https://doi.org/10.29321/MAJ.10.A02428

Madras Agric J 71 (1) 15—18 January 1984

NURSERY MANAGEMENT for *Ragi* (CO 11)*

M.N. BUDHAR[1] and SP. PALANIAPPAN[2]

In a study to investigate the effect of nursery management in *ragi* (CO 11) it was found that *ragi* seedlings should be raised in nurseries applied with 2 Kg DAP/cent of nursery for higher yields, *Pai* nursery technique could also be adoped for easy management Planting twenty days old seedlings and application of 90 Kg/ha to the main field are optimum.

Problems besetting the attainment of even a modest *ragi* harvest are and will continue to be numerous, of which nursery management, age of seedlings at transplanting and N application are some aspects. The yield from tansplanted crop is dependent besides the age of seedlings. on the type of seedlings, as healthy and vigorous' seedlings would facilitate easy transplanting and quicker and higher percentage of establishment Any method that would help to produce better seedlings will have,considerable impact on yield. Rajagopalan *et al* (1978) observed that application of DAP to dapog rice nursery recorded higher grain yield. palaniappan *et al.* (1979) stated that application of 25kg N/ha of nursery area to *ragi* gave higher grain yield compared to unmanured nursery. Depending upon the duration of *ragi* variety, 20 to 30 days old seedlings are recommeded for transplanting. This study was undertaken to find out whether by nursery management,the adverse effect of planting aged seedling could be overcome and by nursery manuring any saving of fertilizer N could be the effect in the main field of *ragi*

MATERIAL AND METHODS

A field experiment was conducted during May to September(first season) and September to December (second-season). 1979, with *ragi* (CO 11) at the Agricultural College and Research Institute Farm, Coimbatore. The experiment was conducted in split plot design with three replications. The age of seedlings (20 (A1) and 30(A2) days old). and N levels (45 (N1) and 90 (N2) kg N/ha) were included in mainfields. Five nursery treatments Viz., pai nursery (S1), Conventional nursery (control) (S2),conventional nursery applied with systemic insecticides and fungicides on the 10th day of the sowing (S3) conventional nursery applied with diammonium phosphate on 10th day of the sowing (DAP S 4) and conventional nursery applied with systemic Insecti-

Part of M.Sc) (Ag), thesis submitted by the first author to Tamil Nadu Agricultural University, Coimbatore.

1. Assistant Professor (Agronomy), Regional Research Station, Paiyur Kaveripattinam Via.

2. Professor of Agronomy, Tamil Nadu Agri University, Coimbatore.

cides and fungicides and DAP on 10th day of the sowing (S5) were included in subplots.

Pai nursery:

The area required for *pai* nursery is 45 M² to plant one hectare. So a raised bed of 1 m² area was prepared and the bed was made flat and free from depressions. The bed was covered with polythene sheet first and with a gunny base over the polythene sheet. Using wet mud. bunds were formed on all the four sides. About 50 kg of sand and 50 kg of well decomposed farm yard manure and 47. 5 g diammonium phosphate (1 9 kg /cent of nursery) were thoroug -hly mixed and applied in the bed.The seeds were treated with 0.002 per cent bavistin solution Then the seeds were air-dried and broadcasted. in the *pai* nursery. The seeds were pressed gently using hand and covered with minimum quantity of sand. The nursery was covered with a thin layer of paddy straw. Watering was done using a rose can, so that the nursery bed remained always in moist condition. Systemic insecticide (dimethoate.0.03%) and fungicide (Kitazin.0.1%) were sprayed on 10th day. To avoid damping off.0.25 per cent solution of copper oxychloride was sprayed on 5th day.

Conventional nursery :

The area required for this nursery is about 400 m² to plant one hectare. A raised bed with 1.5 m width and 5.3 length was prepared for S2, S3, S4 and S5 treatments. The seeds without any pre-treatment were sown in the bed and irrigation was given at 5 days interval. Systemic insecticide (dimethoate, 0.03%) and fungicide (Kitanzin, 0.1%) were sprayed in S3 and S5 treatments on 10th day. Diammonium phosphate at 20 Kg/ha was applied on 10th day to S4 and S5 treatments.

RESULTS AND DISCUSSIONS

Effect of age of seedlings :

Twenty day old seedlings recorded higher grain yield (3373 kg/ha and 2822 kg/ha in the first and second season) than 30 day old seedlings (3012 kg/ha and 2534 kg/ha in the first and second season) (Table). Better physiological condition at planting with sufficiently long vegetative phase in the main field seems to have helped the 20 day old seedlings to establish easily and utilise all the available resources such as sunlight, nutrients and moisture more efficiently, leading to increased photosyn thesis. Since the source was kept at more than adequate level, only the capacity of the sink could impose a ceiling on yield. Hence higher grain yield was recorded by planting 20 day old seedlings. On the contrary, 30 day old seedlings were subjected to intense competition in the crowded environment of the nursery for a longer time. When they were transplanted, establishment was rather slow and hence the period of vegetative phase in the main field was considerably reduced, imposing a restriction on the source itself. When the source itself was restricted, the sink capacity could not be fully utilized. This resulted in lower yield.

Effect of Nitrogen :

Increasing the N supply increased the grain yield. Yields of 3536 kg and 2835 kg/ha in the first and second seasons were obtained at higher level of N (90 kg/ha) compared to the yields of 2850 kg/ha and 2520 kg/ha in the first and second seasons at lower level of N (45 kg/ha). Fertility status of the soil of the experimental plot was adjudged to be low with regard to available N Hence increasing the N supply has favourably influenced all the growth and yield components, which ultimately resulted in increased yield.

Effect of nursery treatments :

In general, manured seedlings (S1, S4 and S5) produced higher yield than unmanured seedlings (S2 and S3). However, in the first season application of only DAP (S4) recorded slightly lower yield than treatments receiving both DAP and pesticides (S1 and S5), due to higher incidence of blast. S1 and S5 treatments were on par and this indicates that *Pai* nursery is not superior to conventional nursery provided the conventional nursery is also treated with nutrients and pesticides. Nursery manuring produced healthy, vigourous seedlings which had an edge over unmanured seedlings in establishment and early growth. This ultimately resulted in improving the yield components and higher yields.

Straw Yield :

In both the seasons the trend of results of straw yield was similar to that of grain yield, bringing out the advantage of planting 20 day old seedlings, higher N supply (90 kg/ha) and nursery manuring with DAP and pesticides.

Net income :

Planting 20 days old seedlings from manured nursery and application of 90 kg N/ha gave significantly higher net income than planting 30 days old seedlings from unmanured nurseries and application of 45 kg N/ha respectively.

Return per rupee invested :

In the first season, planting 20 days old seedlings from *Pai* nursery with the application of 90 kg N/ha in the main field gave maximum return of Rs. 2.85 per rupee invested. In the second season, planting 20 day old seedlings from conventional manured nursery with the application of 45 kg N/ha to the main field gave a maximum return of Rs. 2.76 per rupee invested.

Summarising the results, it can be stated that *ragi* seedlings should be raised in nurseries applied with 2 kg DAP/cent of nursery. Application of systemic insecticides and fungicides protect the crop from pests and diseases. In the early crop growth period, *Pai* nursery, though similar to conventional manured nursery in terms of yield and net income, could be adopted by the farmers because easy management of the smaller area required for nursery, provided the farmer is well versed with *Pai* nursery

techniques. Planting day old seedlings is advantageous and keeping the seedlings in the nursery beyond this period, would result in considerable reduction in yield, irrespective of the nursery management practices followed Nursery manuring may not result in any substantial saving in fertiliser N applied to the main field. Application of 90 kg N/ha to ragi (Co 11) is adequate.

REFERENCES

PALANIAPPAN, SP., C. RAMASWAMY and A. BALASUBRAMANIAN. 1979. Studies on transplanting versus direct sowing in sorghum finger millet and pearl millet, *food farming and Agric.* 10: 392 393.

RAJAGOPALAN, S., V.G. PALANIYANDI and A. MUTHUSANKARANARAYANAN. 1978. Performance of pre-treatment of seeds and age of seedlings under depog nursery method. *Farm Sci.* 5 (4): 11-13.

Table: Effect of nursery management and N levels on yield and income from *ragi* (CO 11)

Treatments	Grain yield (Kg/ha) First season	Grain yield (Kg/ha) Second season	Straw yield (Kg/ha) First season	Straw yield (Kg/ha) Second season	Net income (Rs/ha) First season	Net income (Rs/ha) Second season
Main plots :						
Age of seedlings						
A 1	3373	2822	7641	7044	1759	1589
A 2	3012	2534	6811	6327	1443	1303
S.Em±	110	98	219	255	106	60
CD 5%	291	239	535	625	259	144
Nitrogen Level :						
N 1	2859	2520	6482	6287	1360	1302
N 2	3536	2835	7970	7084	1841	1511
S.Em±	119	98	219	255	106	59
CD 5%	291	239	535	625	259	144
Sub plot :						
S 1	3665	2873	8256	7181	1979	1608
S 2	2733	2381	6199	5964	1211	1195
S 3	2693	2437	6251	6122	1176	1242
S 4	3207	2852	7217	7036	1631	1590
S 5	3665	2847	8207	7105	2006	1584
S.Em±	132	160	267	377	118	146
CD 5%	269	324	543	769	240	297