

TECHNICAL CATALOGUE

ORGANOVUM PLUS

Organovum Plus will result in:

Healthier laying hens,

Stronger thicker egg shells,

Lower % cracks,

Improved and better feed conversion,

Reduced mortality,

Better flock uniformity,

Improved function of the egg gland,

More grade A eggs.



2/12

ORGANIC CHEMICAL SOLUTIONS
Clinical Efficacy & Trial Data

ORGANOVUM-PLUS*

Technical Services Department
How To Reduce Cracked Eggs: Let OrganOvum Plus Help
By Dr. Martin R. Moreira January 27, 2001

Many poultry men do not understand the seriousness of the economic impact caused by the number of cracked and/or lost eggs. It is sad but true that perception is reality, and the perceived reality for most poultry men is that the percentage of cracked eggs is low in their operation. Objective quality control checks indicate otherwise. Currently the percentage of cracked eggs received at the grading stations for most operations will range between 5-8%. This problem is further exacerbated by the fact that during the washing and grading processes more eggs are broken. This 5-8% cracked eggs as the result of poor eggshell quality and faulty handling by the producer, will have a projected annual loss of at least US\$25,000 for every 100,000 hens in production.

Some Causes of Cracked and lost Eggs

It has been postulated and shown that the quality of the eggshell is closely related to the incidence of cracked eggs. Here are some influencing factors determining egg shell quality:

Genetics

Some genetic strains of birds have the ability to produce eggs with better shells. However, as strains are bred and selected for better egg production, there is a tendency toward a reduction in eggshell quality.

Position of Egg Within a Clutch

The first eggs of a clutch possess better shell quality than those laid later in clutch. As high producing hens must have longer clutches, the correlation between clutch length and poorer shell quality is obvious. This problem cannot be addressed through normal nutritional practices as doing so would entail gearing formulas for the weaker eggs which would be costly. This is why **Ovum Plus** can be helpful even for a top-laying hen during peak production.

Length of Lay

The longer the period of egg production, the poorer the shell quality becomes. This has to do with the hen's inability to transport the needed nutrients for eggshell formation as she gets older.

Temperature

The higher the environmental temperature, the poorer the quality of the eggshells. When high temperatures occur at the end of the laying period, both factors work to decrease shell quality. At these particular instances, it is of foremost importance to give the older stressed hen as much help as possible.

Disease

Respiratory diseases, such as bronchitis and Newcastle disease, have a marked effect on shell quality.

Eggshell Breaking Strength

When shell quality is good, it will require from 6 to 8 lbs. of pressure to break the eggs. However, when shell quality is poor, 5 lbs. of pressure will break them, and there is a problem. Normally, eggs laid at the end of the laying period will break with 5 lbs. or less of pressure.

The above is only a few of the most important factors affecting eggshell quality and eggshell strength. While knowing the most important factors affecting eggshell quality does not solve the problem, it is an old adage that knowing the problem is half the answer. What are some of the things that can be done to improve eggshell quality and reduce lost or cracked egg numbers?

How to Reduce Egg Breakage

Reducing the number of cracked and lost eggs should be a real important project for all poultry farms. The first step is to determine what the present breakage is, and then start a campaign to reduce it. Keeping detailed records and plotting the progress on graph paper is a very helpful and needed tool. Let's list some of the methods we can use in order to reduce the incidence of cracked and lost eggs¹:

- 1) Genetics. Some strains of egg-type layers produce a higher percentage of cracked eggs. Make a judicious choice when selecting the genetic supplier.
- 2) Handle eggs more carefully at the end of the laying period.
- 3) Start an employee-education program to stress the economic importance of and how to reduce egg breakage. Candle eggs gathered by different personnel and compare results for further feedback.
- 4) Provide a cushion bumper at the front of the egg collection area.
- 5) Try some cages with fewer birds. Crowding increases egg breakage. It may be that an excessive number of cracked eggs are canceling the additional income from more birds per cage.
- 6) Collect eggs from cages more often. Eggs rolling down to the floor have a greater chance of creating breakage if there are eggs in the receiving area. It is estimated that at least one-half of the breakage is due to this.
- 7) Collect eggs on flats to avoid an extra handling. If baskets must be used, do not fill them over half full.
- 8) Consider changing the ration if poor shell quality is a continuous problem.
- 9) Reduce every stress possible; stresses lower shell quality in most cases and therefore increase egg breakage. Supplement your ration during these times with **Ovum Plus**.
- 10) Prevent cannibalism. It often causes birds to pick at freshly laid eggs. Check on the light intensity. Higher than needed intensity can incite cannibalism
- 11) Reduce bird fright. Sporadic movements and jumping of birds in the cages can only create more eggs that are cracked.
- 12) Be sure any automatic egg-gathering equipment does not produce an increase in egg breakage. Check the belt material, the speed of the belts, and any angling or corner devices.
- 13) Whenever there is any kind of unusual stress supplement your feed ration with at least 2 lbs., (1 kg) to not more than 8 lbs, (4 kg) of **Ovum Plus** per ton, (metric ton) of feed. If you would like to have more information regarding the benefits of ORGANOVUM Plus please contact your local distributor or e mail us at info@ocslc.net. Thanks for your consideration.

ABSTRACT

Every egg producer sooner or later may experience a shell quality problem. Thin, weak, rough, and poor textured shells cause great economic loss. Shell quality problems usually occur as the hen becomes older. It is thought that older hens do not absorb the nutrients needed for shell formation as well as younger hens. Hence, older hens respond to supplemental feeding of nutrients to improve shell quality, OVUM- PLUS can be mixed in the feed to help reduce losses from under grade eggs and cracks.

WHAT IS ORGANOVUM-PLUS ?

ORGANOVUM-PLUS is a nutrient supplement for older laying hens. ORGANOVUM-PLUS is a unique combination of soluble trace minerals and vitamins, ORGANOVUM-PLUS may provide the extra nutrients that older hens need for egg shell formation. ORGANOVUM-PLUS is a carries the soluble trace minerals and vitamins in the feeder to the hen without separating

¹ North, Mack O. 1972. "Commercial Chicken Production Manual", The Avi Publishing Company, INC., pgs. 277-278.

out of the ration. This unique granular shape particle is much of ORGANOVOUM-PLUS's success story in that it gets the trace minerals and vitamins to the hen and helps her with shell formation. **ORGANOVOUM-PLUS IS NOT A CALCIUM PRODUCT.** NO CHANGES are required in formulation, not even Calcium, If the hens are consuming between 3,5 and 4,5 grams of calcium per day, ORGANOVOUM-PLUS can be added to the rations without formulation changes. ORGANOVOUM-PLUS is a non - medicated product. ORGANOVOUM-PLUS is a convenience package. It lets you add extra - nutrients, without reformulation, to help older hens do a little better job.

EXPECTED RESULTS

The proof of any product is in its performance in the field. ORGANOVOUM-PLUS has proven itself around the world. Producers tell us you can expect better shells, you will save more "loss eggs", and you will reduce mortality up to 4%. Give ORGANOVOUM-PLUS a chance to help you with your shell quality problems. You will be glad you did. It is convenient and simple.

HOW IS IT FED?

EARLY OVUM PLUS PROGRAM - Add 2 lbs. of ORGANOVOUM-PLUS per ton, 1 kg per metric ton, to your complete feed when new pullets are housed (18 - 21 weeks of age) and continue for 5 weeks. Stop. Then at 46 weeks of age, add 2 lbs. OVUM-PLUS per ton till end of lay. This EARLY ORGANOVOUM-PLUS PROGRAM helps pullets come into production with extra nutrients.

PREVENTIVE PROGRAM - Prior to an anticipated eggshell problem, or when the hens have reached 4 to 5 months of lay, add 2 lbs. ORGANOVOUM-PLUS per ton, 1 kg per metric ton, of complete ration, and feed to end of lay. Just add ORGANOVOUM-PLUS. no other ration changes are necessary.

TREATMENT PROGRAM - When a shell problem has developed, add 8 lbs. ORGANOVOUM-PLUS per ton, 4 kg per metric ton, for one week, then add 4 lbs. per ton for one week, then 2 lbs. per ton till end of lay.

MOLTED BIRDS When birds have reached 50% production, add 2lbs. ORGANOVOUM-PLUS per ton, 1 kg per metric ton, of complete ration, and continue feeding till end of lay.

DOES IT PAY?

One ton of ORGANOVOUM-PLUS will feed 62,500 birds for approximately five months, at 2 pounds per ton, 1 kg per metric ton, continuously. If ORGANOVOUM-PLUS gets an extra egg in 5 months lay, it pays.

* Since this data was collected improvements have been made to the efficacy of OrganOvum Plus.

FIELD PROVEN

*ORGANOVUM-PLUS was fed to 10,000 birds in Missouri and the result was a 3.5% advantage in the number of eggs gathered over the control flock. ORGANOVUM-PLUS does not make any claims for increasing production, but many teats show more eggs gathered, due to less breakage in the house.

*In a Florida teat, layers fed ORGANOVUM-PLUS showed a 4% increase in Grade A eggs or 14 more Grade A eggs per case than the control flock. The teat period covered both hot and cool weather and involved 225,000 layers. *A recent field trial with layers fed ORGANOVUM-PLUS was conducted in Manitoba, Canada. At the end of an 8 week period the layers fed ORGANOVUM-PLUS showed an increase of 3.65% in Grade A eggs and a 3.55% reduction in cracks over the control flock, ORGANOVUM-PLUS birds showed a distinct advantage in producing more marketable eggs than the control flock,

WHAT ABOUT OTHER SPECIES ?

ORGANOVUM-PLUS can be used on older hens of any species. ORGANOVUM-PLUS has been used on broiler breeders, turkey breeders, pheasants, and quail.

Egg content can be manipulated by nutrition. Three main research directions can be inferred from the results of ongoing investigations

- 1) Egg size
- 2) Egg enrichment with fatty acids, vitamin and minerals and
- 3) Shell quality.

The recent interest for the beneficial effect of the polyunsaturated fatty acids (n-3) on human health has led to the development of nutritional strategies aiming to improve egg content in fatty acids (n-3) and micronutrients (vitamins and minerals). Higher intakes of polyunsaturated fatty acids, he said, decreased the risk of heart diseases and strokes as well as having positive immunological and neurological effects.

Dietary PUFA are readily incorporated into eggs and there are three main sources of PUFA for poultry, the first fish oil, the second flaxseed, linseed and millet (plant sources rich in linolenic acid mainly) and the third sea algae, the latter being the most efficient way of producing n-3 enriched eggs; their PUFA content is more stable than in fish oil and in a more active form than in the plant oils.

Besides the amino acid composition, diet manipulation can be used to improve the vitamin and mineral content of the eggs, said Dr Whitehead. It is well known that the vitamin content of eggs depends upon the dietary vitamin level, and poultry diet supplementation has been considered as a means of egg vitamin enrichment for human nutrition. However, vitamin incorporation in eggs has evolved for the benefit of poultry rather than human.

The recent preoccupation for egg shell quality and the concern for osteoporosis prevention, said Dr Whitehead, increased the interest of the nutritionists to find particular calcium and phosphorus sources. Recent studies of mineral nutrition suggested that phytase may help maintain eggshell quality for a lower dietary phosphorus level and that certain calcium sources have a beneficial effect on egg shell and bone quality. Within this context, the use of dietary supplements with metabolites of vitamin D seems to have beneficial effects.

The beneficial effect of antioxidants on human health determined a reassessment of liposoluble vitamin incorporation into the egg. Thus, the efficiency of vitamin E and beta carotene incorporation is low (15% for vitamin E and 0.3% for beta-carotene), but it is higher for vitamin A, 80% for a dietary content of 8000 IU/kg. At the same time, the well-known antagonism between liposoluble vitamins, reminded the author, extends to their incorporation into the egg too. The theme of egg enrichment in omega-3 fatty acids was largely completed by Dr Grashorn (University of Hohenheim) who studied different relationships between omega-3 and omega-6 fatty acids in eggs

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by the dietary inclusion of several mixed fat sources, which allowed him to adjust different ratios between omega-3 and omega-6. The different ratios were obtained by mixing fish-oil, soy oil, flaxseed oil, canola oil and sunflower oil.

The level of egg omega-3 fatty acids increased with the dietary level of omega-3 and n-6/n-3 ratio decreased. However, it seems stressed Dr. Grashorn, that there is a threshold of n-3 fatty acids accumulation in the yolk, which could be due to the ratio between dietary linolenic and linolenic acids. At the same time, egg enrichment in n-3 fatty acids resulted in a high rate of oxidation, phenomenon that could be controlled by the presence of antioxidants such as alpha-tocopherol. The increasing concern for human health, its relationship with diet structure and quality, and the association of polyunsaturated fatty acids with beneficial effects on human health, explains the orientation of a large number of papers presented to the discovery of better sources of polyunsaturated fatty acids and to the most efficient ways of manipulating these sources. The trend was to use mixed oil sources rather than single oil sources. The combination of cereals such as corn, barley and oats (rich in linolenic acid) used in particular proportions presented by Barbera Kaminska (Poland) was interesting. Barley and especially oats are not widely used in poultry nutrition except for the Scandinavian countries; the high fat and lipogenic acid levels could make them typical dietary components which to improve yolk polyunsaturated fatty acids profile. The eggs obtained hens fed 40% oats had a significantly higher content of linoleic acid (18.2)

Cage Options For Reducing Cracked Eggs

With the advent of new cage design for commercial egg layers, particularly in Europe, researchers, H. Wall and R. Tauson from the Swedish University of Agricultural Sciences, Uppsala, Sweden reported on cage options that may help reduce egg cracks (*Poultry Science* 81:340-348). The study specifically looked at furnished-cage models, which reduce the egg laying area of the cage to a 55-inch-wide area. 1,296 hens of three lines; Hy-Line White, Hy-Line Brown, and Lohmann Selected Leghorn were examined over a 60-week laying period. The use of egg saver wires and long nest curtains on the cages significantly reduced the percentage of cracked eggs. However, the position of the nest opening (front or rear) had no effect on egg quality.

by John Schleifer, D.V.M.

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UNIVERSITY TEST

The following test was conducted to evaluate ORGANOVUM-PLUS in the diets of Leghorn Breeder Hens. This experiment using molted birds extended over 13-28 day periods. Total eggs produced were recorded daily and summarized each seven days. Mortality was summarized for period 1-6 and 7-12. Eggshell quality was evaluated using three separate procedures, as measured by the Inatron machine, Marius Deformation machine, and specific gravity for shell mass. Hatch ability was determined at the end of 3, 6, 9, 12, and 15 months and recorded as a percent of hatch for all eggs set.

Since the trace mineral content of the feed was more than adequate by NRC standards, the production response to ORGANOVUM-PLUS was good. Birds consuming ORGANOVUM-PLUS fortified diets peaked at a higher level and produced at a numerically higher rate throughout the life cycle of the hens.

Eggshell quality agreed closely in the three shell quality measurements (Tables 7-8-9). Mortality (Table 6) improved markedly. Hatchability study (Table 10) is most impressive, as continuing improvement was observed in the ORGANOVUM-PLUS birds in each batch.

RATION: CALCULATED ANALYSIS

<u>Ingredient</u>			<u>%</u>
ME(kcal/lb)	1280/lb.	Calcium	3.50
Crude Protein1	6%	Phosphorus (AV)	.50
Lysine.		Phosphorus (TOT)	.68
Methionine	-34%	Sodium	.21
Methionine + Cys	.60%		

- 1) Vitamin premix formulated to provide the following levels of added vitamins per kilogram of diet: Vitamin A - 8800 IU Vitamin D₃ - 1650 IU
 Vitamin E - 6.6 IU Vitamin B₁₂ - 7.04 activity mcg
 Riboflavin - 6.6mg. d-Pantothenic acid - 9.9mg.
 Niacin -33mg, Choline - 528mg.
 Ethoxyquin - 49.5mg. Vitamin K (MSB) - 640 mg.
 Thiamine - 404mg. d - Biotin - 20mg.

- (2) Trace mineral premix formulated to provide the following levels as mg/kg:
 Manganese - 59; Zinc - 49; Iron - 29; Copper - 5; Iodine - 1

The Production Response of Hens Fed ORGANOVUM-PLUS (Percent Expressed on a Hen Day Basis)

TREATMENT	Period I												
	1 ² AV%	2	3	4	5	6	7	8	9	10	11	12	13
Basal	43 50	63	65	64	64	58	50	55	54	58	41	24	12
+ 0-25% OrganOvum-Plus	46 53	68	71	67	63	60	51	56	52	55	43	35	32

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Dietary TREATMENT	1 - 6	7 - 12	Total
Basal	4.2%	10.4%	14.6%
+ 0.025%			
OrganOvum-Plus	2.1%	8.3%	10.4%

!)Each period represents 28 days

Egg Shell Quality - Deformation(I)

Period(2)

Dietary TREATMENT	1	2	3	4	5	6	7	8	9	10	AV
Basal	24.8	----	---	---	25.9	30.2	23.9	28.0	29.0	26.4	
+ 0.025%											
Ovum Plus	24.8	22.3	---	---	---	25.3	27.2	23.9	24.7	26.5	25.0

1. Deformation is a measure of the deformity induced into the curvature of the shell when a 500gram weight is lowered onto the shell, The measurement is in umicrons. The lower the number the higher the Shell quality.
2. Each period represents 28 days.

Egg Shell Quality (Specific Gravity)

Period(2)

Dietary TREATMENT	1	2	3	4	5	6	7	8	9	10	AV				
Basal	1.088	1.086	----						----	1.076	1.073	1.081	1.078	1.079	1.080
+ 0.025%															
OrganOvum-Plus	1.088	1.076	---	----	1.078	1.075	1.083	1.080	1.084	1.082					

1. Specific gravity is a measurement of she)] mass. It Is a means of quickly evaluating the shell quality of a large number of eggs. The larger the number the better the shell quality.
2. Each period represents 28 days.

Egg Shell Quality Studies (inatron Breaking Strength)

Period2

Dietary TREATMENT	1	2	3	4	5	6	7	8	9	10	AV
Basal	5.8	5.9	---	---	---	5.5	4.5	5.0	4.5	4.7	5.1
+ 0.025%											

OrganOvum-Plus 6.2 6.1 --- --- --- 5.4 4.9 5.3 4.8 5.0 5.4

1. Inatron breaking strength is the Quasi-static force required to induce a hairline fracture in the egg shell. It is expressed In pounds and Is considered a measure of the crystalline structure of the shell.
2. Each period represents 28 days.

Hatchability Study

No. Months On

No.	TREATMENT	TREATMENT	Percent Hatch
1	Basal	3 Months	76
	OrganOvum-Plus		76
2	Basal	6 Months	67
	OrganOvum-Plus		69
3	Basal	9 Months	60
	Ovum Plus		69
4	Basal	12 Months	50
	OrganOvum-Plus		57
15	Basal	15 Months	5
	Ovum Plus		45

Aged males and females used In these studies account for the low Hatch ability.

OVUM-PLUS TEST FROM A MAJOR POULTRY COMPANY

his test was run by a large breeder company, three houses on one farm, 10,000 birds per house, The grade was averaged for 5 days prior to feeding ORGANOVUM-PLUS, and then again after ORGANOVUM-PLUS was fed for two weeks, The percent of change is shown. Loss eggs were reduced by 3.3% and even though cracks were up by .3%, Grade A's increased 2.9%. Note also that the larger the loss prior to ORGANOVUM-PLUS, the greater the loss-reduction after.

Average grade for five days before ORGANOVUM-PLUS feeding, and grade the 14th day after start of feeding are							
<u>Bldg. #</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>Bldg. #2</u>	<u>1</u>	<u>2</u>	<u>3</u>
Grade A Cracks				Grade A Cracks			
2/11 - 2/16	82.5	6.6	9.0	82.4	7.6	7.9	
3/3	83.5	8.3	6.5	84.8	6.3	5.9	
% Change				% Change			
2/11 - 2/16	+1.0	+1.7	-2.5	+2.4	-1.3	-2.0	

<u>Bldg. #3</u>	<u>Average</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>Bldg. #2</u>	<u>1</u>	<u>2</u>	<u>3</u>
Grade A Cracks Loss				Grade A Cracks Loss				
2/11 - 2/16	79.1	7.2	11.25	81.3	7.1	9.4		
3/3	84.4	7.8	6.1	84.2	7.4	6.1		
% Change				% Change				
2/11 - 2/16	+5.3	+6	-5-15	+2.9	+3	-3.3		

Results From International Studies

OrganOvum-Plus Field Trial -Kirchberg, West Germany DATE: Aug. - Dec.

DESCRIPTION OF TRIAL:

Number of birds at commencement:
9864 Age of birds at commencement:
64 weeks Age of birds at termination:
83 weeks
OrganOvum-Plus Inclusion rate: 2 kg per forms for 2 weeks. Thereafter 1 kg per forms.

RESULTS: DATE

	<u>Age of Birds</u>	<u>second</u>
	(weeks)	
5 - 11 Aug.	64	8.62

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	OrganOvum-Plus commenced	
19 - 25 Aug.		3,77
21 - 27 Oct.	75	4.12
16 - 22 Dec.	83	5.73 %

OrganOvum-Plus Field Trial- England

Trials carried out by a Norfolk firm on the OrganOvum-Plus have resulted in its use in all feed for birds over 40 weeks of age.

Bibby subsidiary Norfolk Newlay, who produce and pack eggs from 750,000 birds, tested OrganOvum-Plus on a 20,000 bird flock housed in two identical flat deck units, OrganOvum-Plus being used in one house, the other acting as a control.

Apart from the reduction in second grade eggs, a further factor in the decision was an improvement in production on the OrganOvum-Plus TREATMENT of around 2%, which has been confirmed in subsequent use of the product. Production Director David Williams said that Norfolk Newlay's strongest sales asset was high egg quality. Handling staff were trained to remove eggs with the slightest fault, so the relatively small improvement in shell quality was significant. Anything which could help improve egg quality was of great value and the consensus of the management was that OrganOvum-Plus had a contribution to make.

OrganOvum-Plus Test at Zellikoefin, Zurich - Switzerland A performance test of OrganOvum-Plus was carried out last year by Zellikoefin College of Poultry Husbandry at Zurich, Switzerland over a 12 week period. A flock of 260 hybrid layers was divided into a control group and a group receiving OrganOvum-Plus at 1 kg per forms added to a 17.2% protein layers mash. Results of the OrganOvum-Plus fed birds compared with the controls showed a 2.5% reduction of feed consumption and a 20.4% reduction in cracked eggs, down from 10.3% to 8.2%. Shell strength was greater, with linear deformation under the Ranch pressure test down from 0.0371 mm to 0.0327 mm, or 11.9%.

OrganOvum-Plus Field Trial - Canada

The test was conducted at the James Valley Colony, Elie, Manitoba. One house of 7,000 hens was divided with one-half of the hens put on 2 lbs. of ORGANOVUM-PLUS per ton of complete feed, the other half used as controls. The test was started on January 10, and completed on February 28. The Shaver 283's were 73 weeks of age on January 10 and had been in production for 52 weeks. 1,000 eggs per week were collected from each look and graded by the supervisor. Production records were kept by the flock owner. This was a well conducted and supervised test and shows a very significant advantage for ORGANOVUM-PLUS.

As is apparent from the data, when ORGANOVUM-PLUS is used at the 2 lb. level it will sometimes take 2 weeks or longer for significant differences to show up, therefore, the differences in the last 2 weeks may be indicative of WHAT ORGANOVUM-PLUS will do when feeding is started earlier.

During the eight weeks of the test, ORGANOVUM-PLUS produced 2.20% more Grade A eggs and 2.04% less cracks, and during the last two weeks, the differences were 3.65% more Grade A and 3.55% less cracks.

ORGANOVUM-PLUS can give you more cartonable Grade A eggs, less loss, fewer cracks, and a longer profitable laying cycle.

weeks	Average Egg Production		
	1 st 2 weeks	last 2 weeks	8
Controls	59.37%	57.73%	58.95
ORGANOVUM-	60.16	58.18	59.86
difference	+0.79	+0.45	+0.91

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Average Grade A

	1st 2 weeks	last 2 weeks	8 weeks
Controls	92.450%	89.10%	90.57
ORGANOVOUM-PLUS	92.35	92.75	92.77
difference	-.10	+ 3.65	+ 2.20

Average GradeB

	1st 2 weeks	Last 2 weeks	8 weeks
Controls	1.41 %		2.15% 1.86%
ORGANOVOUM-	1.60		1.85% 1.71%
difference	+1.19		..30 -1.16

Average% Cracked Shells

	1st 2 weeks	Last 2 weeks	8 weeks
Controls	5.70%		8.40% 7.11%
ORGANOVOUM-	5.70		4.85% 5.07%
difference	0.00		- 3.55 -

% Other Grade Factors

	1st 2 weeks	last 2 weeks	8 weeks
Controls	.45%	.35%	.46%
ORGANOVOUM-	.35	.55	.46
difference	-.10	+2.20	0.00

OrganOvum-Plus Trial -Finland

A test of shell strength by measuring the specific gravity of eggs was used in a OrganOvum-Plus trial conducted by Dr.Jouko Tiitola at the Munkkila Experimental Station, Finland. Groups of hens In two poultry houses were given feed supplemented with 0.1% of OrganOvum-Plus. After the birds had been receiving the feed for about 14 days, eggs were collected from the birds that had received the test feed, in order to analyze the shells in comparison with those of the controls, The analysis was made by immersing the eggs In salt solutions with different specific gravities and dividing them into different specific gravity classes. The reason for this is that specific gravity of the egg is directly proportional to shell percentage. There is a direct correlation between cracks and shell weakness. The average specific gravity limits are in practice between 1.075 and 1.090. Even a very small decrease in the average specific gravity causes an increase in the number of eggs with

weak shells. This is the reason for the rapidly increasing number of cracks when the shell quality deteriorates. The effect of OrganOvum-Plus on specific gravity classes of the eggs of hens at 14 months of lay is shown in the table, which indicates that the birds receiving OrganOvum-Plus had 27% fewer weak-shelled eggs. The test confirms OCS LLC recommendation to the producer to add OrganOvum-Plus for thicker shells whenever there are problems with shell strength, egg during the final laying period, in hot weather or for any other reason.

Class	Number	%	Average Specific Gravity	Effect of OrganOvum-Plus	
				<u>Ovum-Plus Fortified</u>	<u>Control</u>
				Number	%
1062	15	4.2		23	6.4
1066	21	5.9		31	8.6
1070	36	10.1		54	15.1
1074	65	18.2		81	22.6
1078	95	26.5		79	22.1
1082	70	19.5		54	15.1
1086	42	11.7		26	7.3
1090	13	3.6		9	2.5
1094	1	0.3		1	0.3
Total	358	100.0		358	100.0
Eggs					

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weak shells 38.4
 (specific gravity less than 1076)
 Average specific Gravity 1077.3 1075.4 gravity

52.7

Another Field Test. involving 225,000 Birds

The following test was run by a large Integrated operation in the southeast United States.

Average number of birds in each flock was 25,000, All birds were on the same corn-soya diet with 3.8% calcium supplied by limestone and oyster shells, Eggs are gathered at the farms and transported to the processing plant, an average of 25 miles.

The under-grade figures shown include dirt, stains, bloods, cracks, Grade B's, etc. as a percent of all eggs processed. Note that this test was started on July 19 in hot weather, and the last 4 weeks were during cool weather. The average age of the ORGANOVOUM-PLUS fed birds was 3 weeks older than the controls, Note also that the increase in Grade A cartonable eggs from Period 1 to Period 3 was 4.5% for the OVUM PLUS birds and only 0.38% for the controls. This is, we feel, a very significant test and is indicative of WHAT ORGANOVOUM-PLUS can do for you.

ORGANOVOUM-PLUS TEST FEED

CONTROLS

Flock No	61	62	68	71		63	67	69	70	72	
Test pd.	78% Bab.	.60% Hy.	Hy.	Bab.		AA	Bab.	Hy.	Bab.		
	22% Hy	40% AA			Avg.			70% Hy.			Avg.
Age in weeks as of 7/19	56	55	49	47	52	54	49	47	48	47	49
Under grades 9/27 thru 10/18	14.6%	17.7%	14.6%	13.4%	15.0%	10.1%	11.1%	12.6%	11.8%	11.7%	11.4%
Increase in grade A=s 1 to 3	11.3%	10.5%	9.4%	10.8%	10.5%	10.2%	11.1%	14.0%	9.8%	10.3%	11.0%
Age in weeks as of 10/19	70	69	63	61	66	68	63	61	62	61	63

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