بحوث جغرافية

١٦

التقويم الاقليمي لأنظمة الأمن الغذائي في دول العالم الثالث مع الاهتمام بالدول العربية

د. صلاح الدين قريشي

١٤١٤هـ ١٩٩٤م

سلسلة محكمة غير دورية تصدر عن الجمعية السعودية للجغرافيا
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قواعد النشر

١ ـ يراعى في البحوث التي تتولى سلسلة «بحوث في جغرافية المملكة العربية السعودية» نشرها، الأصالة العلمية وصحة الإخراج العلمي وسلامة اللغة.

٢ ـ يشترط في البحث المقدم للسلسلة ألّا يكون قد سبق نشره من قبل.

٣ ـ ترسل البحوث باسم رئيس هيئة تحرير السلسلة.

٤ ـ تقدم جميع الأصول على الآلة الكاتبة على ورق بحجم A4 ، مع مراعاة أن يكون النسخ على وجه واحد، ويترك فراغ ونصف بين كل سطر وآخر. ويمكن أن يكون الحد الأعلى للبحث (٧٥) صفحة)، والحد الأدنى (١٥) صفحة.

٥ ـ يرسل أصل البحث مع صورتين وملخص في حدود (٢٥٠) كلمة باللغتين العربية والإنجليزية.

٦ ـ يراعى أن تقدم الأشكال مرسومة بالحبر الصيني على ورق (كلك) مقاس ١٣×١٨ سم وترفق أصول الأشكال بالبحث ولا تلصق على أماكنها.

٧ ـ ترسل البحوث الصالحة للنشر والمختارة من قبل هيئة التحرير إلى محكمين إثنين ـ في الأقل ـ في مجال التخصص من داخل أوخارج المملكة قبل نشرها في السلسلة.

٨ ـ تقوم هيئة تحرير السلسلة بإبلاغ أصحاب البحوث بتاريخ استلام بحوثهم. وكذلك إبلاغهم بالقرار النهائي المتعلق بقبول البحث للنشر من عدمه مع إعادة البحوث غير المقبولة إلى أصحابها.

٩ ـ يمنح كل باحث أو الباحث الرئيسي لمجموعة الباحثين المشتركين في البحث خمسا وعشرون نسخة من البحث المنشور.

١٠ ـ تطبق قواعد الإشارة إلى المصادر وفقا للآتي:

يستخدم نظام (اسم/ تاريخ) ويقتضي هذا النظام الإشارة إلى مصدر المعلومة في المتن بين قوسين باسم المؤلف متبوعا برقم الصفحة. وإذا تكرر نفس المؤلف في مرجعين مختلفين يذكر اسم المؤلف ثم يتبع بسنة المرجع ثم رقم الصفحة. أما في قائمة المراجع فيستوجب ذلك ترتيبها هجائيا حسب نوعية المصدر كالتالي:

الكتـــــــب: يذكـر اسم العائلة للمؤلف (المؤلف الأول إذا كان للمرجع أكثر من مؤلف واحد) متبوعًا بالأسماء الأولى، ثم سنة النشر بين قوسين، ثم عنوان الكتاب، فرقم الطبعة ـ إن وجد ـ، ثم الناشر، وأخيرًا مدينة النشر.

الـدوريـــــات: يذكر اسم عائلة المؤلف متبوعًا بالأسماء الأولى، ثم سنة النشر بين قوسين، ثم عنوان المقالة، ثم عنوان الدورية، ثم رقم المجلد، ثم رقم العدد، ثم أرقام صفحات المقال (ص ص ٥ـ١٥).

الكـتب المحـــررة: يذكـر اسم عائلة المؤلف، متبـوعًا بالأسماء الأولى، ثم سنة النشر بين قوسين، ثم عنوان الفصل، ثم يكتب (في in) تحتها خط، ثم اسم عائلة المحرر متبوعًا بالأسماء الأولى، وكذلك بالنسبة للمحررين المشاركين، ثم (محرر .ed أو محررين .eds) ثم عنـوان الكتـاب، ثم رقم المجلد، فرقم الطبعة، وأخيراً الناشر، فمدينة النشر.

الرسائل غير المنشورة: يذكـر اسم عائلة المؤلف متبـوعًـا بالأسماء الأولى، ثم سنة الحصـول على الـدرجة بين قوسين، ثم عنوان الرسالة، ثم يحدد نوع الـرسـالة (ماجستير/ دكتوراه)، ثم اسم الجامعة والمدينة التي تقع فيها.

أمـا الهوامش فلا تستخدم إلا عند الضرورة القصوى وتخصص للملاحظات والتطبيقات ذات القيمة في توضيح النص.

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* **تعريف بالباحث:**

الدكتور صلاح الدين قريشي: باحث سابق في مدينة الملك عبدالعزيز للعلوم والتقنية بمدينة الرياض، يعمل الآن أستاذًا للجغرافيا بجامعة أليجار الإسلامية بالهند.

التقويم الإقليمي لأنظمة الأمن الغذائي في دول العالم الثالث مع الاهتمام بالدول العربية

ملخص

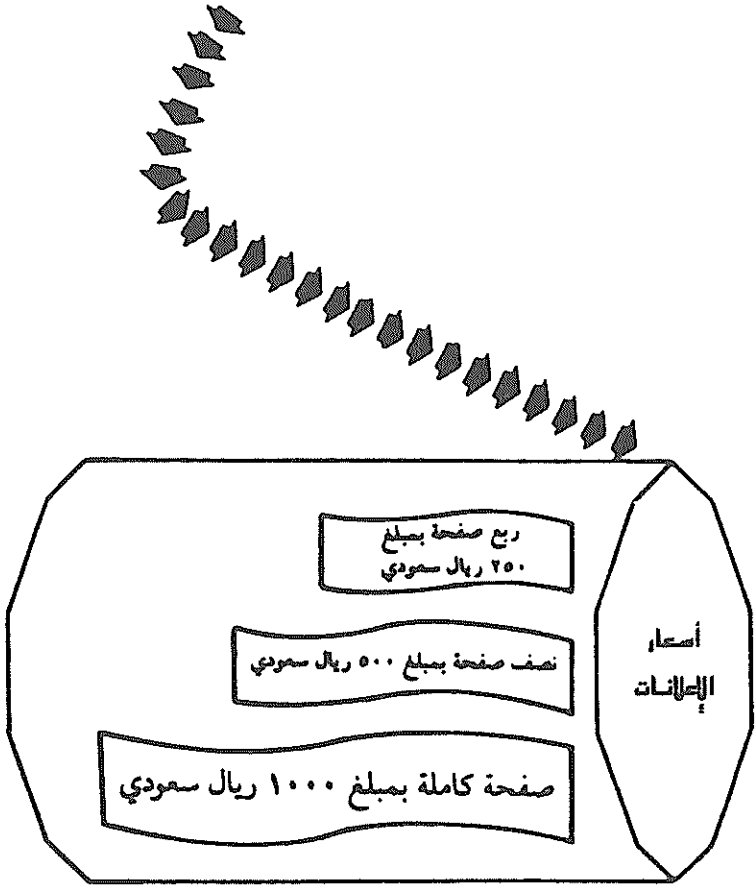
تهدف هذه الدراسة إلى تقديم تفسير جزئي لأنظمة الأمن الغذائي في دول العالم الثالث وذلك لصعوبة القيام بتقويم فعلي متكامل لمثل هذه الأنظمة دون الأخذ في الاعتبار كل المواد الغذائية التي يمكن أن تتاح لكل مواطن من مواطني هذه الدول ومن هذا المنطلق اختار الباحث بعض المواد الغذائية والزيوت الدهنية والسكر لتمثل مجتمعة مؤشرًا لمدى وفرة المواد الغذائية في أي قطر من الأقطار.

ولقد قام الباحث بتحليل متغيرات الإنتاج المحلي للحبوب ودرجة الاعتماد على الاستيراد إضافة إلى مؤشر مركب يعكس درجة توافر المواد الغذائية في ثمانية وأربعين دولة في قارات آسيا وأفريقيا وأمريكا اللاتينية. وقام الباحث بتحليل ومقارنة قيم هذه المتغيرات المختارة من القارات الثلاث وبين الدول التي أدخلت في الدراسة، وأوضح التحليل تباينًا كبيرًا في مستويات الأمن الغذائي بين الدول. ويعزى هذا التباين إلى مجموعة من الأسباب منها تفضيل زراعة المحاصيل النقدية الموجهة للتصدير والإمكانات البيئية المتاحة والنهج المتبع في الإنتاج الزراعي والوضع الاقتصادي العام في كل الدول.

ويقترح الباحث بعض الحلول التي من شأنها رفع مستوى الإنتاجية الزراعية وتوفير الأمن الغذائي للمواطن في كل دولة ويحث بدرجة خاصة على ضرورة إعادة النظر في النهج الاستهلاكي السائد للمواد الغذائية في الدول محط الدراسة.

صفحة الإعلانات

عزيزي الباحث وصاحب العمل والمؤسسة، تتيح لك الجمعية الجغرافية السعودية، فرصة التعريف بإنتاجك العلمي وأجهزتك التي يمكن أن تخدم الجغرافيين والجغرافيا بأسعار رمزية.



تعلن الجمعية الجغرافية السعودية عن إمكانية الحصول على مطبوعات الجمعية بالإضافة إلى إصدارات سلسلة بحوث جغرافية من أمين مال الجمعية بسعر رمزي قدره (١٠ ريالات) للعدد الواحد من:

١ ـ أبحاث تعليم الجغرافيا في المملكة العربية السعودية.

٢ ـ الدليل الإرشادي لتعليم الجغرافيا.

٣ ـ دليل ملخصات رسائل الماجستير والدكتوراه لبعض أعضاء الجمعية الجغرافية السعودية.

٤ ـ دليل رسائل الماجستير والدكتوراه في أقسام الجغرافيا بجامعات المملكة العربية السعودية.

الإصدارات السابقة

١ ـ نموذج لتوقيع الكتابة العربية على الرموز في الخرائط العامة والطبوغرافية	د. ناصر بن محمد عبدالله سلمي
٢ ـ تقدير عدد سكان المدن السعودية الصغيرة باستخدام الصور الجوية	د. خالد بن محمد العنقري
٣ ـ الحرارة وتكاليف تمديد موسم إنتاج الطماطم في البيوت المحمية المكيفة في واحة الأحساء	د. عبدالله بن أحمد سعد الطاهر
٤ ـ The Utility of Sand grain size in distinguishing Between various depositional environments	د. عبدالحفيظ بن محمد سعيد سقا
٥ ـ خصائص ومشكلات إنتاج الخضراوات بالبيوت المحمية من وجهة نظر المزارعين في منطقة الرياض الإدراية	د. عبدالله بن سليمان الحديثي عبدالعزيز بن إبراهيم الحرة
٦ ـ الصناعات الغذائية في مدينة الرياض خصائصها الجغرافية ومستقبلها	د. صبحي بن أحمد قاسم السعيد
٧ ـ خدمات هواتف العملة في مدينة الرياض دراسة جغرافية في الخصائص والتوزيع	د. عبدالرحمن بن صادق الشريف
٨ ـ نمط توزيع محطات وقود السيارات في مدينة الرياض، عام ١٤٠٩هـ/١٩٨٨م	د. خالد بن ناصر المديهيم
٩ ـ تحلية مياه البحر في دول مجلس التعاون لدول الخليج العربية : دراسة جغرافية تحليلية	د. محمد بن عبدالعزيز القباني
١٠ ـ نوايا الهجرة والمفاضلات المكانية لطلبة الجامعة السعوديين	د. محمد بن مفرح القحطاني
١١ ـ التحليل المكاني للخدمات التنموية في وادي تندحة ـ منطقة عسير	د. حسين بن سناف ريماوي
١٢ ـ تعرج الأنهار والأودية ـ دراسة جيمورفولوجية تطبيقية لبعض الأودية الجافة في المملكة العربية السعودية	د. عبدالله بن ناصر الوليعي
١٣ ـ الأقاليم المناخية في المملكة العربية السعودية : تطبيق مقارن للتحليل التجميعي وتحليل المركبات الأساسية	أ. د. محمد بن عبدالله الجراش
١٤ ـ دراسة التوسع العمراني في مدينة الرياض باستخدام الصور الجوية والمناظر الفضائية (١٩٥٠ ـ ١٩٨٩م)	د. عيسى بن موسى الشاعر
١٥ ـ الاستخدام الرأسي للأرض في المنطقة المركزية بمدينة جدة	د. عبدالحفيظ بن عبدالحكيم سمرقندي

أسعار البيع :

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24–	Domestic Production Availability Index of Asia	31.01
25–	Domestic Production Availability Index of Africa	20.29
26–	Domestic Production Availability Index S. America	30.75
27–	Total Food Availability of T.W.C.	1,118,087,258 MT
28–	Average Food Availability of T.W.C.	32.36
29–	Per Capita Food Availability of Asia	32.82
30–	Per Capita Food AVailability of Africa	27.11
31–	Per Capita Food Availability of S. America	36.31

Source: Computed from FAO's Production and Trade Data and UN's Demographic Data

APPENDIX VI

Miscellaneous at a Glance

1 – Total Population, Third World Countries = 3,931,563,000
2 – Total Population of Study Area = 3,423,566,000 = 87.07%
3 – Total Population of Asiatic Region = 2,681,000 = 78.3%
4 – Total Population of African Region = 380,205,000 = 11.1%
5 – Total Population of S. American Region = 361,829,000 = 10.6%

Per Capita

6 – Total Import Dependence, M.I.D.I. = 86,718,694 MT = 2.58 (25.8 kg)
7 – Import Dependence of Asia M.I.D.I. = 40,632,129 MT = 1.81 (18.1 kg)
8 – Import Dependence of Africa M.I.D.I. = 25,935,409 MT = 6.82 (68.2 kg)
9 – Import Dependence of S. America M.I.D.I.
= 20,151,156 MT = 5.56 (55.6 kg)

10– Total Economically Active Agricultural Population
= 939,950,000 = 100.0%
11– Economically Active Agricultural Population in Asia
= 821,906,000 = 87.44%
12– Economically Active Agricultural Population in Africa
= 84,273,000 = 8.96%
13– Economically Active Agricultural Population in S. America
= 33,771,000 = 3.59%

14– Total Irrigated Hectareage in T.W.C. = 160,672,000 = 100.0%
15– Total Irrigated Hectareage in Asia = 137,860,000 = 85.8%
16– Total Irrigated Hectareage in Africa = 8,806,000 = 5.5%
17– Total Irrigated Hectareage in S. America= 14,006,000 = 8.7%

18– Per Capita Irrigated Hectareage to Eco. Act. Agrl. Popl in T.W.C. = 0.172
19– Per Capita Irrigated Hectareage to Eco. Act. Agrl. Pop. in Asia = 0.169
20– Per Capita Irrigated Hectareage to Eco. Act. Agrl. Pop. in Africa = 0.104
21– Per Capita Irrigated Hectareage to Eco. Act. Agrl. Pop. in S. America = 0.414
22– Total Domestic Production Availability of T.W.C. 1,020,021,050 MT
23– Average Domestic Production Availability Index of T.W.C. 29.78

Appendix V

PER CAPITA IRRIGATED HECTAREAGE TO ECONOMICALLY ACTIVE AGRICULTURAL POPULATION

MIN	Total	MAX
0.005	939,950,000	3.437
Very high Hectareage		
1.501 – 4.000	Chile, Iraq, Israel, Libya	
Population	1,861,000 = 0.91 %	
High Hectareage		
1.001 – 1.500	Cuba, Iran, Pakistan	
Population	20,987,000 = 2.3 %	
Medium Hectareage		
0.501 – 1.000	Afghanistan, Syria, South Africa, Ecuador, Mexico, Peru, Uruguay, North Korea	
Population	21,361,000 = 2.27 %	
Low Hectareage		
0.100 – 0.5	Burma, China, India, Indonesia, Malaysia, Philippines, Saudi Arabia, Sri Lanka, Thailand, Turkey, Algeria, Egypt, Morocco, Somalia, Sudan, Tanzania, Bolivia, Brazil, Colombia, Paraguay, Venezuela, South Korea	
Population	790,344,000 = 84.08 %	
Very low Hectareage		
.005 – 0.099	Bangla Desh, Nepal, Vietnam, Chad, Cameroon, Ethiopia, Ivory Coast, Kenya, Nigeria	
Population	101,418,000 = 10.79 %	

Source: Based on FAO's Production and UN's Demographic Data. (1984-1986).

Appendix IV

LEVELS OR INDICES OF FOOD INSECURITY

MIN 0.02	MAX 4.78
Very high Insecurity 2.0 – 4.99 Population	Sri Lanka, Egypt, Somalia 80,732,000 = 2.35 %
High Insecurity 1.0 – 1.99 Population	Algeria, Ethiopia, Morocco, Chile, Bangla Desh, Malaysia, Syria, Chad, Cuba, South Korea 271,057,000 = 7.91 %
Moderate Insecurity 0.40 – 0.99 Population	Angola, Kenya, Libya, Sudan, Tanzania, Iraq, Israel, Saudi Arabia, Bolivia, Ecuador, Mexico, Peru 232,381,000 = 6.78 %
Marginal Insecurity 0.10 – 0.39 Population	Brazil, Colombia, Venezuela, Cameroon, Nigeria, Afghanistan, China, India, Indonesia, Iran, Philippines, Turkey, Vietnam, North Korea 2,551,930,000 = 74.54 %
Insignificant Insecurity 0.01 – 0.09 Population	Ivory Coast, South Africa, Paraguay, Nepal, Pakistan, Thailand 215,581,000 = 6.29 %
Absolute Security Population	Argentina, Uruguay, Burma 71,885,000 = 2.09 %

Source: Computed from basic FAO data in the study.

Appendix III
IMPORT DEPENDENCE INDICES

MIN 0.03	MAX 48.76
Very high I.D.I. 18.1 – 50.0	Algeria, Egypt, Libya, Cuba, Iraq, Israel, Saudi Arabia, South Korea
Population	160,339,000 = 4.68 %
High I.D.I. 4.1 – 18.0	Angola, Morocco, Somalia, Bolivia, Chile, Mexico, Peru, Venezuela, Iran, Malaysia, Sri Lanka, Syria.
Population	261,404,000 = 7.63 %
Moderate I.D.I. 1.0 – 4.0	Brazil, Colombia, Ecuador, Chad, Cameroon, Ethiopia, Kenya, Nigeria, Sudan, Tanzania, South Africa, Bangla Desh, Philippines, Turkey, North Korea.
Population	662,755,000 = 19.35 %
Marginal I.D.I. 0.6 – 0.9	Afghanistan, China, Indonesia, Vietnam, Paraguay
Population	1,322,495,000 = 38.62 %
Insignificant I.D.I. 0.03 – 0.5	Nepal, India, Pakistan, Thailand, Ivory Coast, Uruguay
Population	947,671,000 = 27.68 %
No I.D.I.	Argentina, Burma
Population	68,902,000 = 2.01 %

Source: Based on FAO's Trade and UN's Demographicdata(1984-1986).

APPENDIX II
LATIN AMERICA
AGRICULTURAL FOOD IMPORTS (MT)
(1984-1986)

COUNTRY	CEREALS	PULSES	OILSEEDS	SUGAR	TOTAL
Argentina	17,109,800 E	199,862 E	4,345,340 E	228,340 E	21,883,342 E
Bolivia	388,700	2,047	4,980 E	17,580 E	390,747
Brazil	5,276,000	54,340	8,072,690 E	2,749,630 E	5,330,340
Chile	580,200	60,292 E	22,830	71,500	674,530
Colombia	844,400	33,841	7,180	271,390 E	885,421
Cuba	2,126,000	96,302	285,880	6,796,450 E	2,508,182
Ecuador	289,300	672	1,330	2,760 E	291,302
Mexico	5,277,400	117,770	71,920	20,500 E	5,467,090
Paraguay	26,700	—	128,680 E	10,330 E	26,700
Peru	1,290,100	9,438	32,090	83,310	1,414,938
Uruguay	248,800 E	1,186	10,610 E	7,880 E	1,186
Venezuela	2,374,400	68,970	553,360	163,990	3,160,720

Source: Computed from FAO Trade Year Books (1984, 85, 86).
E Carries the export values.

APPENDIX II
AFRICA
AGRICULTURAL FOOD IMPORTS (MT)
(1984-1986)

COUNTRY	CEREALS	PULSES	OILSEEDS	SUGAR	TOTAL
Algeria	4,681,200	93,611	181,180	640,190	5,596,181
Angola	330,600	28,333	—	54,340	413,273
Cameroon	135,100	365	13,660 E	6,180	141,645
Chad	87,200	—	3,260 E	14,710	101,910
Egypt	8,792,900	53,691	270,410	742,460	9,859,461
Ethiopia	666,700	4,283 E	28,050 E	25,930 E	666,700
Ivory Coast	514,500	192	61,950 E	16,000 E	514,692
Kenya	271,800	10,443 E	4,540 E	60,170	331,970
Libya	1,306,100	8,366	126,760	159,930	1,601,156
Morocco	2,182,500	18,201 E	3,520	272,800	2,458,820
Nigeria	1,635,700	29,832	28,060 E	471,230	2,136,762
Somalia	301,200	633	—	62,130	363,963
South Africa	678,900	8,637	115,250	843,800 E	687,537
Sudan	747,100	18,819	50,560 E	24,020	789,939
Tanzania	256,400	4,567 E	16,300 E	15,000	271,400

Source: Computed from FAO Trade Year Books (1984, 85, 86).
E Carries the export values.

APPENDIX II
ASIA
AGRICULTURAL FOOD IMPORTS (MT)
(1984-1986)

COUNTRY	CEREALS	PULSES	OILSEEDS	SUGAR	TOTAL
Afghanistan	67,600	9,800 E	—	77,170	144,770
Bangladesh	1,964,400	2,751	930 E	185,160	2,152,311
Burma	—	100,733 E	42,190 E	—	142,923 E
China	6,675,600	150,924 E	1,531,560 E	935,350	7,610,950
India	811,400	271,333	1,367,290 E	958,440	2,041,173
Indonesia	1,516,600	14,670	175,630	18,530	1,549,800
Iran	4,422,200	17,292	337,870	626,910	5,404,272
Iraq	3,982,400	77,133	132,900	571,390	4,763,823
Israel	1,806,600	18,345	2,140 E	270,090	2,095,035
Malaysia	2,089,700	52,977	462,080 E	490,650	2,633,327
Nepal	49,700 E	10,970 E	16,000 E	10,670	10,670
Pakistan	1,255,200	7,254	215,530 E	282,070	1,544,524
Philippines	142,400 E	40,726	4,380	52,060	97,166
Saudi Arabia	5,851,500	38,773	127,970	320,360	6,338,603
Sri Lanka	891,800	34,235	21,830 E	244,110	1,170,145
Syria	1,385,900	26,554 E	73,720	342,410	1,802,030
Thailand	7,789,200 E	230,020 E	207,340	1,702,210 E	207,340
Turkey	561,200	469,655 E	3,590 E	143,890 E	561,200
Vietnam	463,100	31,666 E	330 E	40,890	503,990
North Korea	150,000	—	3,533	115,940	269,473
South Korea	6,797,300	19,762	211,920	596,170	7,625,152

Source: Computed from FAO Trade Year Books (1984, 85, 86).
E Carries the export values.

APPENDIX I
LATIN AMERICA
DOMESTIC FOODGRAIN AVAILABILITY (MT)
(1984-1986)

COUNTRY	CEREALS	PULSES	OILSEEDS	SUGAR	TOTAL
Argentina	9,118,200	46,138	2,425,320	891,660	12,481,318
Bolivia	934,000	27,000	97,040	212,420	1,270,460
Brazil	39,056,000	2,309,000	621,620	5,775,370	47,761,990
Chile	2,619,000	84,708	142,000	420,000	3,265,708
Colombia	3,340,000	150,000	296,000	1,056,610	4,842,610
Cuba	618,000	27,000	15,000	758,550	1,418,550
Ecuador	897,000	37,000	201,000	274,240	1,409,240
Mexico	23,883,000	1,245,000	1,321,000	3,841,410	30,290,410
Paraguay	1,070,000	52,000	776,640	62,670	1,961,310
Peru	2,025,000	126,000	41,000	644,000	2,836,000
Uruguay	749,200	6,000	83,780	84,120	923,100
Venezuela	2,143,000	48,000	79,000	555,000	2,825,000

Source: Computed from FAO Trade Year Books (1984, 85, 86).

APPENDIX I
AFRICA
DOMESTIC FOODGRAIN AVAILABILITY (MT)
(1984-1986)

COUNTRY	CEREALS	PULSES	OILSEEDS	SUGAR	TOTAL
Algeria	2,868,000	57,000	152,000	14,000	3,091,000
Angola	354,000	40,000	75,000	28,000	497,000
Cameroon	904,000	123,000	216,680	77,000	1,320,680
Chad	692,000	59,000	99,480	24,000	874,480
Egypt	9,139,000	386,000	247,000	951,000	10,723,000
Ethiopia	5,417,000	928,717	188,900	163,070	6,697,687
Ivory Coast	1,074,000	8,000	222,100	114,000	1,418,100
Kenya	2,988,000	459,557	25,920	387,000	3,851,477
Libya	263,000	11,000	135,000	—	409,000
Morocco	5,726,000	396,799	519,000	483,000	7,124,799
Nigeria	11,429,000	1,014,000	1,517,880	51,000	14,011,880
Somalia	577,000	23,000	73,000	45,000	718,000
S. Africa	10,744,000	103,000	266,500	1,438,200	12,551,700
Sudan	3,158,000	149,000	467,880	519,000	4,293,880
Tanzania	3,792,000	370,433	1,460,700	106,000	5,729,133

Source: Computed from FAO Trade Year Books (1984, 85, 86).

APPENDIX I
ASIA
DOMESTIC FOODGRAIN AVAILABILITY (MT)
(1984-1986)

COUNTRY	CEREALS	PULSES	OILSEEDS	SUGAR	TOTAL
Afghanistan	4,480,000	29,200	51,000	3,000	4,563,200
Bangla Desh	23,848,000	190,000	229,140	128,000	24,395,140
Burma	16,806,000	508,267	1,000,620	64,000	16,378,887
China	350,325,000	5,548,076	23,461,880	6,319,000	385,643,956
India	159,356,000	12,592,000	9,073,420	7,d830,000	188,851,420
Indonesia	44,166,000	332,000	4,261,740	1,815,000	50,574,740
Iran	11,761,000	350,000	170,000	757,000	13,038,000
Iraq	2,288,000	31,000	28,000	5,000	2,352,000
Israel	236,000	9,000	57,720	—	302,720
Malaysia	1,931,000	Imports	3,707,840	83,000	5,721,840
Nepal	4,231,300	135,030	50,000	20,000	4,436,330
Pakistan	18,840,600	798,000	400,000	1,346,000	21,384,600
Philippines	12,989,000	40,000	1,805,940	1,526,000	16,360,940
Saudi Arabia	2,246,000	7,000	3,000	—	2,256,000
Sri Lanka	2,506,000	41,000	183,340	22,000	2,752,340
Syria	2,672,000	129,446	373,000	52,000	3,226,446
Thailand	15,427,800	148,980	734,000	895,790	17,206,570
Turkey	28,387,000	1,397,345	2,858,820	1,391,110	34,034,275
Vietnam	16,346,000	132,334	501,340	460,000	17,439,674
North Korea	11,158,000	298,000	434,000	—	11,980,000
South Korea	8,431,000	48,000	328,000	—	8,807,000

Source: Computed from FAO Trade Year Books (1984, 85, 86).

Food security is not merely a matter of production statistics. consumption ethics need to be acknowledged as a major associate of the food security system. Affluents in their burgeoning social gatherings render ruthless wastage of food. The driving force to promote conservation oriented consumption behavior is its conscientious subscription to Accountability in the Hereafter and the proportionate reward or retribution thereof. The social organisations and the educational institutions shall try to propagate and reinstate such religious injunctions in the minds of individuals which may invoke voluntary spirit of conservation as a basic need of food security.

Summary and Conclusion

Although the study takes a risk of comparative analyses over a vast, culturally and geographically heterogeneous canvas, yet it attempts a partial explanation of food insecurity levels in the third world countries. In some countries despite a fairly high production potential in terms of environment support, domestic food insecurities persist largely because of landuse disequilibrium such as in Cuba, Malaysia and Sudan. It is also observed that in some countries a sudden and several fold price rise of essential food items, a potent threat to food availability, is a result of invisible trade of benefits between the respective industrialists and the members of the government machinery; for example, a recent price rise of sugar and vegetable oils in India. India is agriculturally one of the most stable countries in the third world. There is a proporitonately high degree of diversity and stability in the cropping pattern. Thus, an unprecendented price rise could not be attributed to the agricultural deficiency or the landuse changes. It could be argued that in some countries the hoarding capacities of market forces play a formidable role in creating food insecurity rather than the genuine scarcity on the production front. The heavy import dependence of petroleum exporting nations is largely attributed to the lack of agricultural sustainability and diversity on the one hand and excessive per capita availability on the other. The irony of social behavior towards food is that greater is the purchasing power, higher is the likelihood of its wastage at consumption level. In the non-observance of the Islamic ethical norms of consumption, the food wastage could also be identified and assessed as a cause of excessive food imports of billions of currency worth. The expansion, diversification and indiginization of national food processing industries, particularly in Saudi Arabia, is a sound step towards long run food security in the region. However, the food packaging aspect has to keep itself economically, materially and hence, ecologically viable.

another breed of problems. For instance, in Saudi Arabia which has groomed herself as a surplus producer of red wheat, from over 0.4 million MT in 1981-1982 to nearly 4 million MT in 1991-92, we find large quantities of Australian white wheat in the domestic and regional markets through the United Arab Emirates largely due to free trade liberties to the individual trading houses. This tendency considerably discourages the consumption of Saudi wheat in the local as well as regional markets and adversely affects the motives of surplus production. In fact, for the developing economies prescrption of a free economy could more often be an unfavourable proposition rather than a favourable one. There should be a "watchful freedom on free economy". Moreover, free trade logically suits to the competitive infrastructure of surplus economis of the West. In fact, in the western economies also several measures and ways of protectionism are prevalent.

Another aspect which is likely to invite Long-run pressure on the food policy is the drastic behavioral change in the food consumption in the Arab Gulf countries. From environmental compatibility point of view this region is the traditional producer and consumer of wheat, barley and millets – the low water requirement crops. Now, because of the growing occasions of feasts in the society, for over two decades there is a continued increase in the intake of rice and non-conventional overseas food in the consumption habits of the people. This pattern will introduce another venue of dependency on the external markets, thereby jeopardising the attempts of regional cooperation in food trade. Further, in the modern Geopolitical system independence of nations or people is inversely proporitonal to their dependence on external market dictates. The consumption behavior in financially rich but production scarcity areas tends to influence the national economies under the market interests of surplus economies. Billions of additional currency worth are drained out of national economies for the excessive food imports to meet the wasteful higher consumption requirements.

In view of the above facts the master Key of sustainable food security is the judicious consumption behavior in addition to increased production efficiency. Food conservation in itself is equivalent to production without incurring the investment of factors of production. It enables resource availability without generating extra, which otherwise could have been a burden on the ecology in general and water resources in particular, because most of the water is drawn from non-renewable, depleting groundwater reserves. Conservation is a way of help to the poor without incurring donations.

Arab Land Food Security

One of the serious dimensions of food problem in the Arab lands in general and Arab Gulf countries in particular is their extraregional dependence on food. Prospects for reducing extraregional dependencies rest in large measure on increasing economic integration and cooperation among Middle Eastern States (Weinbaun, 1981). To promote regional cooperation in agriculture and to reorient the food trade in favour of regional index there is a need to develop complementary agricultural systems in the region. Statistically, more than three-fourths of the cultivated area and irrigation water and the same proportion of rural population (a potential farm force) are found in the 14 low and middle income non-petroleum Arab countries. This could be appreciated in view of the facts that a total of 33 m/ha of cultivated land, of which 8 m/ha is under irrigation, and 64 million rural population is in the low and middle income Arab countries. The combined GDP of these countries represents only 24% of the total Arab GDP. On the other hand, the seven high income Arab countries possess the remaining one-fourth of the agricultural resources and rural population, with 76% of the remaining GDP (Ali, 1983). Here is the potential avenue for a joint cooperation between the natural-human resources and the financial resources.

However, the pattern of food trade among several Arab countries is worth commenting on. Libya, Egypt, Jordan, Kuwait, Saudi Arabia and United Arab Emirates imported wheat from Europe and the USA at a time when Tunisia, Algeria and Morocco produced wheat in surplus. Inter-Arab trade within the whole region forms a small fraction of their total trade (Marie, 1976). That was in the past but now the situation is changing with the agricultural expansion, stability and diversity in food production and processing. Expansion and diversification is intended to promote regional cooperation and security. Governments are doing their due. For example, in the high income Arab countries, government appropriations for their agricultural and rural development amounted up to an unbelievable 17,000 dollars per capita of agricultural population in the first half of the 1980's. Despite this, the agricultural potentials of the land have not been adequately utilized mainly due to scanty water resources in the region. A general landuse survey shows that in Saudi Arabia 7.8 per cent of the total arable land is permanently cropped. In Iran 6.7 per cent of the arable land is permanently cropped whereas in Iraq only 4.1 per cent of the arable land is under permanent cropping.

Weinbaun (1981) advocated a system of free trade as a centrepiece of complementary food policy for the region. Free trade, however, is infested with

agricultural population in India is 0.21 hectare against 0.1 in China and 1.0 in Pakistan. As compared to this the per capita domestic production index in India is 24.65 while in China it is 35.97 and in Pakistan it is 21.57. The irrigation efficiency ratio to food production in China is most favourable, while the irrigation efficiency of India is distinctly higher over Pakistan. Although the heavy rainfall in many coastal areas of India considerably boosts up the irrigation efficiency in comparison to Pakistan which receives much lower rainfall. However, the irrigation efficiency in foodgrain production is so much less in Pakistan that it largely speaks of poor land management, poor water use and above all widespread feudal landlordism. Similarly a regional comparison in South America between Peru, Uruguay and Venezuela suggests the varying irrigation efficiency in foodgrain production. The per capita irrigated hectareage of Peru 0.51, Uruguay 0.56 and Venezuela 0.42 are comparable. The coresponding per capita food production is Peru 14.03, Uruguay 30.94 and Venezuela 15.88. It shows Uruguay has the highest irrigation efficiency in foodgrain production in this region.

In yet another regional analysis from West Africa between Cameroon, Ivory Coast and Nigeria the per capita irrigated hectareage to economically active agricultural production is 0.008 Cameroon, 0.022 Ivory Coast and 0.033 Nigeria. The corresponding domestic foodgrains indices are 12.64, 13.95 and 14.33. Irrigation efficiency of Cameroon and Ivory Coast is higher over that of Nigeria. The local geographical heterogeneity plays a significant role in varying irrigation efficiency. In another region of East Africa the irrigation efficiency was compared in foodgrain production between Ethiopia 14.910, Kenya 36.400 and Tanzania 19.620. The irrigation efficiency is distinctly higher in Kenya (Table 4), although the per capita foodgrain production is highest in Tanzania. In Ethiopia both the irrigatin efficiency and per capita foodgrain production is lowest of the region.

In the wake of general food inadequacy amongst the middle and higher middle income groups and acute scarcities and insecurities in the low income groups in the third world countries the socio-psychological attitudes of the people are contrary to the pride of nations. Except under war-like emergency conditions the people generally hold their nations in low esteem. Domestic self sufficiency and adequate individual availability of basic amenities of life rather than striving for inequality oriented, demonstrative high standard of living would help in reducing social tensions and stratification. Security is a prerequisite in bolstering the spirit of nationalism.

a large scale for the export market. The landuse pattern is disproportionalely in favour of market economies at the expense of adequate domestic food production. The fact that several third world countries despite domestic food inadequacy opt their landuse pattern in favour of market economies is related with the low purchasing power of basic food. This is explained as a lack of price incentive on foodgrain production as compared to cash crops. The government subsidies often outweigh for the cash crops, presumably under the guidelines of foreign aid.

PER CAPITA IRRIGATED HECTAREAGE TO
ECONOMICALLY ACTIVE AGRICULTURAL POPULATION
THIRD WORLD COUNTRIES
1984 - 1986

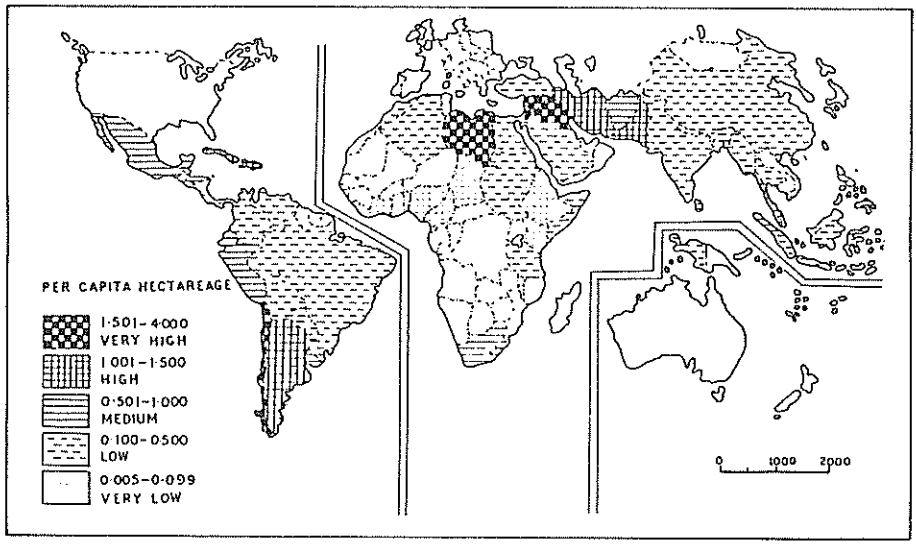

Fig. 3

Source: Prepared after FAO's Production Data (1984-86).

In another regional example from Asia, the per capita irrigated hectareage in relation to import dependency and domestic production was examined in order to ascertain the comparative irrigation efficiency in foodgrains production between China, India and Pakistan – the three largest irrigated countries in the world (Table 4). The per capita irrigated hectareage to economically active

US dollars. Landuse wise one hectare of sugar cane field is fetching US dollars 693. If alternative 3 short duration crops were raised on one hectare every multiple cropped hectareage, it has been estimated, would have saved a foreign exchange of 927 US dollars by eliminating imports of cereals 189 dollars, pulses 530 dollars and oilseeds 208 dollars. The above figures have been calculated from import expenditure on cereals, pulses and oilseeds (UN International Trade Statistics Yearbook, 1986).

Further, the argument of diminishing returns from sugar cane could be supported in view of the evidence from several places in India, where short duration multiple crops have proved more remunerative than sugar cane. Consequently, multiple cropping has won heactareage over sugar cane. However, in view of the current price rise of sugar in India (the dimension of which by no means could be justified as a result of production and hectareage shortages and which could largely be attributed to the invisible opportunities of the markets forces) there is an incentive for sugar cane cultivation.

If we examine continent wise, South America has an average per capita irrigated hectareage of 0.4 hectare ot economically active agricultural population against 0.1 hectare per capita irrigated hectareage in Africa (Fig. 3). Despite such a favourable condition and moderate population size, South America is a heavy importer of foodgrains and has an import dependence index of 5.5 against Africa's 6.8. The main reason of such a situation could again be the fact that South America is the sweetest continent by virtue of almost every country being a larger producer of sugar. Every South American nation is exporter of sugar with the exception of Chile, Peru and Venezuela. It suggests that agricultural landuse has not attained equilibrium between excessive export preferences and domestic self sufficiency in South America and that the utilization of water and time resources (growing season) is not in a judicious state in the agricultural landuse. Heavily export oriented landuse will have to give way to cropping for domestic self sufficiency so that the import dependence could be reduced and the level of food insecurity could also be lowered with the reorientation and expansion of agricultural landuse in favour of multiple cropping. It would be good particularly for the third world countries to reduce pressures on the international trade.

In another regional analysis, Sudan, the traditional cotton grower with a relatively elaborate agricultural infrastructure and experienced agricultural society has per capita domestic food availability of 19.36 against a much lowely rated Somalia, 15.13. The significant point is that Sudan is obliged to grow cotton on

TABLE IV
REGIONAL FOOD AVAILABILITY
AND IRRIGATION EFFICIENCY
(1984-1986)

Regions	Percapita Domestic Production	Percapita Import Dependence	Percapita Irrig. HA. to Eco. Active Agrl. Pop.	Efficiency Indices
China	35.97	0.70	0.10	3.597
India	24.65	0.26	0.21	1.173
Pakistan	21.57	0.09	1.00	0.215
Cameroon	12.64	1.35	0.008	15.800
Ivory Coast	13.95	0.5	0.022	6.340
Nigeria	14.22	2.1	0.033	4.309
Ethiopia	14.91	1.48	0.010	14.910
Kenya	18.20	1.56	0.005	36.400
TAnzania	25.51	1.20	0.013	19.620
Israel	7.04	48.77	3.43	0.020
Libya	10.93	42.78	1.82	0.060
Saudi Arabia	15.03	42.24	0.27	0.556
Peru	14.03	7.0	0.51	0.275
Uruguay	30.94	0.04	0.56	0.552
Venezuela	15.88	17.76	0.42	0.378

Source: Computed from FAO Production Year Books (1984, 85, 86).

Note: Efficiency Indices:

$$IE = \frac{PD}{HEP} \cdot \frac{\bullet}{\bullet} \; 100$$

IE = Efficiency Indices
PD = Per capita Domestic Production
HEP = Per capita Irrigated Hectareage to Economically Active Agricultural Population.

[27] Hosteller, T.R. "Predicting Student Success in an Introductory Programming Course." *Proc. of NECC5*, Silver Spring: IEEE Press, 1983.

TABLE III
LEVELS OF PER CAPITA INCOME IN US DOLLARS
(1984-1986)

MIN 110	MAX 7273
Very High Income Group 2,001 – 8,000 Population	Libya, Algeria, South Africa, Uruguay, Venezuela, Mexico, Iran, Iraq, Israel, Saudi Arabia. 241,387,000 = 7.05 %
High Income Group 901 - 1800 Population	Argentina, Brazil, Colombia, Paraguay, Peru, Ivory Coast, Turkey, Cuba, South Korea. 324,760,000 = 9.48 %
Middle Income Group 601 – 900 Population	Bolivia, Ecuador, Morocco, China, Philippines, Malaysia, Syria, Thailand, Nigeria, North Korea. 1,374,923,000 = 40.16 %
Low Income Group 301 – 600 Population	Angola, Cameroon, Egypt, Sudan, Chile, Indonesia, Pakistan, Vietnam. 340,500,000 = 12.57 %
Very Low Income Group 100 – 300 Population	Afghanistan, Bangla Desh, Burma, India, Nepal, Sri Lanka, Chad, Ethiopia, Kenya, Somalia, Tanzania. 1,054,936,000 = 30.81 %

Source: Computed from United Nations National Accounts Statistics 1986.

Note: Population shown in each income group is the sum of the total population of the countries in that group and the representative percentage is with reference to the total of all the groups.

A comparative analysis of non-agricultural economies of Israel, Libya and Saudi Arabia reveals interesting results. All the three are higher income group (Table 3). The per capita irrigated hectareage of Israel to economically active agricultural population is 3.4 with the load of very high import dependence index of 48.7. The per capita irrigated hectareage of Libya to economically active agricultural population is 1.8. The import dependence index is 42.7 while the per capita irrigated hectareage of Saudi Arabia is 0.27 only with import dependence index of 42.2. Saudi Arabia's per capita irrigated hectareage is 7 times less than Libya and 13 times less than that of Israel. Yet Saudi Arabia's domestic production index of 15.03 is higher than Libya's domestic production index of 10.93 and Israel's domestic production index of 7.04. On the basis of the above data one comes to argue for the higher agricultural efficiency of Saudi Arabia over Libya and Israel in terms of water use (Table 4). Thus, Saudi Arabia can be said to observe better water management practices than either Libya or Israel. Higher water use efficiency in Saudi Arabia could also be related to the very intensive agricultural mechanisation and better input environment. Moreover, Saudi Arabia and Libya are environmentally in the arid zone whereas large parts of Israel are in the Semi-arid regime which inherently seems to be less taxing on the water resource.

In another analysis, the high import dependence index of Cuba 24.4 (aggregate 2.5 million MT) is accompanied with sugar export index nearly 3 times higher (aggregate 6.8 million MT). With a fairly established agrarian sector of high per capita irrigated hectareage of 1 hectare, the import-export indices in cuba are not in favour of domestic self sufficiency. It reveals that even this hard core socialist state is committed to a capitalist market approach, because the agricultural landuse is heavily inclined towards the market-crop (sugar). Moreover, this market approach is also not economically judicious because sugar cane is an annual crop and consumes more time resources and keeps the land occupied for the whole year at the expense of other season crops. This is a great drawback of annual crops from the view point of domestic sufficiency, crop sociology and soil ecology. A judicious multiple crop sociology invokes production equilibrium as well as improves soil microbial envirionment by maintaining nitrogen and nutrient balance. Even the economic input-output ratio of otherwise multiple, short duration crops could have been more favourable than sugar cane. In Cuba every metric ton of sugar export fetches foreign exchange of 693

ranging from 2.0 to 4.99 constitute 2.35 per cent of the total population, inflicting on 80,732,000 persons in Sri Lanka, Egypt and Somalia. The high insecurity indices ranging from 1.0 to 1.99 constitute 7.91 per cent of the total population. High insecurity exists over 271,057,000 persons in Algeria, Ethiopia, Morocco, Chile, Bangladesh, Malaysia, Syria, Chad, Cuba and South Korea (Appendix IV). Moderate insecurity indices of 0.40 to 0.99 range affect 6.78 per cent population. It comprises Angola, Kenya, Libya, Sudan, Tanzania, Iraq, Israel, Saudi Arabia, Bolivia, Ecuador, Mexico and Peru. This category comprises a total population of 232,381,000 persons. The largest population numbering 2,551,930,000 persons falls in the marginal insecurity indices of 0.10 to 0.39 range. It constitutes 74.54 per cent of the people in Brazil, Colombia, Venezuela, Cameroon, Nigeria, Afghanistan, China, India, Indonesia, Iran, Philippines, Turkey, Vietnam and North Korea. The insignificant insecurity levels of 0.01 to 0.09 constitute 6.29 per cent of the total population. This category comprises 215,581,000 persons in Ivory coast, South Africa, Paraguay, Nepal, Pakistan and Thailand. Within a general food insecurity in the third world countries there are some exceptions. The Absolute Security Constitutes 2.09 per cent, comprising 71,885,000 persons in Argentina, Uruguay and Burma. All the three countries have moderate to low pressure of population on the agricultural potentials of the envirionment.

Landuse Structure and Insecurity Analyses

It has been noted in a number of countries that the import dependence and the consequent food insecurity is largely the function of landuse structure and inefficiency. In some cases, however, the landuse efficiency has been discovered to be much higher than the general expectations, as for example, in Saudi Arabia. This has been viewed in the light of per capita irrigated hectareage to econommically active agricultural population (Appendix V). The relationship between per capita domestic production viz-a-viz per capita irrigated heactareage may support the argument. It is a fairly reasonable assumption that the higher is the per capita irrigated hectareage in an economically developing country proportionately higher could be the the index of per capita domestic production. However, if the per capita domestic produciton in a country is higher despite a lower per capita irrigated hectareage to economically active agricltural population this could apparently be attributed to the higher agricultural efficiency in that country at least in terms of water use and farm operation techniques.

General Food Insecurity Levels

As there is a good deal of complexity, rather an impracticability is precise measuring of the food availability and security conditions for the population of a country, alternatively, the agregate foodgrain availabilty in the country could initially be assumed as the potantial food availability to the people. To make it look a little more realistic, the potential food availability can be screened through the per capita income to consider it a relative expression of the actual food buying capacity or availability for a large number of masses in the country. And it is this actual food security or conversely the food insecurity level of a country (Fig. 2). Further, as a result of uncontrolled factors in potential food availability such as inflation, the prices of agricultural commodities in many countries were more adversely affected than prices of manufactured goods, which contributed to the deterioration in terms of food availability and food security (FAO 1986). In the ultimate analysis of food availability and food acquisition through the index of per capita income the very high food insecurity indices

INDICES OF FOOD INSECURITY
THIRD WORLD COUNTRIES
1984 - 1986

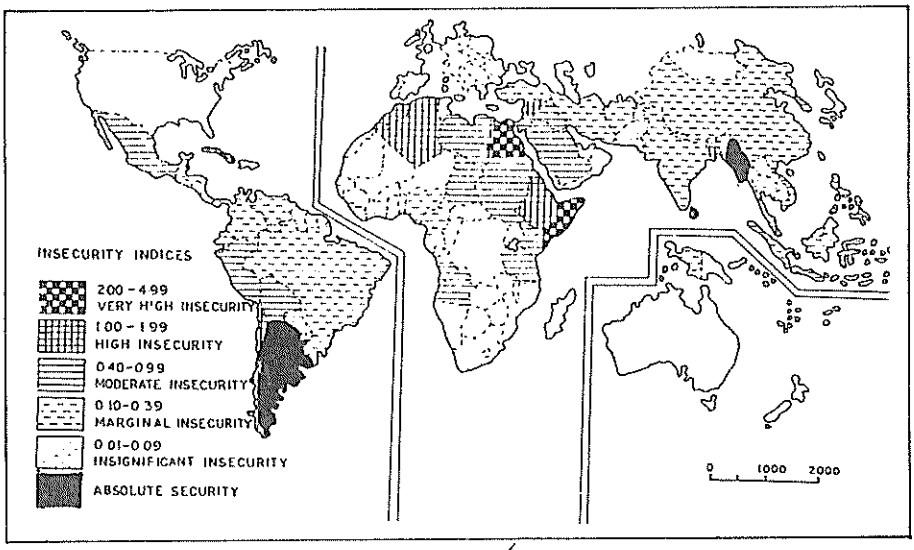

Fig. 2

Source: Prepared after FAO's Trade and UN's Demograp-ic and Per capita Income data (1984-86).

oses to develop ways to further increase food exports, while loads of vegetables, mutton, and other eatables are daily air-lifted from Bombay and Delhi. The welfare economy is camouflaged by market economy (Salahuddin Qureshi, 1989). Whereas, FAO experts opine that developing countries need to expand their exports not only to survive their debt, but also to earn the foreign exchange necessary for the import of capital goods and production inputs (FAO 1984). There are two countries, namely Argentina and Burma who have no import dependence. They can be considered fully self sufficient in the basic food availabilty. In fact Argentina is a large exporter of cereals and oilseeds and also a modest exporter of pulses and sugar (Appendix II). Argentina entertains nil to negligible imports of these foodgrains. Similarly Burma also exports the foodgrains rather than imports. Their aggregate food availability indices, almost entirely based on domestic supplies, are also fairly high, 40.22 and 43.24 respectively (Table 1). They constitue 2.01 per cent of the total population of the study area, comprising 68,902,000 persons.

If we examine the import dependence indices in relation to domestic production indices and the aggregate food availability indices we infer several meanings and interpretations of importance in the general food security of the nations. (a) In some cases import dependence seems a consequence of the domestic agricultural inadequacy such as in Egypt, South Korea and Syria. (b) While in other cases it tends to explain the commitment of respective governments towards adequate provisions of food such as in Malasia (Table 1). The later trend, outside the rich petroleum exporting nations could be seen in the moderate to low population countries. (c) In some countries the low import dependence, despite low domestic food production could be explained to their massive population size as their economies can not afford the large import billings, for example India, Pakistan, bangla Desh and Nigeria. (d) In some other countries, the high import dependence despite better environmental potential for agriculture could be attributed to the heavy disequilibrium in the agricultural landuse pattern in terms of export of cash crops viz-a-viz domestic food crops. This is evident in case of Cuba. (e) In Kenya, despite better environmental potenital, low domestic production of food grains could be attributed to the landuse preferences for the export crops. Mukhisa (1993), programme director of the African Centre for Technology Studies admitted that Kenya's policies are fixed on trade with the rich North. Instead of growing food for their own consumption, the Kenyans grow export products such as coffee, sisal and wheat. This takes up a lot of the land and human resources available for the export rather than for domestic sustenance.

PER CAPITA IMPORT DEPENDENCE INDICES
THIRD WORLD COUNTRIES
1984 - 1986

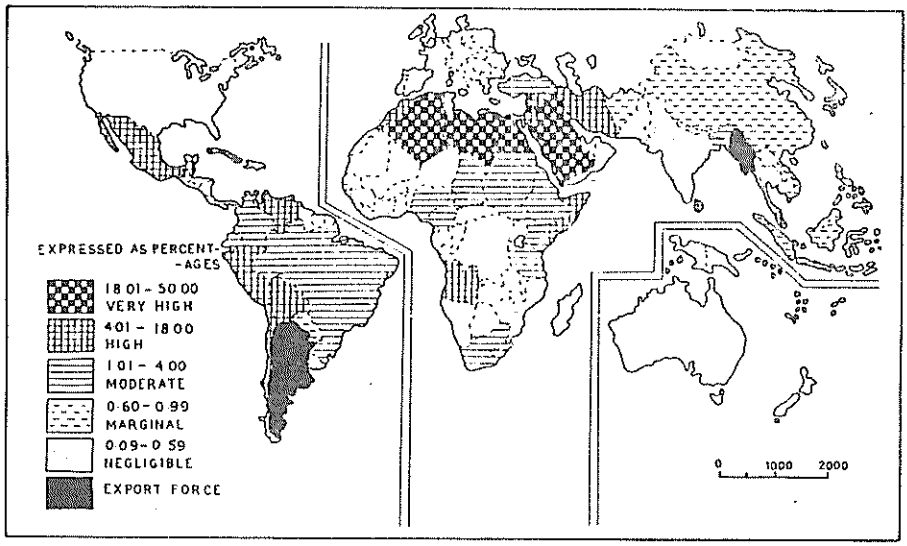

Fig. 1

Source: Prepared after FAO data from Trade Year Books (1984,85,86).

ing from 0.6 to 0.9 constitute the highest 38.62 per cent of the population comprising an aggregate number of 1,322,495,000 persons. It is interesting to note that in this category China, Indonesia and Vietnam are high population countries. They have fairly reasonable domestic production levels. Further, they can not afford a high aggregate import of foodstuff. The insignificant import dependence levels ranging from 0.03 to 0.5 constitute another sizeable proportion of population accounting to 27.68 per cent. This category comprises a total of 947,671,000 per sons. The notable countries in this category are India, Pakistan and Thailand. The main reason for them to afford insignificant imports is the low import bearing capacity of the economy. On the contrary, the third world scarcity countries are obliged to export even their foodstuffs before they can adequately sustain their own population. They have to export food and forest products as many of them do not have potentials of industrial exports to earn back the much in demand foreign exchange to realise import payments. India, for example, with 48.8 per cent of her population living below poverty line prop-

Food Import Dependence

The food import dependence indices of the third world countries are considerably skewed. The Petroleum Exporting Arab Countries in general have very high import dependence indices. These import dependence indices rise high to enable the high food availability to the local population as well as to the large expatriate population. For example, Saudi Arabia in addition to 12,000,000 local population imports for nearly 3,000,000 expatriates. Nevertheless, the import indices account high even in otherwise situation. The average per capita import dependence index for the third world countries is 2.58, equivalent to 25.8 Kg (Appendix VI). The aggregate value stands for 86,718,694 metric tones. Continent wise, import dependence index of Asia is lowest, reading, 1.81 or 18.1 kg. This accounts to an aggregate import dependence of 40,632,129 metric tones. Considering that Asia comprises 78 per cent of the total population of the study area, the aggregate import value of Asia is 46.8 per cent of the total import dependence in the study region. The remaining 22 per cent of the population in Africa and Latin America has a dependency of 53.2 per cent of the total imports. Further details show that apart from the oil exporting Arab Countries the imports of foodgrains by other Asiatic Countries is met with very sparingly, to barely subsist the domestic shortages as their economies can not sustain the pressures of imports. In Africa the per capita import dependence index is highest, reading 6.82 which is equivalent to 68.2 kg. This accounts to an aggregate import dependence of 25,953,409 metric tonnes. Apart from Libya, which has the highest import dependence, the other countries with high import dependence are Algeria, Egypt, Morocco and Somalia. It is significant to note that Morocco and Egypt despite holding above average domestic production have high import dependence to enable an appreciably high aggregate food availability (Table 1). In Latin America the per capita import dependence index is 5.56 which means 55.6 kg. It is a matter to reckon with that Latin America despite above average domestic production has an appreciably high import dependence. This is, seemingly, to substantiate the higher food availability over the already high domestic production, as for example, in Brazil, Chile and Mexico (Fig. 1).

Very high import dependence indices ranging from 18.1 to 50.0 constitute 4.68 per cent of the total population. They comprise 160,339,000 persons in Algeria, Egypt, Libya, Cuba, Iraq, Israel, Saudi Arabia and South Korea (Appendix III). The import dependence indices ranging from 4.1 to 18.0 constitute 7.63 per cent of the population. They comprise 261,404,000 persons. The moderate dependence indices ranging from 1.0 to 4.0 constitute 19.35 per cent of the population comprising 662,755,000 persons. The marginal import indices rang-

of 1,325,396,000 people in Somalia, Sudan, Tanzania, Bolivia, Chile, Uruguay, Afghanistan, Bangladesh, India, Indonesia, Nepal, Philippines, Sri Lanka, Thailand and Vietnam. The very low category also comprises a sizeable proportion of 10.4 per cent population comprising a total of 357,481,000 people in Angola, Cameroon, Chad, Ethiopia, Ivory Coast, Kenya, Nigeria, Colombia, Ecuador, Peru and Pakistan.

TABLE II
AGGREGATE FOOD AVAILABILITY INDICES
(1984-1986)

MIN **10.130**	**MAX** **68.770**
Very high	
57.043 – 68.770	Saudi Arabia, North Korea, Turkey
Population	86,184,000 = 2.5 %
High	
45.315 – 57.042	Libya, Paraguay, Israel, Malaysia, Syria
Population	38,566,000 = 1.1 %
Moderate	
33.587 – 45.314	Algeria, Egypt, Morocco, South Africa, Argentina, Brazil, Cuba, Mexico, Venezuela, Burma, China, Iran, Iraq, South Korea
Population	1,618,873,000 = 47.3 %
Low	
21.859 – 33.586	Somalia, Sudan, Tanzania, Bolivia, Chile, Uruguay, Afghanistan, Bangla Desh, India, Indonesia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam
Population	1,325,396,000 = 38.7 %
Very Low	
10.130 – 21.858	Angola, Cameroon, Chad, Ethiopia, Ivory Coast, Kenya, Nigeria, Colombia, Ecuador, Peru, Pakistan
Population	357,481,000 = 10.4 %

Source: Computed from FAO'S Trade Year Books and UN's Demographic data (1984-1986).

Aggregate Food Availability

The Study inidcated a strikingly wide variation in the agregate food availabiity among the third world countries with Angola having a minimum per capita availability of 10.13 per annum, while Turkey accounts for a maximum of 68.77 i.e., 6.87 quintals per annuam (Table 1). The Arab Gulf countries have understandably very high per capita foodgrain availability (Qasem, 1988). However, the food availability variation exceeds five fold amongst the third world countries. The average per capita food availability indices for the third world countries is 32.36. Continent wise, the food availability position of Latin American Countries is most comfortable with well above average availability value of 36.31. The situation in Africa is considerably below average, accounting to only 27.11. The food availability positin in Asia is just above the average value accounting to 32.82. A total number of 25 countries have below average food availability accounting for 47.6 per cent of the population of the study region. In Africa the notable countries with below average food availability are Ethiopia, Kenya, Nigeria, Sudan and Tanzania. Amongst the African Countries under study 65.4 per cent population has below average food availability. In Asiatic Countries 48.5 per cent of the population has below average food availability. The notable countries under this category are Bangla Desh, India, Indonesia, Pakistan, Philippines and Vietnam. In Latin America, however, only 22.3 per cent population is in below average food aailability. Columbia, Peru and Venezuela are notable in this category. The highest average per capita food availability in Latin American Countries could mainly be attributed to the moderate to low population pressure vis a vis environmental potential for production. This evidently shows that the agricultural infrastructure in Latin American Countries is far more developed than either in Africa or Asia (Ladd and Lamons, 1987).

The whole range of aggregate potential food availability has been divided into five categories. In the very high category of per capita food availability ranging from 57.043 to 68.77 value, only 2.5 per cent of the total population of the study region enjoys the abundance. These comprise a number of 86,184,000 people in Saudi Arabia, North Korea and Turkey. The high per capita food availability ranges from 45.315 to 57.042 for a minimum 1.1 per cent of the total population in the study region. This is in Libya, Paraguay, Israel, Malaysia and Syria (Table 2). The moderate category in 33.58 to 45.30 range constitutes 47.3 per cent population comprising a total of 1,618,873,000 people in Algeria, Egypt, Morocco, South Africa, Argentina, Brazil, Cuba, Mexico, Venezuela, Burma, China, Iran, Iraq and South Korea. The low availability in 21.85 to 33.57 range constitutes a sizeable portion 38.7 per cent population comprising a total

TABLE I
LATIN AMERICA
FOODGRAINS AVAILABILITY INDICES
(1984-1986)

Country	Population	Domestic Prod. Availability	Food Import Dependency	Aggregate Food Availability
Argentina	31,030,000	40.22	Nil	40.22
Bolivia	6,547,000	19.41	5.96	25.37
Brazil	138,493,000	34.49	3.84	38.33
Chile	12,327,000	26.49	3.84	38.33
Colombia	29,128,000	16.62	3.0	19.62
Cuba	10,246,000	13.84	24.4	38.24
Ecuador	9,647,000	14.62	3.0	17.62
Mexico	79,563,000	38.07	6.87	44.94
Paraguay	3,807,000	51.51	0.7	52.21
Peru	20,207,000	14.03	7.0	21.03
Uruguay	2,983,000	30.94	0.04	30.98
Venezuela	17,791,000	15.88	17.76	33.64
Total	361,829,000	30.75	5.56	36.31

Source: Computed from FAO Trade Year Books (1984, 85, 86).

Note: Below Average 80,839,000 = 22.34 per cent reprents the sum of countries' population who have less than 36.31 average per capita aggregate food availability index for Latin America.

TABLE I
AFRICA
FOODGRAINS AVAILABILITY INDICES
(1984-1986)

Country	Population	Domestic Prod. Availability	Food Import Dependency	Aggregate Food Availability
Algeria	22,421,000	13.79	24.95	38.74
Angola	8,981,000	5.53	4.6	10.13
Cameroon	10,446,000	12.64	1.35	13.99
Chad	5,139,000	17.01	1.98	18.99
Egypt	49,609,000	21.61	19.87	41.48
Ethiopia	44,927,000	14.91	1.48	16.39
Ivory Coast	10,165,000	13.95	0.5	14.45
Kenya	21,163,000	18.20	1.56	19.76
Libya	3,742,000	10.93	42.78	53.71
Morocco	22,476,000	31.70	10.93	42.63
Nigeria	98,515,000	14.22	2.1	16.32
Somalia	4,760,000	15.13	7.6	22.73
South Africa	33,221,000	37.85	2.0	39.85
Sudan	22,178,000	19.36	3.56	22.92
Tanzania	22,462,000	25.51	1.2	26.71
Total	380,205,000	20.29	6.82	27.11

Source: Computed from FAO Trade Year Books (1984, 85, 86).

Note: Below Average 252,437,000 = 66.39 per cent represents the sum of countries' population who have less than 27.11 average per capita aggregate food availability index for Africa.

TABLE I
ASIA
FOODGRAINS AVAILABILITY INDICES
(1984-1986)

Country	Population	Domestic Prod. Availability	Food Import Dependency	Aggregate Food Availability
Afghanistan	18,614,000	24.52	0.77	25.29
Bangla Desh	100,616,000	24.25	2.13	26.38
Burma	37,872,000	43.24	Nil	43.24
China	1,072218000	35.97	0.7	36.67
India	766,135,000	24.65	0.26	24.91
Indonesia	166,940,000	30.29	0.93	31.22
Iran	45,914,000	28.39	11.77	40.16
Iraq	16,450,000	14.29	28.95	43.24
Israel	4,296,000	7.04	48.77	55.86
Malaysia	16,109,000	35.52	16.34	51.86
Nepal	17,131,000	25.89	0.06	25.95
Pakistan	99,163,000	21.57	0.09	21.66
Philippines	55,576,000	29.44	2.77	32.21
Saudi Arabia	12,006,000+3M	15.03	42.24	57.27
Sri Lanka	16,117,000	17.07	7.26	24.33
Syria	10,612,000	30.40	16.98	47.38
Thailand	52,094,000	33.03	0.39	33.42
Turkey	50,301,000	67.66	1.11	68.77
Vietnam	60,916,000	28.62	0.83	29.45
North Korea	20,883,000	56.93	1.29	58.22
South Korea	41,569,000	21.18	18.34	39.52
Total	2,681532000	31.01	1.81	32.82

Source: Computed from FAO Trade Year Books (1984,85,86).

Note: Below Average 1,301,208,000 = 48.52 per cent represents the sum of countries' population who have less than 32.82 average per capita aggregate food availability index for Asia.

tion to obtain their respective per capita indices.

(e) The per capita domestic availability index and the per capita dependence index were summed up to obtain per capita Aggregate Food Availability Index (Table 1). The index value of 10, for example, is equivalent to 1 quintal availability.

(f) Per capita domestic availability indices and the per capita import dependence indices were obtained to make an instant comparison of the food security level on the local and regional plane.

2. At the second stage, the Aggregate Availability Index was screened through the average per capita income to ascertain the general food security or insecurity position a little better. (Fig. 2).

3. At the third stage, an index to measure relative agricultural efficiency was obtained with reference to per capita irrigated hectareage to economically active agricultural population. The indices of per capita irrigated hectareage were compared with the domestic production indices to examine the agricultural environment in terms of landuse efficiency (Table 4).

the low income countries (Alberto, 1981). In this situaiton also, the milk availability tends to homogenize the relative skewness of availability because 85-95 per cent of the babies in the third world countries are nursed on breast feeding. Thus, the inbuilt differences in food habits seem to affect the study only marginally. However, the study takes care of the distinct identity of high income petroleum exporting countries in this assessment. This article may help revise many of our prevalent notions on the compıarative food availability/security in some countries.

Methodology

Out of well over 100 countries in the third world a total number of 48 countries from three continents of Africa, Asia and Latin America were taken representing 87 per cent of the population of the third world countries. The countries were not randomly selected. The criteria for the selection of countries were the size (geographical area) encompassing different agricultural regions within a country, agricultural population, environmental potantial, agricultural tradition and the countries as representatives of the regional cultural personalities. The agricultural landuse structure of these countries was also examined. The author has used his own methodology in this work. The study makes a three tier analysis for the period (1984-1986). This period of study was selected in view of the consistent data availability for different parameters up to this duration when this work was started. It was assumed that the average of three years period would represent normal typical conditions and not any particular situation of either widespread drought or above normal rainfall conditions. Most of the computed data in the entire study corresponds with this period and was obtained from FAO and UN sources.

1. (a) At the first stage, three years data (1984-86) of domestic production of cereals, pulses, oilseeds and sugar was obtained. On its aggregrate the average values of the total domestic foodgrains production were calculated for all the countries.

   (b) The average export values of corresponding foodgrains were deducted from the domestic production values to ascertain the remaining domestic foodgrains availability (Appendix 1).

   (c) Three years import of cereals, pulses, oilseeds and sugar for the corresponding period were calculated to ascertain the average import dependency (Appendix 2).

   (d) The total domestic foodgrain availability and the foodgrains import were each divided by the corresponding three years average popula-

REGIONAL EVALUATION OF FOOD SECURITY SYSTEMS IN THE THIRD WORLD WITH SPECIAL REFERENCE TO ARAB COUNTRIES

Salahuddin Qureshi

Introduction

This paper attempts ot probe into uncertain food emergency conditions that may arise out of the geo-political crises or pressures to which the third world countries are vulnerable, and the disequilibrium in their agricultural landuse. Moreover, it is the moral binding on every country to optimally harness its human and material resources in order to reduce the staple food dependency on the international trade and stand a value for a fair deal in the modern geopolitics. The present attempt is a macro study on the nutritional availability and food insecurity in the third world countries. The problem of food insecurity and related under nutrition in this part of the world is of serious dimension. Inherent food insecurity is a much acknowledged fact in the third world countries. However, the inflicted food insecurity in this region can no longer be denied. As a matter of fact, food security is one of the basic requisites of social, economic and political stability of nations (Christopher, 1979). The present study, however, is an attempt to measure the degree of food insecurity in these countries. The exercise, nevertheless, seeks a partial explantion of insecurity levels.

The study includes foodgrains only because in the periods of emergency people can suspend their unconventional food demands and the majority can fall back on basic food for survival and sustenance. Another reason for taking up only foodgrains, such as cereals, pulses, oilseeds and sugar, as an index of food availability also considerably serves the purpose of enquiry because it is an understandable fact that the food habits of the inhabitants of the low income third world countries largely confine to the primary food. Further, the evaluation of the whole gamut of food requirements could have rendered the analysis rather complex and cumbersome. Thus the element of heterogeneity of food habits, a potential hurdle in comparative analysis, is quite insignificant. Milk, fruits, vegetables and non-vegetables qualify a paltry 7-12 per cent of the diet in

ABSTRACT

Evaluation of the actual food availability and the related food security for the entire population of a country or a group of countries is rather impracticable. Further, the assessment of food security with reference to the whole gamut of foodstuffs may have rendered the analysis highly complex and cumbersome. Hence, foodgrains consisting of cereals, pulses, oilseeds and sugar were taken up to represent the basic food availability. A countrywide evaluation has to necessarily resort on the averages in food availability, and the availability itself has to rely on some generalising assumptions. The study, therefore, seeks a partial explanation of the food security systems in the third world countries.

Domestic foodgrains production, import dependence of basic food and the aggregate food availability indices have been worked out for 48 countries in Asia, Africa and latin America. These were, broadly examined at the continent level and also a comparative analysis was made among the individual nations. Wide range of variations were revealed in the food security position. Differences in the food security levels were ascribed to the sets of reasons pertaining to the obligations for export oriented landuse preferences, environmental potentials, agricultural traditions and the overall economic status of a country. It is suggested that in addition to the much envisaged production efficiency, individual's food availability and security levels can also be raised to a considerable extent by observing the conservation oriented religious ethics in consumption behaviour, which could reduce the excessive import dependence of billions of currency worth.

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