COMMUNICATION TO THE EDITOR
Composition of a By-Product of Wild Rice Processing

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TO THE EDITOR:

The USDA has been supporting research at the University of Minnesota, St. Paul, on development of a procedure for separating mature green wild rice from immature material to increase the efficiency of the wild rice process. Resulting from their studies was the design and construction of an airstream separator capable of separating freshly harvested wild rice into fractions according to maturity, ie, a mature, an intermediate, and an immature or light fraction. The first two fractions can be processed further to recover the wild rice, but the light fraction, which consists of empty hulls, small, immature rice kernels, chaff, and debris, is not considered economical to process. The light fraction amounts to 13–18% by weight and 23–27% by volume of the green rice separated. It has a bulk density of about 10 lb/ft^3 and contains 55–60% moisture. Currently, this fraction is discarded (1,2).

In considering disposal problems due to various environmental ordinances and landfill regulations, we conducted a compositional and amino acid assay on samples of the recovered light fraction from two crop years to determine if it had any potential food or feed value.

The chemical composition of the fraction is given in Table I. Protein content (N × 6.25) is about 12%, which is considerably higher than the protein content of corn bran (5.5%) or soy hulls (8.0%), but 3–5 percentage points less than wheat bran (4). Ash in this fraction is comparable to that found in the soy and wheat products. Fat content is slightly higher than that usually found in corn bran or soy hull but lower than that in wheat bran. Components of the crude fiber fraction in the samples have not yet been determined.

The amino acid profile of the light fraction is presented in Table II, which shows little difference between the amounts of essential amino acids in samples from the two crop years. Only lysine is not equal or better than the FAO

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Provisional Pattern (5); however, at observed levels of 4.7 and 5.0, it is only slightly below the FAO value of 5.5 g/100 g of recovered protein.

The data suggest that this by-product of wild rice processing would certainly have value as a feed ingredient and possibly as a food ingredient, but feeding studies will be required to establish this.

TABLE I
Chemical Composition of Light Fraction Separated From Freshly Harvested Wild Rice[a]

Component	Sample From 1976 Crop	Sample From 1977 Crop
Protein (N × 6.25)[b]	12.3	12.2
Crude fat[b]	1.8	1.7
Crude fiber[b]	25.0	21.0
Ash[b]	6.1	4.9

[a]Percentage on moisture-free basis.
[b]Determined by Approved Methods of AACC (3).

TABLE II
Amino Acid Composition of Light Fraction Separated From Freshly Harvested Wild Rice[a]

Amino Acid[b]	Sample From 1976 Crop	Sample From 1977 Crop	FAO Pattern[c]
Aspartic acid	10.8	10.2	...
Threonine[d]	4.9	4.2	4.0
Serine	5.5	5.5	...
Glutamic acid	13.8	16.2	...
Proline	5.6	5.0	...
Glycine	5.9	5.4	...
Alanine	6.9	6.4	...
Valine[d]	6.9	6.5	5.0
Methionine + cystine[d]	3.1	3.7	3.5
Isoleucine[d]	4.9	4.6	4.0
Leucine[d]	8.6	8.2	7.0
Phenylalanine + tyrosine[d]	10.5	10.3	6.0
Histidine	1.5	1.8	...
Lysine[d]	4.7	5.0	5.5
Arginine	6.4	7.0	...

[a]Grams of amino acid per 100 g of recovered protein.
[b]Determined by Technicon TSM amino acid analyzer, after hydrolysis of sample in 6*N* acid.
[c]See reference 5.
[d]Essential amino acid.

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