

F R A S S

NEWSLETTER



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EDITED BY

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Science and Education Administration
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EDITORS' NOTE

Success of the Frass Newsletter depends on continuous input of each of its over 400 subscribers. The editors welcome all information relating to arthropod rearing. Your input is important for keeping the rearing community informed and to promote its advancement.....give your support by sending comments, views, and abstracts of publications, etc. to the editor before January 1980 to be included in the next issue of FRASS.

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COMMENTARY

Norman Leppla

Five Years of Frass: An Unpretentious Prospective

The first 1980 Insect Rearing Newsletter will mark its five-year anniversary. Maybe it's presumptuous, but in anticipation of this particular issue, it occurs to me that most of our initial objectives have been achieved. The newsletter was conceived as a problem solving vehicle for the 1970s, and it has served that purpose well. However, at this juncture, we confront a new decade of challenges. How will effective communication and cooperative action assist us in facing tomorrow's issues? To answer this question, we must recall previous attitudes about insect rearing, review past accomplishments, and anticipate the future role of FRASS.

In 1975 the climate was all but hostile. Insect rearing was being relegated to almost purely technical support and scientific journals were categorically rejecting manuscripts on the subject. Thus much rearing research remained unpublished, "buried" in results sections of related papers, or published in inappropriate journals. In addition, industry was unable or unwilling to supply custom dietary ingredients and other materials. Adequate environmental control systems for insectaries were not readily available at reasonable cost, and quality control was an almost non-existent practice. Moreover, obsolescence and duplication were rampant, since those of us with similar interests and achievements were unaware of each other's contributions.

Many of these persistent problems have been organized into discrete projects for concerted action by the Insect Rearing Group. For example, we now have a continuously updated list of insect rearing supplies, a directory of participants, and a catalog of arthropod cultures. The group sponsors workshops at national and regional meetings of the Entomological Society of America. A recurrent theme at these sessions is the importance of quality control in rearing programs. Our most recent effort has been to help organize and advertise the 1980 conference, "Advances in Insect Rearing." However, the primary purpose of the group is to prepare and distribute a semiannual newsletter that communicates rearing problems and solutions, cites recent publications, announces professional activities, and circulates news of interest to the participants.

Obviously, during the last five years the Insect Rearing Group has not been operating in a vacuum. Significant changes have occurred in our nation that have had both positive and negative consequences for the conduct of entomology. One of the benefits of this upheaval was a reemphasis on publishing the results of past work and proposing courses of action for the future. Thus, we have seen the publication of "Artificial Diets for Insects, Mites, and Spiders," "Facilities for Insect Research and Production," "Quality Control: An Idea Book for Fruit Fly Workers," and "Arthropod Cultures 1979-80." Concomitantly, ESA established a monthly newsletter and a journal section for entomological techniques articles. However, thanks to the enthusiasm and dedication of the annual coordinators and active participants, FRASS remains the primary source of current information on insect rearing.

MEETINGS

1979--National Meeting of the Entomological Society of America,
November 25-29, Denver Hilton Hotel, Denver, CO.

1979--Arthropod Rearing Meeting of the Arthropod Rearing Society,
Tuesday, November 27, 7:30 PM, Spruce Room, Denver Hilton
Hotel, Denver, CO.

Moderator: J. D. Hoffman
USDA SEA NCR
Biological Control of Insects Research
Columbia, MO 65205

1979--Results of Survey on Insect Allergies--Section 3 of the ESA,
Monday, November 26, 4:30 PM, Breckenridge Room, Denver
Hilton Hotel, Denver, CO.

Presented by: Robert A Wirtz
Department of the Army
Letterman Army Institute of Research
Presidio of San Francisco, CA 94129

1980--Insect Rearing Conference, March 4-6, Capitol Airport Inn,
1200 Virginia Ave., Atlanta, Georgia.

The conference is SDA-sponsored with a score consisting
of federal, state, university and commercial interest. International
participants are welcomed. The conference objectives
are:

a.--Assemble the scientific principles of insect rearing
that have been established in recent years. These would
include guidelines for establishing and maintaining colonies
of insects for specific purposes.

b.--Identify problem areas in insect rearing programs and
develop scientific recommendations for problem solving.
These would include research, development, and implementation
protocols.

c.--Establish the scientific complexity and integrity of
insect rearing as a field of scientific research.

d.--Through publication of the conference proceedings,
document the state of the art of insect rearing and establish
a reference for direction of the science.

The planned format for the conference is two and one-half days
of presentations with two nights of summary and discussion.
The afternoon of the third day will be used to summarize and
identify areas of need and make recommendations for future
research.

The program is organized into 6 areas of emphasis: 1) Colony establishment and maintenance; 2) Insect diets; 3) Production, utilization, and quality testing; 4) Engineering; 5) Management; and 6) Pathology.

Papers presented will be compiled and published as a book.

For more information regarding the conference, please contact Dr. R. F. Moore, Conference Coordinator, USDA-SEA, Agricultural Research, Cotton Insects Research, Post Office Box 271, Florence, South Carolina 29503.

NOTES OF INTEREST

Arthropod Species in Culture 1978-1979

Over 200 locations have submitted information on approximately 1000 colonies containing some 500 species of arthropods. Publication was originally scheduled for the spring of 1979, but has been delayed 6-9 months due to extensiveness of compilation and review. This delay, although undesirable, has allowed the inclusion of about 100 additional species. Publication is planned through the Entomological Society of America. Details concerning the availability of the "List" will be included in the January-February issue of "Frass."

Headhouse addition at Brookings

A headhouse addition is currently under construction at the USDA, SEA-AR, NCR, Northern Grain Insects Research Laboratory at Brookings, South Dakota. Anticipated completion of this addition is August 1980. The structure, which measures 70 x 100 feet, is divided into two separate work areas, one for manipulating field-collected insects and propagation of insects on plant substrates and the other for maintenance of insects on semi-synthetic media. The latter portion will contain laboratories for rearing production and rearing research, diet preparation, pupation and emergence rooms. Each area is maintained by separate air systems for heating, cooling, and purification. The air purification system is designed to remove odors and all particles 0.2 microns or larger. Insects will be maintained in 12 environmental rooms that can be programmed for photoperiod, temperature regimes, and humidity. Additional information can be obtained from Dr. Gerald R. Sutter at the Northern Grain Insects Research Laboratory, Brookings, SD 57006.

New Insectary

A new insectary, occupying approximately 6,000 ft², began operation at the USDA, SEA, AR, Metabolism and Radiation Research Laboratory, Fargo, North Dakota in 1978. The facility is designed to minimize microbial contamination of insect cultures and to reduce potential hazards of allergens in insect rearing. The building possesses a self-contained air handling system, plus a central vacuum and central steam source with outlets in individual rooms for cleaning purposes. Separate work areas include 1) special diet preparation kitchen, 2) cold room, 3) egg seeding laminar flow area, 4) pupal and adult handling areas, 5) eight environmental rooms with individual controls, and 6) two isolation laboratories with their own environmental rooms for special insect strains, e.g., field collected or "dirty" insects. Species currently being reared include the boll weevil, house fly, stable fly, Heliothis spp., American cockroach, and Mediterranean flour moth. The staff consists of a GS-9 professional support supervisor, 2 biological laboratory technicians and 2-3 student assistants as they are available. Additional information can be obtained by contacting Mr. Dale Birkenmeyer, the insectary supervisor.

Viral Insecticide Production

Sandoz, Inc., Wasco, California has completed a facility (opened June 15, 1979) for production of a viral insecticide, Elcar®, on Heliothis zea. The insectary is designed to provide ideal temperature-humidity-light conditions and strict security to prevent contamination of the insectary by the Elcar® virus. H. zea larvae are transferred to the viral production unit for infection.

Insect Rearing Information

Please direct requests for information regarding insect rearing in the U. S. Dept. of Agric. to:

Dr. Raymond P. Moore, Jr.
National Technical Advisor for Insect Rearing
United States Department of Agriculture
Science and Education Administration
Pee Dee Experiment Station
P. O. Box 271
Florence, SC 29502

Relocation

Pritam Singh has returned home: Entomology Division, DSIR
Private Bag
Auckland, New Zealand

Allergy Committee

Dr. S. B. Vinson, Chairman Section B, ESA, was requested to appoint a committee to examine allergic reactions to insects. Members of this committee are:

Wirtz, R. A. Chairman
Hoffman, J. D.
Gorham, E. A.
Weiden, M.
Brindley, D. L.
Hammond, A. M.

Dr. Wirtz will present results of the Allergy Survey at the preliminary business meeting of Section B of the National Meeting of the Entomological Society of America at 4:30 PM on Monday, 26 November 1979, in the Breckenridge Room at the Denver Hilton Hotel.

REQUESTS

Have You Had Disease Losses in Your Insectary???

Please answer these questions or tell us about your past problems in your own words and send your replies to either: Ronald H. Goodwin, Insect Pathology Lab., USDA, SEA, Rm 214, Bldg 011A, ARC-West, Beltsville, MD 20705, (Tel. (301) 344-3689), or Martin Shapiro, Gypsy Moth Rearing Research, USDA, SEA, Bldg 1398, Otis AFB, MA 02542. (Indicate whether you wish your replies to remain anonymous or attributed).

1. What diagnosed diseases have caused your greatest or most persistent losses, decreased viability or fecundity?
2. What successful and what unsuccessful measures have you used in coping with disease losses?
3. Have you had unexplained losses or reproduction failures among imported or field collected pest insects or beneficial insects when they were initially cultured or later?
4. Please describe major or persistent minor unexplained losses you have had in your insectary stock. What is your opinion about the cause of these losses: handling, diet, genetic, disease?
5. What steps do you usually take to prevent the introduction of disease agents into your own stock insects? Was your insectary designed with disease prevention in mind? If not, what changes would you make now if you could afford them?

6. Have you had support problems in diagnosing your own insect's unexplained losses, decreased viability, decreased fecundity or decreased field competitive abilities? What kind of support would best fit your needs?

Informational Contact for In Vitro Rearing

An effort is being initiated to obtain the world literature relating to in vitro rearing of insects. An author-publication list will be collated from both hemispheres--updated annually and made available upon request.

Please send copies of all publications and current addresses of all authors to the respective contact person listed below for your hemisphere.

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Columbia, MO 65205 USA

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Charge de Recherches
Laboratoire de biologie-406
INSA 20, Avenue Albert Einstein
69621 Villeurbanne Cedex
Lyon (78)68 81 12
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Artificial Diet Supplement

Pritam Singh is compiling a Supplement to Artificial Diets for Insects, Ticks, and Spiders. This volume will have a revised introductory chapter covering diets published from 1976-1980 and include formulations omitted in the original volume. A joint species index will be included.

Send reprints of work on diets for the forthcoming volume or comments on the original book to Dr. Singh, Entomology Division, DSIR, Private Bag, Auckland, New Zealand.

PUBLICATIONS

Atkinson, P. R. 1979. Mass rearing and artificial infestation methods for Oldana saccharina. Proc. I. Afr. Sugar Technol. Assoc. Annu. Congr. 52: 143-45. (PSATA)

- Cooperative Research. 1979. Studies on the artificial host egg of the endoparasitic wasp Trichogramma. *Acta Entomol. Sin.* 22(3).
- Davis, F. M., and T. G. Oswalt. 1979. Hand inoculator for dispensing lepidopterous larvae. U. S. Dep. Agric. AAT-S-9/October 1979. 5p.
- Grenier, S., G. Bonnot, B. Delobel, and P. Laviolette. 1978. Developpement en milieu artificiel du parasitoide Lixophaga diatraeae (Towns.) Obtention de l'imago a partir de l'oeuf. *C. R. Acad. Sci. Paris*, t. 287. Sept. Serie D, p. 535-38. (Laboratoire de Biologie n° 406. I.N.R.A.-I.N.S.A., 20, Avenue Albert Einstein, 69621 Villeurbanne Cedex, France.)
- Griffin, J. G. 1979. "Rackveyor" for use in mass rearing boll weevils. U. S. Dep. Agric. SEA, AAT-S-4/Sept. 1979. 3p. (L. Griffin; USDA, P. O. Box 5367, Mississippi State, Miss. 39762)
1979. Egg planter for a boll weevil mass-rearing operation. U. S. Dep. Agric. SEA, AAT-S-6/Sept. 1979. 5p.
- and O. H. Lindig. 1979. Emergence cabinet for mass rearing of boll weevils. U. S. Dep. Agric. SEA, AAT-S-4/Sept. 3p.
- and O. H. Lindig. 1979. Oviposition cage and auxiliary equipment for mass rearing of boll weevils. U. S. Dep. Agric. SEA, AAT-S-5/Sept. 1979. 5p.
- Hubei Province. 1979. Group of artificial host eggs of Trichogramma. *Acta Entomol. Sin.* 22(3): 310.
- Miller, J. A., C. D. Schmidt, and J. L. Eschle. 1979. Mass rearing of horn flies on a host. U. S. Dep. Agric. SEA, AAT-S-8/Sept., illus. (Miller, USDA, P. O. Box 232, Kerrville, TX 78028, tel. (512) 257-3566).
- Martin, P. B., R. L. Ridgway, and C. E. Schuetze. 1978. Physical and biological evaluations of an encapsulated diet for rearin Chrysopa carnea. *Fla. Entomol.* 61(3): 145-52.
- Poinar, G. O., and G. M. Thomas. 1978. Diagnostic Manual for the Identification of Insect Pathogens. Plenum Press. New York. 218p.
- Raj, Desh, and N. Ramakrishnan. 1978. Economics of mass rearing of Trichogramma brasiliensis Ashmead. *Indian J. Entomol.* 3(1): 45-49. (Raj, Indian Agric. Res. Inst., New Delhi, India 110012)
- Ruskan, G., and I. Huber. 197?. The rearing of embryos of Blattella germanica in vitro. (Fairleigh Dickinson Univ., Madison, NJ)

DIET INGREDIENT SOURCE AND PRICE LIST

<u>Item</u>	<u>Description</u>	<u>Source</u>	<u>Cost</u>
Agar	fine	Morehead & Co. 14801 Oxnard St. Van Nuys, CA 91401 8-213-873-6640	\$5.04/lb They pay shipping on 200 lb. or more
Alfalfa	meal	Nutrilite Products P. O. Box 98 Lakeview, CA 92353 714-521-3900	\$55.00/cwt
Aureomycin	chlorotetracycline soluable powder 64 g/lb (25.6 gm act./6.4 oz. pkg)	Ozark Supply Co. American Cyanamid 1614 Wyoming Kansas City, MO 816-229-6100	\$2.55/6.4oz.
Alphacel	non-nutritive, bulk	Nutritional Biochemicals, Inc., 26201 Miles Road Cleveland, OH 44128 216-662-0212	\$96.00/cwt
Ascorbic Acid		Roche Chemical Division Hoffman-LaRoche, Inc. Nutley, NJ 07110 201-235-5000	\$4.56/lb in 1-5 lb quant. \$4.31/lb in 6-10 lb quant. \$4.08/lb in 11-25 lb quant.
Calcium alginate	Kelgin HV	Kelco Co. 20 N. Wacker Drive Chicago, IL 60606 312-372-1352	\$212.00/cwt
Gelcarin	HWG	Marine Colloids, Inc. 2 Edison Place Springfield, NJ 201-379-6620	\$5.00/lb under 200 lbs \$3.75/lb in 200- 800 lb quant. \$3.25/lb in 800- 1000 lb quant. (50 lb min. odr.)
Casein	crude, 80 mesh loctic, 30-40 mesh .70/lb	Milk Specialities P. O. Box 278 Dundee, IL 60118 8-312-426-3411	.75/lb 25 kg bag (55 lb)
CSM		Krause Milling Co. 4222 W. Burnham St. P. O. Box 1156 Milwaukee, WI 53215 414-272-6200	exact price unavailable

ETOH		U. S. Industrial Chem. Co., Box 7157 Louisville, KY 40207 502-426-6100	\$412.50/55 gal drum
Formaldehyde	40%	Fisher Scientific 1241 Ambassador Blvd. St. Louis, MO 63132 314-991-2400	\$16.07/5 gal GSA contract \$21.40/5 gal others
KOH	45%	Fisher Scientific	\$35.24/5 gal GSA contract \$40.50/5 gal others
Linseed Oil	raw	GSA	\$30.00/5 gal
Methyl-p	methyl-para hydroxybenzoate, technical	Tenneco Chemicals, Inc. Organics & Polymers Div Turner Place, Box 365 Piscataway, NJ 08854 201-981-5000	\$3.07/lb in 100 lb quant. \$3.17/lb in 50 lb quant. \$3.27/lb in 25 lb quant.
Paper towels (Rolls)		GSA 8540-00-291-0391 (25 rolls/case)	
Pinto beans	whole	Bemhem & Co. c/o South Western Sales Assoc. P. O. Box 2948 Jacksonville, FL 32203 904-356-8535	\$19.05/cwt
Potassium Sorbate, powder	Sorbistat K	Pfizer Corp. 6460 W. Courtland St. Chicago, IL 60635 c/o J. M. Dugger, Res. Mgr. 312-381-9500	\$240.00/cwt
Salt mix (W)	Wesson	ICM Pharmaceuticals 26201 Miles Cleveland, OH 44128 216-831-3000	\$10.05/5 lb \$34.75/25 lb
Soy Protein	Supro 610 100 mesh	Ralston Purina Co. Checkerboard Square St. Louis, MO 63188 314-982-0111	\$.74/lb Min. 50 lb
Tenox	PG	Eastman Chemical Prod. Inc., Order Services Kingsport, TN 37662 615-246-2111	\$8.95/5 lb

Vitamin Pre-mix	#26862	Roche Chemical Div. Hoffman-LaRoche, Inc. Nutley, NJ 07110 201-235-5000	\$2.90/lb
Wheat germ	raw	Earthwonder 1735 E. Trafficway Springfield, MO 65802	\$.43/lb
Wheat Germ	toasted, regular toasted, flaked use flaked	Kretchmer Products Inter. Multifoods Corp. 1200 Multifoods Bldg. Minneapolis, MN 55402 612-340-3300	\$.50/lb
Wheat germ	raw (flaked)	Niblack Foods 555 Flint St. Rochester, NY	\$39.50/cwt \$.3525/lb 2000 lb lots
Wheat germ		Arrow Head Mills	\$.50/lb 300 lb min.
WSB (wheat soy blend)		source unknown	
Yeast-torula		St. Regis Paper Co. Lake States Division 603 W. Davenport St. Rhineland, WI 54501 715-369-4100	\$.34/lb in drum \$.32/lb in sack

Containers & Other Supplies

Cups-plastic	1 oz.	Thunderbird Container Corp. P. O. Box 12033 El Paso, TX 79012 915-584-1151	\$33.85/5000 (case)
Lids-1oz.	paper (press in) 1.476 diam.	Standard Cap & Seal P. O. Box 80336 Chamblee, GA 30341 404-457-6332	\$20.00/10,000
Tray	50 cell #J-2	Trend Mfg. of America 1663 N. McDuff Ave. P. O. Box 6915 Jacksonville, FL 32205 904-388-6525	\$63.15 1 case = 500 trays
Mylar	lidding for 50 cell tray	Champion Package 15 Spinning Wheel Road Hensdale, IL 60521	\$80.00/r1 (4500 ft)

Assorted paper towels	Scott Paper Co. Bob Shell, Production Manager Scott Plaza Philadelphia, PA 19113	\$17.42/30 unit case (25 cases minimum)
Cell-Pac (CP-25)	Autoclavable holders for Thunderbird 1 oz. cups	Diamond National P. O. Box 697 Phoenix, AZ 85001
Choline Chloride Crystals		ICM Pharmaceuticals 26201 Miles Raod Cleveland, OH 44128
Hexcell	Expanded resin-coated honeycomb HRH-10	Hexcell Corp. 6151 W. Century Blvd. Suite 1114 Los Angeles, CA 90045 213-776-8740

POSITIONS
(Wanted-Open-Filled)

Wanted:

Open: Research Biochemist, GS-1320-11/12
Bee Research Laboratory
2000 East Allen Rd.
Tucson, AZ 85719
tel. (602) 795-3222, FTS-8-762-6280

Research Assignment: acquire new information to produce high population colonies on demand for crop pollination.

Filled: Postdoctoral-Research Associate: \$16,500/annum with reappointment contingent on performance.
Dept. of Entomology
Univ. of Arizona (USDA-Biological Control Laboratory)
Tucson, AZ 85719

Qualifications: Ph. D. in entomology; training-experience in insect physiology, biochemistry, insect nutrition, and rearing of entomophagous species.

Research Assignment: Develop artificial diets, rearing techniques for predaceous insects.

FRASS SUBSCRIBER LIST

Please check your name and address for accuracy. Send correction deletion, or new-subscriber request on the form at the end of this listing. NOTE: No action is required to remain on the mailing list.

REQUEST FORM

Address Correction-Deletion-New Subscriber: (circle one)

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Address--

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