

Summer trial, UCR

Isobac 20, a product of Nationwide Chemical Corporation, was reported to give good control of damping-off as an in-furrow spray, or as a pre-emergence spray at ground cracking or during the post-emergence period. The active ingredient of Isobac 20 is monosodium salt of 2,2 methylenebis (3,4,6-trichlorophenol). Isobac was compared with Panogen 15 2 oz, Panogen plus Vitavax 75W 8 oz, Ceresan L 2 oz plus Demosan 65W 10 oz, Terra-Coat L-21 12 oz plus PCNB-Terrazole granular 1 lb active per acre, and PCNB-Terrazole granular 1 lb active per acre. Isobac 20 was applied as an in-furrow spray at planting at the rate of 6 oz per acre, as a spray over the cottonseed bed at ground cracking, and as a topical spray after emergence of the cotton seedlings. Delta Pine 16 acid-delinted cottonseed was planted June 25, 1969. *Rhizoctonia* inoculum was added in-furrow at planting time. Stand counts were taken of healthy appearing plants in 50 ft of row July 15. The results are as follows:

Treatment	Plants per 50 ft row
Panogen 15 2 oz	129 a*
Isobac 20 in-furrow spray at planting 6 oz	179 a
Isobac 20 6 oz at ground cracking	192 ab
Isobac 20 6 oz post emergence	246 b
Panogen plus Vitavax 75W 8 oz	376 c
PCNB-Terrazole granular 1 lb active per acre	412 cd
Ceresan L 2 oz plus Demosan 65W 10 oz	431 d
Terra-Coat L-21 12 oz, plus PCNB-Terrazole granular 1 lb active per acre	476 d

* Significant at 1% level.

These results are similar to previous trials in that Terra-Coat seed treatment plus PCNB-Terrazole granular, PCNB-Terrazole granular alone, or Ceresan L plus Demosan combination seed treatment were significantly better than the other treatments. Plants from seeds treated with Panogen plus Vitavax were next in effectiveness. Isobac performed poorly in this test and in two out of three cases was not significantly better than the check or no treatment.

Imperial Valley, 1969

Four growers trials were conducted during the spring of 1969 to compare single fungicide seed treatments. The seed treatments were as follows: Demosan 65W 10 oz, PCNB LST 12 oz, Panogen 15 2 oz, and no treatment. Rates of fungicides were per 100 lbs of untreated, acid-delinted Delta Pine 16 cottonseed. Disease incidence was low during these experiments and in only two trials were the responses significantly better than those from plots with no treatment. The

Brock trial was planted March 11 on a Holtville salty loam soil. The Borchard trial was planted March 27 on a Rositas very fine sandy loam soil. Plots were 200 ft long and replicated six times. The number of healthy plants per 100 ft of row was counted at the Brock ranch April 9 and the Borchard ranch April 22:

Treatment	Healthy plants per 100 ft row	
	Brock	Borchard
Panogen 15 2 cz	914 a*	604 a
PCNB LST 12 oz	795 a	554 a
Demosan 65W 10 oz	646 b	591 a
Check cr no treatment	617 b	409 b

* Significant at 1% level

Panogen and PCNB were significantly better than Demosan or the check treatment at the Brock ranch. Panogen, PCNB, or Demosan seed treatment were significantly better than the check or no treatment at the Borchard ranch trial.

Meloland, 1969

Delta Pine 16 cotton seed was the variety used again in the spring trial at the Meloland Field Station. All fungicide rates are per 100 lbs of acid-delinted cotton seed or per-acre for the granular treatments. Treatments were as follows: No treatment, PCNB LST 12 oz, Terra-Coat L-21 12 oz, Vitavax 75W 8 oz, Ceresan L 2 oz plus Demosan 65W 10 oz, Demosan 65W 10 oz, and PCNB in-furrow granular 1 lb active. The plot was planted April 22 and treatments were 85 ft long and replicated six times. The number of healthy plants in 60 ft of row May 25:

Treatment	Healthy plants per 60 ft row
Check cr no treatment	76 a*
PCNB LST 12 oz	186 b
PCNB in-furrow granular, 1 lb active	237 bc
Terra-Coat L-21 12 oz	248 bc
Vitavax 75W 8 oz	264 cd
Ceresan L 2 oz plus Demosan 65W 10 oz	275 cd
Demosan 65W 10 oz	328 d

* Significant at 1% level.

Vitavax, Demosan or a combination seed treatment of Ceresan plus Demosan were significantly better than all other treatments. Terra-Coat or PCNB in-furrow granular was intermediate in the number of healthy plants.

Albert O. Paulus is Extension Plant Pathologist; Fugio Shibuya is Extension Laboratory Technician; and Thomas DeWolfe is Specialist, Department of Plant Pathology, University of California, Riverside. James House and David Cudney are Farm Advisors, Imperial County; and Joseph Osgood, formerly in Imperial County, is now Farm Advisor in Tehama County. The Delta Pine 16 cottonseed used in these trials was obtained from the Delta and Pine Land Co., Brawley.

Effects of SEMEN on of

No differences in fertility and hatchability of turkey eggs were observed when hens were inseminated with semen extended with three different diluents tested, as compared with undiluted semen.

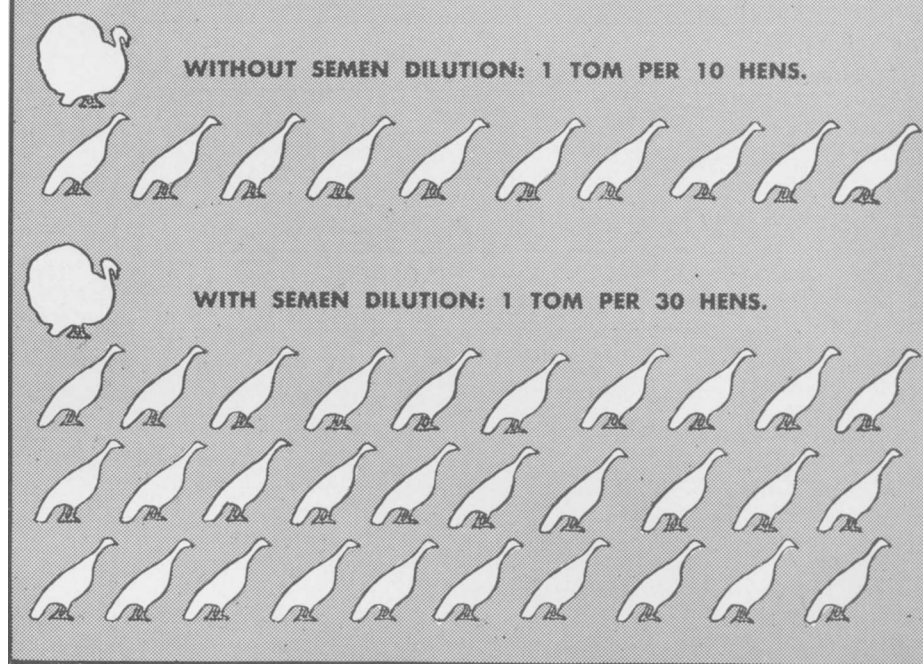
DILUTION OF TURKEY SEMEN has obvious economic advantages to the turkey breeder (as illustrated by the tom-hen ratio diagram). With a dilution program the semen from one male will inseminate three times the number of hens as in a program using undiluted semen. The more frequently the males are used within a week, the greater are the economic benefits from a dilution program with turkey breeder males.

Researchers in the Nebraska Experiment Station showed that turkey semen could be extended successfully in several experiments in 1954. Recently, Brown of the Ohio Experiment Station, and Lake of the Edinburgh Poultry Research Centre (using diluents widely different in composition), showed that dilution of turkey semen had no adverse effect upon fertility and hatchability of turkey eggs. At present, a diluent prepared by the Minnesota Turkey Grower's Association and sealed in 2-cc glass vials has been widely used in the field for the extension of turkey semen.

In this study, the objective was to determine whether these diluents (used at a ratio of one part semen to two parts diluent) would differ among themselves in terms of fertility and hatchability, after insemination into hens within one hour of collection and dilution. The formulae of the three diluents are shown in table 1.

three EXTENDERS reproduction turkeys

EFFECT OF SEMEN DILUTION ON TURKEY TOM-HEN RATIO



F. X. OGASAWARA · R. A. ERNST

Lake's and Brown's diluents were prepared aseptically and sealed in 2-cc glass vials (1.33 cc of diluent per vial). The Minnesota diluent was provided by Dr. E. Graham of the University of Minnesota in similar vials for use in the experiment. All diluents were stored in a refrigerator at 40°F until the day of use.

One hundred twenty Bronze turkey females were randomly distributed into five treatment groups in four replicate blocks, so that full sisters appeared in all five treatments whenever possible. The hens were held in individual cages at the University of California experimental farm at Davis. The five treatments compared in this experiment are shown in table 2. The last two treatments are controls: one duplicating the total volume inseminated, and the other the actual number of spermatozoa inseminated.

Thirty-two Bronze males were held in flat bottom cages. The large number was for the purpose of insuring a surplus volume of semen, both for insemination and for semen quality testing. The collection, dilution, and insemination of semen was carried out within a one-hour period. The hens were inseminated on a biweekly schedule for a 13-week experimental period. The order of insemination was determined randomly on each date to eliminate any effect of time between collection of semen and insemination of the diluted semen.

After each insemination of the hens, the semen (both diluted and control samples) was evaluated for concentration and

for the percentage of live sperm. As shown in table 3, the concentration of spermatozoa in the diluted samples was proportionately lower than that of the whole semen.

Table 4 shows that egg production of the five treatment groups was reasonably uniform during this trial. Fertility was high, averaging 90 per cent in all groups for the duration of the trial. Table 4 also shows the per cent hatch of fertile eggs and of total eggs set, and again illustrates how closely these three treatments were grouped during the experimental period. Statistical analysis indicated that none of the means of the five treatment groups were significantly different from each other for egg production, fertile eggs, hatch of fertile eggs or hatch to total eggs set.

No differences in fertility and hatchability of eggs were observed when hens were inseminated with semen extended with the three diluents—or with undiluted semen—irrespective of dose used. It was concluded that any diluent (if osmotically balanced for turkey sperm cells) can be used as an extender if the collection, dilution and insemination procedures are confined to a one-hour interval.

Frank X. Ogasawara is Associate Professor, Avian Sciences Department and Animal Physiology Department, University of California, Davis; and Ralph A. Ernst is Extension Poultry Specialist, University of California, Davis.

TABLE 1
DILUENT COMPOSITION FOR TURKEY SEMEN

Constituent	Lake's	Brown's	Minnesota
	gms per liter		
Mg Chloride	0.676		
K Citrate	1.280		
Na Acetate	8.511		
Na Glutamate	17.350		
Fructose	10.000		
Dextrose			2.000
Na Chloride		10.000	3.350
Di-Na Phosphate			1.185
K Di-Acid Phosphate			0.260
Mg Sulfate			0.500
K Chloride			2.200
Ca Chloride			0.500
Tris			1.670
Tricine			22.000
Peptone			20.000
Threonine			0.011
pH:	7.0	6.8	7.2

TABLE 2. EXPERIMENTAL DESIGN

Semen diluent	Dilution	Volume
		inseminated
	semen:diluent	ml
Lake's	1:2	0.03
Minnesota	1:2	0.03
Brown's	1:2	0.03
None	None	0.03
None	None	0.01

TABLE 3. SEMEN QUALITY TESTS

Sample	Concentration of sperm	Live-dead values		
		Normal	Abnormal	Dead
	billion/ml	%	%	%
Lake's diluent	2.5	72	20	8
Minnesota diluent	2.3	75	17	8
Brown's diluent	2.5	75	16	9
Whole semen	9.6	64	23	13

TABLE 4. EGG PRODUCTION, FERTILITY, AND HATCHABILITY RESULTS

Semen: whole or diluted	Egg production	Fertile eggs	Hatch of fertile eggs	Hatch of total egg set
				%
	%	%	%	%
Lake's	41	90	70	63
Minnesota	41	89	69	61
Brown's	38	89	65	59
Whole semen	39	93	71	65
1/3 semen	33	89	65	58
Average	38	90	68	61