identical time ensure the sustainability of the manufacturing, value effectiveness and healthy environment. The following technique of seed pelleting with one of a kind styles of pelleting materials should be accompanied. Then the filler materials are sprinkled at the covered seeds and are rolled at the filler material for effective and uniform coating. The thickness of the seed coating is depending on the amount of decal on the subject of the quantity of seed. The total mixing time need to not exceed four minutes because prolonged agitation may harm the seeds or chips of pelleted coat.

Result and Discussion

Seed pelleted with (200g/kg) of seed with fly ash powder recorded higher values for seed quality parameters *viz*., germination (95.32%), velocity of germination (28.56), shoot length (11.53 cm), root length (9.65 cm) and seedling length (18.92 cm). The growth in seed quality can be due to stimulatory effect of micro vitamins and improved water holding potential of fly ash which results in elevated degree in germination percentage. The micro nutrients that are soluble in water could have been located with the aid of the seeds throughout imbition manner and promoted diverse enzymetic procedure leading to faster cell department and radical emergence except enhancing germination. These findings are in concordance with file of Vanangamudi and Karivaratharaju (1986) and Prakash *et al*. (2012). Shoot length (11.53cm), root length (9.65 cm) and seedling length (18.92 cm) also proven considerable growth over control. Fly ash pelleted seed had been produced advanced in lengthier seedlings the development of seed and seedling satisfactory characters might be because of the vitamins and antioxidants present in the fly ash. Presence of calcicum and potassium invigourate the vigour and enhance the seed and seedling characters. Those results are in conformity to the findings of Nelson (2000) and Prakash *et al*. (2012).

Higher dry matter production (0.83 g), vigour index I (1168.71) and power index II (51.35) were observed for seed pelleted with fly ash (200 g/kg of seed). This will be because of the presence of parameters of micro vitamins which includes zinc, boron, manganese and iron found in fly ash are rather essential for activation of enzyme related to seed viability and vigour. Similar findings had been made with the aid of Patil *et al*.(1999) and Prakash *et al*.(2012). Use of fly ash gave extensively higher plant growth attributes of okra cv.Aruna. *Viz*., Field emergence (25.42), minimal days for 50% flowering (48.71%), No of branches / plant (8.75) and plant height (77.26 cm) as compared to control. This may be due to fly ash include sufficient awareness micro and macro vitamins *viz*., calcium, iron, manganese, boron, nitrogen, phosphorus, zinc and potassium which may be better used by the seed effects in accelerated rate of cellular division, cell elongation ends in better in increase parameters. Similar findings made Rao (1990) Carlson and Adriano (1991) [3] and Mittra *et al* (1995) [5].

The yield attributes *viz*., No of fruits / plants (10.73), fruit weight (37.66 g), fruit length (25.43 cm), no of seeds/ fruits (96.64) and 100 seed weight (6.58 g). This can be because of presence of diverse micro vitamins in fly ash which activates the endogenous level of enzyme for elevated field characters, subject emergence and yield characters. Similar findings have been made by way of Basu (1994) [2], Warambhe *et al*. (1993) [9] and Kuchanwar *et al*. (1997) [4].

Table 1: Effect of seed pelleting treatment on seed quality parameters in okra cv. Aruna

Treatment (T)	Germination (%)	Speed of germinaton	Shoot length (cm)	Root length (cm)	Seedling length (cm)	Dry matter production (g seedling^{-10})	Vigour index I	Vigour index II
T_0	70.75 (57.267)	20.91	4.09	4.25	6.97	0.24	387.14	11.92
T_1	86.83 (68.769)	25.78	9.72	7.23	16.53	0.69	897.46	37.67
T_2	91.13 (72.969)	27.43	10.34	8.51	17.76	0.72	1029.33	44.93
T_3	82.51 (65.422)	24.85	8.41	6.44	14.03	0.55	764.87	31.16
T_4	78.24 (62.201)	22.94	6.75	5.72	11.24	0.46	636.53	24.64
T_5	95.32(77.782)	28.56	11.53	9.65	18.92	0.83	1168.71	51.35
T_6	74.29 (59.584)	21.87	5.28	4.98	8.89	0.37	508.35	18.21
MEAN	82.72	24.62	8.01	6.68	13.47	0.55	770.34	31.41
SED	1.70	0.33	0.23	0.31	0.37	0.040	57.56	3.05
CD(P=0.05)	3.46	0.67	0.48	0.64	0.76	0.083	116.86	6.21

Table 2: Effect of seed pelleting treatment on plant growth characters in okra variety Aruna

Treatment (T)	Field emergence (%)	50 % flowering	No of branches	Plant height (cm)
T_0	13.18	43.62	2.60	48.39
T_1	21.74	45.29	6.41	67.32
T_2	23.51	47.55	7.62	72.64
T_3	19.61	37.41	5.32	63.09
T_4	17.35	41.13	4.56	58.78
T_5	25.42	48.71	8.75	77.26
T_6	15.28	38.72	3.52	54.25

MEAN	19.44	43.20	5.54	63.10
SED	0.69	0.47	0.32	2.09
CD(P=0.05)	1.42	0.97	0.65	4.25

Table 3: Effect of seed pelleting treatment on yield characters in okra variety Aruna

Treatment (T)	Fruit length (cm)	Fruit weight (g)	No of fruits / plants	No of seeds / fruits	100 g seed weight
T_0	16.14	19.56	2.61	64.17	2.71
T_1	22.52	31.67	7.44	86.58	5.33
T_2	23.71	34.43	8.56	92.43	5.97
T_3	20.48	29.06	6.13	82.31	4.62
T_4	19.39	26.42	5.06	77.85	4.01
T_5	25.43	37.66	10.73	96.64	6.58
T_6	17.24	22.37	3.92	71.46	3.34
MEAN	20.70	28.73	6.35	81.63	4.65
SED	0.41	1.24	0.44	1.07	0.28
CD(P=0.05)	0.85	2.52	0.91	2.18	0.58

Conclusion

Use of chemical substances as pelleting materials are highly-priced and hazards, where as botanicals are less pricey, effortlessly to be had to the formers, safe to handle and they are able to put together without difficulty. The experiment conclude that 200g fly ash powder pelleted seeds recorded the higher values for germination percent, speed of germination, shoot length, root length, seedling length, dry matter production, vigour index I, vigour index II, growth attributes and yield attributes. Primarily based at the effects okra seeds pelleted with fly ash leaf powder are quite suitable for seed pelleting than unpelleting and have been followed by means of prosopis leaf powder.

References

1. Abdul-Baki AA, Anderson JD. Vigour determination is soybean seed by multiple criteria. Crop Sci,1973:13:630-633.
2. Basu RN. An appraisal of research asset and dry physiological seed treatments and their applicability with special reference to tropical and subtropical countries. Seed Sci. & Technol,1994:22:107-126.
3. Carlson CL, Adriano OC. Growth and elemental content of the two tree species growing on abandoned coal flyash basins. J. Environ. Qual.,1991:20:581-587.
4. Kuchanwar OD, Matte DB, Kene DR. Evaluation of graded dose of fly ash and fertilizers on nutrient content and uptake of groundnut grown on vertisol. J. Soils and Crops,1997:7(1):1-3.
5. Mittra BN, Ghosh BC, Karmakar S, James George, Chaturvedi R. Effect of flyash application on rice and sweet potato, In: Proc. Nat. Sem. Use of lignite fly ash in agriculture. Annamalai University, Annamalainagar, 1995, 69-73.
6. Patil AK. Influence of containers and seed treatment on storability of Bengal gram. M.Sc. (Agri) Thesis, University of Agricultural Sciences, Dharwad, 2000.
7. Panse VG, Sukhatme PV. Statistical Methods for Agricultural Workers. Indian Council of Agricultural Research Publication, 1978, 87-89.
8. Rao DN, Agarwal M, Singh J. Study of pollution on sink efficiency, growth response and productivity pattern of plants with respect to fly ash and SO 2. Tech. Rep. (DEO/141/266-85) submitted to Ministry of Envi & Forest, New Delhi, India, 1990.
9. Warambhe PE, Kene DR, Thakare KK, Darange OG, Bhoyar US. Evaluation of physico-chemical properties of flyash of thermal power station Koradi (Nagpur)–For its likely use in agriculture. J. Soils and Crops,1993:3(1):75-77.