The estimated joint supply elasticity is 1.09 explaining law of supply and price elastic nature of poultry joint products. This illustrated that one should consider the share bye-products also in estimating elasticity. As it was evident from the analysis, the joint product elasticity was higher than the own price elasticity of egg.

SUMMARY

Layer farming (eggs and spent birds) was more remunerative than broiler farming as evidenced from the present study. It was observed from the study that the supply of poultry products individually satisfied the supply law. It also proved apriori economic expectation that the price elasticity was greater than unity, implying that the supply was price elastic in poultry sector. It could be concluded that the poultry sub-sectors for the said period were characterised by increasing returns to scale.

The layer, as base commodity of production was induced by both prices of egg and meet as could be evidenced from the value of joint product supply elastic.

REFERENCES

GUJARATI,D.N, (1988), "Basic Economietrics", (New York : Mograw Hill Book Company), 189-192.

TOMEK, W.G. and ROBINSON, K.L., "Agricultural Product Prices", (New York: Cornell University Press), 47-49.

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CHEMICAL CONTROL OF SHEATH ROT OF RICE

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ABSTRACT

Efficacy of mancozeb, edifenphos and tricyclazole was tested on three rice varieties viz., IR 20, Co 43 and IR 50 against sheath rot of rice and their influence on yield parameters was also assessed. Spraying mancozeb + tricyclazole 2 times was superior to other treatments. Fungicide spraying significantly increased the number of productive tillers and grain yield when fungicides were applied for seed treatment as well as for spraying in the main field.

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Sheath rot disease of rice caused by **Sarocladium oryzae** Sawada has become one of the destructive diseases in rice. Efficacy of different chemicals like mancozeb (Thrimurthy, 1986), edifenphos (Kannaiyan, 1979), carbendazim (Ganesan, 1987) has been reported. The efficacy of the tri-cyclazolo (5-methyl 1,2,4 = triazolo (3,4-b) benzothiazole) against sheath rot disease of rice was assessed in the present study.

MATERIALS AND METHODS

Two field trials were conducted during September 1988 - January 1989 and December 1988 - March 1989 at the Paddy Breeding Station, Tamil Nadu Agricultural University, Coimbatore. The different treatments used in the trials were:

1. Mancozeb (0.25%) at mid tillering, maximum tillering, late boot and early grain filling stages
2. Tricyclazole (0.08%) at mid tillering and late boot stages
3. Mancozeb (0.25%) at mid tillering and grain formation stages and tricyclazole (0.08%) at boot leaf stage
4. Mancozeb (0.25%) + Tricyclazole (0.08%) at mid tillering and late boot leaf stages
5. Edifenphos (0.1%) at mid tillering and late boot leaf stages
6. Control

Three varieties of rice viz., IR 20, CO 43 and IR 50 were used and field trials were conducted by adopting split-plot design with varieties as the main plots and fungicide treatments as sub-plots. The treatments were randomized and replicated 4 times. (Sub-plot size was 4.5 x 4.0 meters). The different fungicide treatments were given to main field alone in the first trial. In the second trial for all the treatments, seed treatment with tricyclazole (4 gm/kg of seed) in the nursery was included. The disease intensity was assessed by adopting a score chart of 5 grades viz., 1,3,5,7 and 9 based on the size of the lesion on boot leaf sheath and per cent of panicle exerted out (Narayanasamy and Viswanathan, 1990). Fifty tillers from each treatment selected at random were examined for disease intensity. The disease index was worked out using the following formula.

Disease index = 1 x A + 3 X B + 5 X C + 7 X D + 9 X E where, A, B, C, D and E refers to percentage of tillers showing grade 1,3,5,7 and 9 respectively.

From the disease index, the efficacy of the fungicide was determined. Yield parameters like number of productive tillers and 1000 - grain weight were also recorded for 10 hills/plot just before harvest. Yield was estimated on plot basis eliminating the border rows and expressed as kg/ha.

RESULTS AND DISCUSSION

Application of mancozeb + tricylazole 2 times and mancozeb 4 times was found superior in controlling sheath rot disease. They reduced the disease level by 41.91 and 38.87 per cent respectively in the first trial. In the same trial, spraying of edifenphos 2 times and mancozeb 2 time and tricyclazole (1 time) (treatment 3) reduced the disease

Table 1. Effect of spraying fungicides during late boot leaf stage on sheath rot intensity.

	Fungicide Treatment	First trial			Second trial		
		IR 20	CO 43	IR 50	IR 20	CO 43	IR 50
1.	Mancozeb	289.3	337.9	273.9	286.8	309.4	275.9
2.	Tricyclazole	335.7	388.6	316.2	329.8	366.4	292.5
3.	Tricyclazole	302.2	369.8	284.7	300.8	348.5	280.3
4.	Mancozeb + Tricyclazole	282.8	319.0	254.9	285.6	300.8	273.0
5.	Edifenphos	339.3	324.8	285.6	314.7	357.8	284.6
6.	Control	445.9	548.8	460.2	480.3	517.5	309.4
	CD (P = 0.05)		37.12			36.94	

Table 2. Effect of fungicide spraying on yield components in rice.

Sl. No.	Fungicide treatment	FIRST TRIAL						SECOND TRIAL					
		No.of productive tillers			Grain yield (kg/ha)			No.of productive tillers			Grain yield (kg/ha)		
		IR 20	Co 43	IR 50	IR 20	Co 43	IR 50	IR 20	CO 43	IR 50	IR 20	CO 43	IR 50
1.	Mancozeb	10.9	9.7	11.1	4871	5434	4938	9.5	10.1	11.6	5169	5058	3948
2.	Tricyclazole	10.4	10.4	10.8	5383	5447	5260	9.5	10.5	11.7	5283	5038	4397
3.	Mancozeb and Tricyclazole	9.9	11.1	10.5	5224	5634	5188	10.1	10.1	11.2	5187	5016	3999
4.	Mancozeb + Tricyclazole	11.2	11.1	11.0	5890	6058	5406	10.2	10.3	12.4	5340	5238	4596
5.	Edifenphos	10.3	11.5	10.5	5047	5383	5198	9.9	9.5	11.3	5140	4953	4088
6.	Control	9.5	9.8	9.6	4485	5070	4669	8.8	10.1	9.6	4859	4542	3737
	CD (P = 0.05)		1.3			667		0.7				220	

by 35.4 and 35.1 per cent respectively Tricyclazole if applied alone reduced the disease significantly. In the second trial also, spraying mancozeb + tricyclazole 2 times and mancozeb 4 times reduced the disease level by 40.6 and 39.7 per cent respectively. Other treatments significantly reduced the disease intensity (Table 1). In general, there was not much variation in the disease control efficiency of different chemicals in the two trials.

When fungicides were sprayed only in main field, all the treatments registered an increase in the number of productive tillers, 1000-grain weight and grain yield over control. However, mancozeb + tricyclazole treatment alone could significantly increase number of productive tillers, 1000-grain weight and grain yield while other treatments had no favourable effect on these characters. When the fungicides were applied to the nursery and main field all the treatments significantly increased number of productive tillers and grain yield (Table 2). However, mancozeb + tricyclazole, tricyclazole and edifenphos treatments significantly increased the 1000 grain weight whereas other treatments were on par with control. Application of mancozeb + tricyclazole increased the grain yield to the maximum extent of 16.3%.

Tricyclazole alone or in combination with mancozeb has been found to be effective against blast (Kempf, 1985; Viswanathan, 1989) and brown leaf spot (Viswanathan and Narayanasamy, 1990) diseases of rice. In the present investigation though mancozeb treatment reduced the disease incidence to a greater level, the yield increase by that treatment was less when compared to mancozeb + tricyclazole and edifenphos treatments. Seed treatment with tricyclazole effectively protected the seedlings from blast and brown spot (Viswanathan, 1989). Effectiveness of edifenphos (Govindarajan and Kannaiyan, 1982) and mancozeb (Thrimurthy, 1986) against sheath rot has been reported. It was also found that mancozeb + tricyclazole was not phytotoxic on any of the 3 varieties tested and did not leave residues at toxic level either in grains or in straw.

REFERENCES

GANESAN,M. 1987. Evaluation of pesticides for rice ecosystem. M.Sc.(Ag.) Thesis. TNAU, Coimbatore.p.73.

GOVINDARAJAN, K and KANNAIYAN, S. 1982. Fungicide control of rice grain infection. International Rice Res. Newsl.7 (4):10.

KANNAIYAN,S. 1979 Chemical control of sheath rot of rice. International Rice Res. Newsl. 4(3): 14-15.

KEMPF,D. 1985. Fungicide mixtures for disease control in rice. From abstracts of Tropical Agriculture. 11:55790.

NARAYANASAMY,P. and VISWANATHAN,R. 1990. A new scoring system for sheath rot of rice. Madras Agricultural Journal 77 (4-5): 256-257.

THIRUMURTHY. 1986. Studies on chemical control of sheath rot of rice. Pesticides. 20(9):20-21.

VISWANATHAN,R. 1989. Studies on 'Management of Rice Fungal diseases with tricyclazole and mancozeb'. M.Sc (Ag.) thesis, TNAU, Coimbatore. P. 119.

VISWANATHAN,R. and NARAYANASAMY.P. 1990. Chemical control of brown leaf spot of rice. **Indian J. Mycol. Pl. Pathol.** (in Press).

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IMMOBILIZATION OF ANABAENA AZOLLAE IN SOLID MATRIX ON AMMONIA EXCRETION

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ABSTRACT

The algal symbiont of Azolla - Anabaena azollae (AS-DS) immobilized in polyurethane foam and hollow fibre recorded higher heterocyst frequency, nitrogenase activity, protein contents and ammonia excretion. Rice seedlings (ADT-36) were raised in acid washed and sterilized sand and inoculated with immobilized A. azollae increased the seedling growth.

Azolla is a free floating water fern which fixes atmospheric nitrogen in association with the N fixing cyanobacterium. **Azolla - Anabaena** symbiosis fixes considerable amounts of nitrogen in flooded rice field ecological condition and contributes 40-60 kg N/ha per rice crop (Kannaiyan, 1992a).

Azolla microphylla a fast growing and higher nitrogen fixing type with tolerance to higher temperature and salinity is used as biofertilizer for rice (Kannaiyan 1992a). The isolation and cultivation of **A. azollae** under free living condition and its nitrogen fixing activity has been reported (Kannaiyan 1991). **A. azollae** (AS-DS) is known to excrete ammonia under laboratory condition (Kannaiyan et. al. 1992). The present paper deals with the immobilization of the algal symbiont **A. azollae** in solid matrix and its inoculation effect on rice seedling growth.

MATERIALS AND METHODS

The solid matrices such as hollow fibre, cotton and silk cotton were cut into small bits of 1.0 cm except polyurethane foam (PU) which was cut into cubes of 1.0 cm. One gram of these materials were washed well and added

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