

### 3. 教育制度と農林業教育

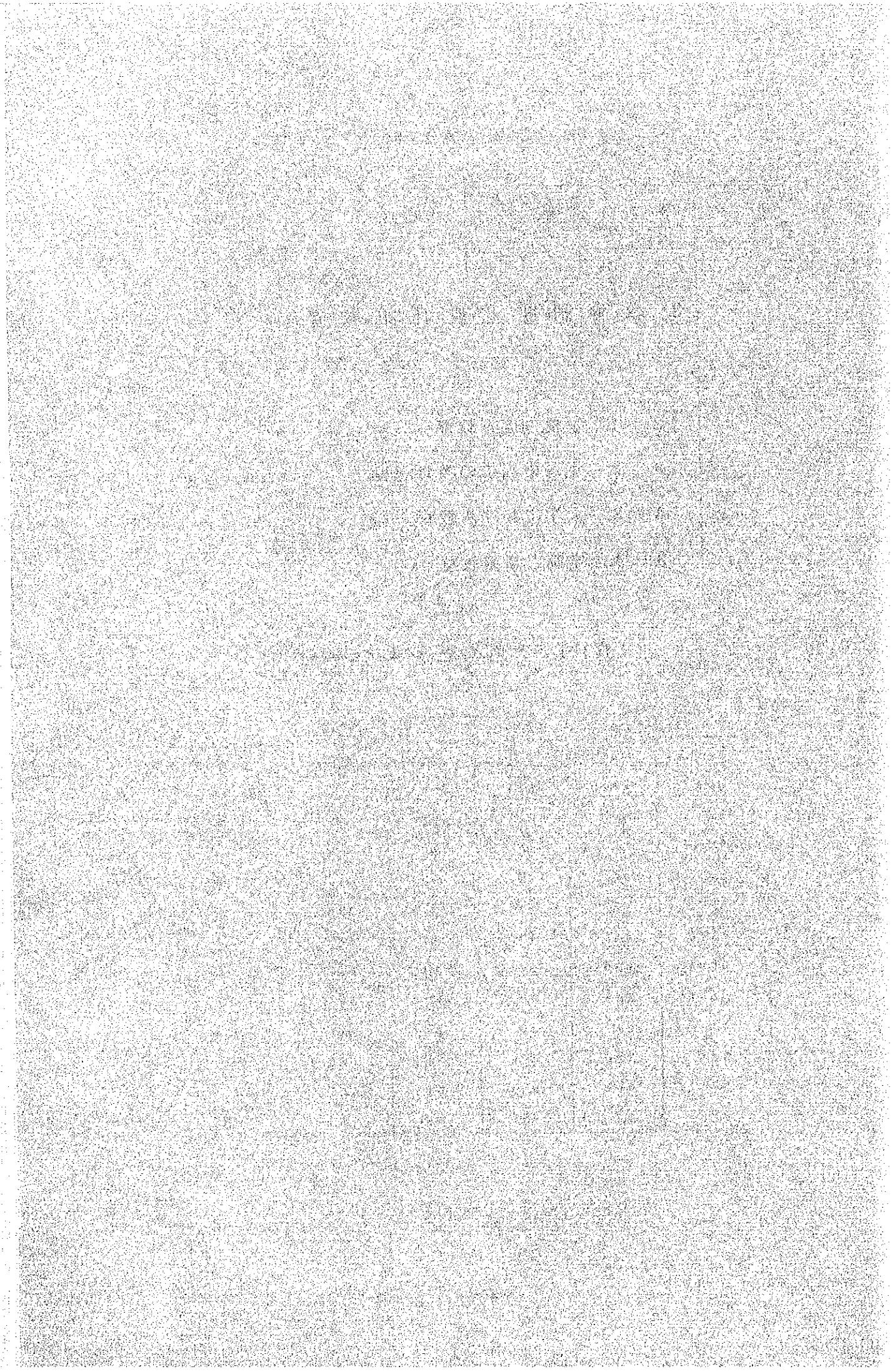
3-1. 学校制度と教育

3-2. 小・中高校の教科課程

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3-4. 学制と農業教育

〔資料〕 トリブハーン大学の概要

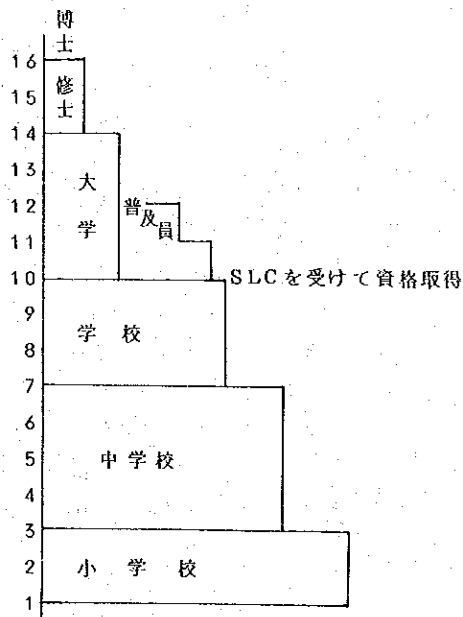


### 3-1 学校制度と教育

ネパールの学校制度は図3に示したように小学校(Primary School)3年, 中学校(Lower Secondary School)4年, 高等学校(Secondary School)3年と続いている。ここで高等

学校卒業試験(School Leaving Certificate), SLCとも呼ぶ, が行われる。これは全国一斉に行われる国家試験で, 第1順位, 第2順位, 第3順位までが合格である。それにパスしないと, いつまでも高等学校に残ることになっている。

ネパールには, 短期大学を含めて, キャンパスと呼ばれるものが, 全国でも67校ある。大学本部はカトマンドゥにあるトリブバン大学(Tribhvan University)唯一つである。学長はマヘンドラ国王である。この大学の各学部, 教養課程が全国に散在している。



第3-1図 ネパールの学校制度

#### (1) 学校教育

14に分れたゾーンのそれぞれに, 小学校, 中学校, 高等学校, キャンパス, 大学などがある。

ひとつのゾーンにどれだけの学校があるかを調べたのが第3-2図である。それを地域別にまとめたのが第3-1表である。

第3-1表 地方別学校数

	小学校	中学校	高等学校	大学	大学本部	合計
東 部	2264	613	156	12		3077
中 央	2540	691	193	36	1	3461
西 部	2441	749	159	10		3359
極西部	1716	433	87	9		2754
計	9343	2613	595	67	1	12651

(1977-78)

小学校は全国で9343校ある。多い順に中央, 西部, 東部, 極西部の順になっている。第3-2図を州ごとに眺めると, バグマチ, ガンダキ, ルンビニ, コシ, サガルマタの各州と続く。中学校(Lower Secondary School)をみると, 西部, 中央, 東部, 極西部の順になっている。州別にみると, バグマチ, ガンダキ, ルンビニ, コシ, メチなどの各州と続き, 小学校とほとんど同じ州があらわれている。高等学校(Secondary School)は, 中央, 東部, 西部, 極西部の順である。州別にみると, バグマチ, ガンダキ, コシ, ルン

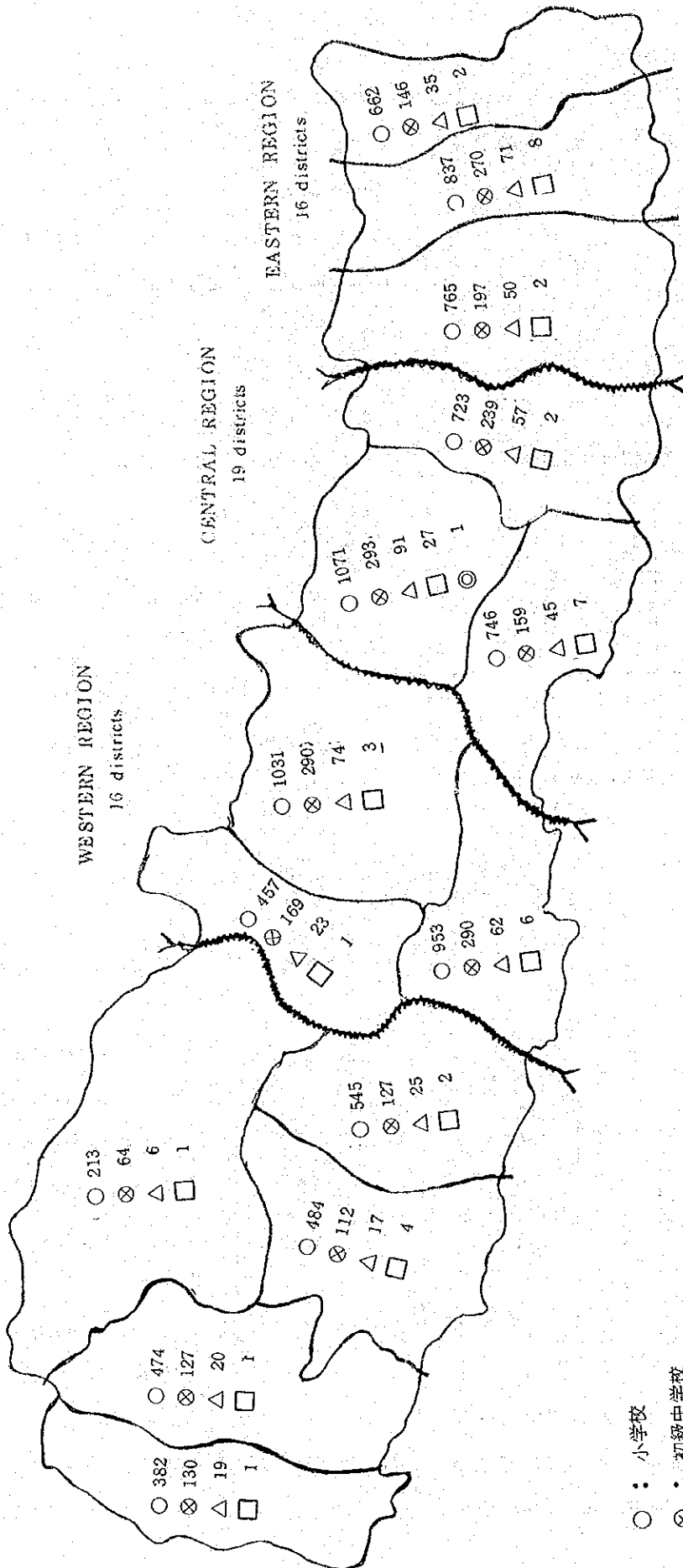
①, ②, ③, ④, ⑤, ⑥ トリブバン大学本部の資料による。

FAR WESTERN REGION  
27 districts

WESTERN REGION  
16 districts

CENTRAL REGION  
19 districts

EASTERN REGION  
16 districts



- : 小学校
- ⊗ : 初級中学校
- △ : 高等学校
- : 大学
- ◎ : 大学本部

第3-2図 ネパールの学校数 (1977-1978)

ピニ、ジャナカプル、サガルマタの順である。地図の上でこれら各州をみると、ネパール国の中央から東半分の8州に偏っている。更に大学(Campus)をみると、バグマチが飛びぬけて多く、コシ、ナラヤニ、ルンピニ、ブヘリと続く。大学本部(University)はバグマチのみにある。

これらの諸学校に通学している児童生徒数をみたのが第3-3図と第3-2表である。

第3-2表 地方別児童生徒数

	小学校	中学校	高等学校	合計
東 部	217966	72765	24962	315693
中 央	253562	87620	36899	378081
西 部	237775	71679	21257	330811
極西部	164091	44516	10533	219140
計	873394	276580	93651	1243725

(1977-1978)

⑤ 小学校に通学している児童は、全国で873394人いることがわかる。中学生が可成り減少して、276580人と約32%になっている。小学校の3年間は義務教育であることを考え、一般大衆の生活を併考するとな

づける点もある。高等学校生は93651人となっていてやはり中学生の約34%になっている。学校の比率をみると、中学校は約28%、高等学校は約23%の減少であるから、学校数に比べて生徒が多くなっていることが分る。

具体的な州ごとの児童生徒数は第3-3図に示した。タウラギ州以西を除く東・中・西部の各州に児童生徒の数が多。

### (1) 幼児教育

全国で20ヶ所程あるといわれている。その全てを見たわけではないから、不正確になるが特殊な例として、バタンにある、チベット人部落の保育園をあげておく。下の写真二葉がそれである。

園児は約22名、保母4名からなっている。園舎は平屋で煉瓦の床張り、隅に物とか教具をのせる棚がある。

ここに写っているのは、園児のものではなく、大人の日用品である。ここでは、系統的な保育を行っている跡はない。すぐ隣りに園児たちの母親が働いていたから、これは託児所も兼用しているといえよう。



写真3-1-1 バタン地区チベット人部落の保育園

第3-3表 就学状況

(1) 小学校, 中学校, 高等学校生徒数 (単位 1000人)

年(5月央)	小学校	中学校	高等学校	合計
1973/74	360	158	58	576
1974/75	401	160	61	622
1975/76	459	174	67	700
1976/77	644	189	74	907
1977/78	769	227	82	1,078
1978/79	875	277	94	1,246

(出所) ネパール政府文部省。

第3-4表 科目別高等教育生徒数 (単位 人)

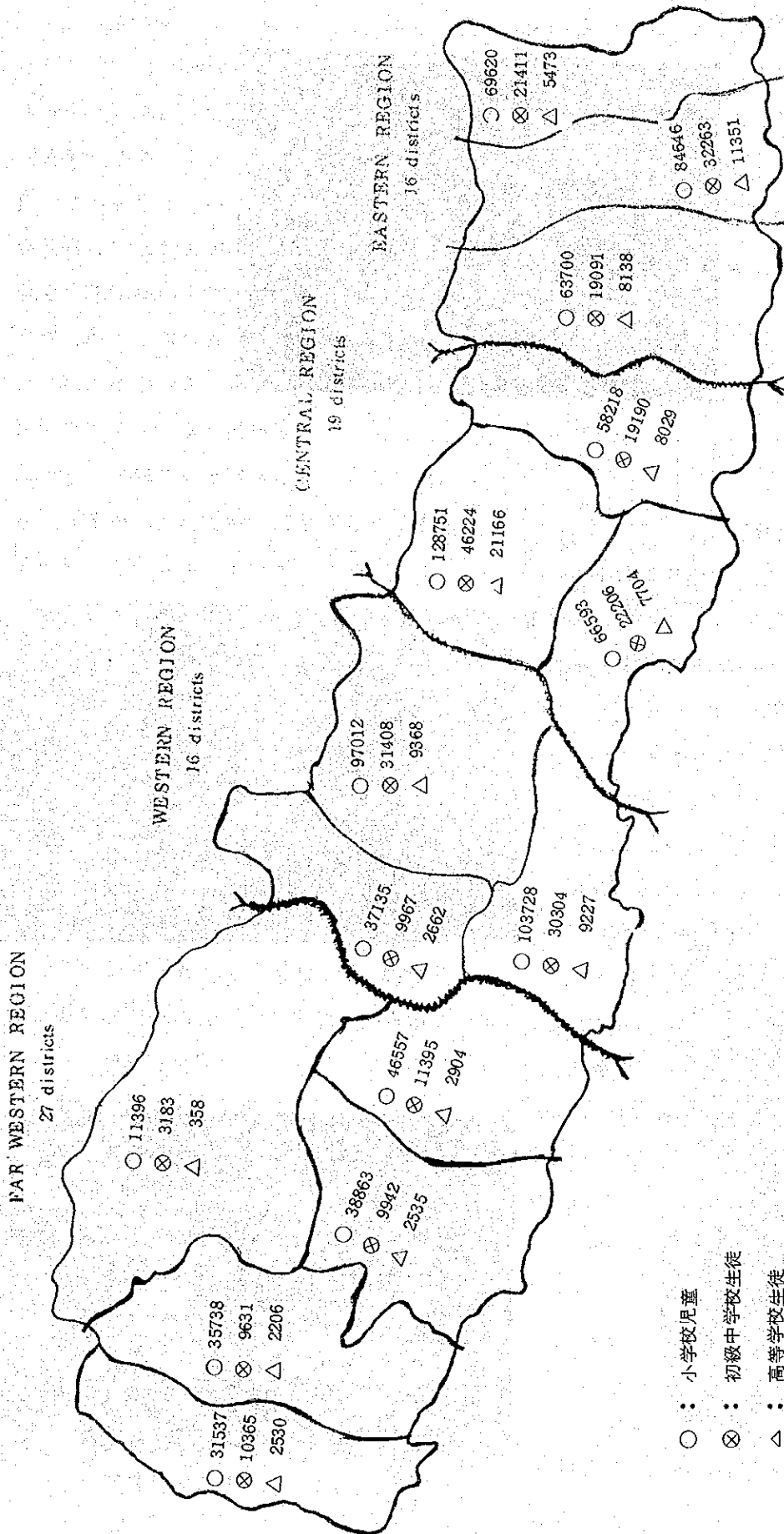
科目	1975/76	1976/77	1977/78	1978/79
教育学	5,178	4,611	4,875	5,782
医学	901	1,647	1,969	1,582
林学	173	158	207	286
農学及び畜産	383	521	608	874
工学	729	1,285	1,549	1,649
応用科学, 技術及び科学	3,010	2,105	2,136	2,706
人文科学及び社会科学	8,947	6,922	8,685	10,688
商業及び一般行政	3,435	3,207	3,977	5,142
法律	479	669	1,250	1,966
サンスクリット	269	313	328	346

(出所) ネパール政府文部省。

第3-5表 保健医療施設拡充状況

	1975/76	1976/77	1977/78	1978/79 (当初9ヵ月)
病院数	61	64	65	68
病床数	2,238	2,294	2,309	2,484
ヘルス・センター	31	35	29	26
ヘルス・ポスト	403	433	428	533
アユルベダ・サービス・センター	82	82	82	85

(出所) ネパール政府厚生省保健局。



⑥  
 第3-3図 ネバールの児童生徒数 (1977-1978)

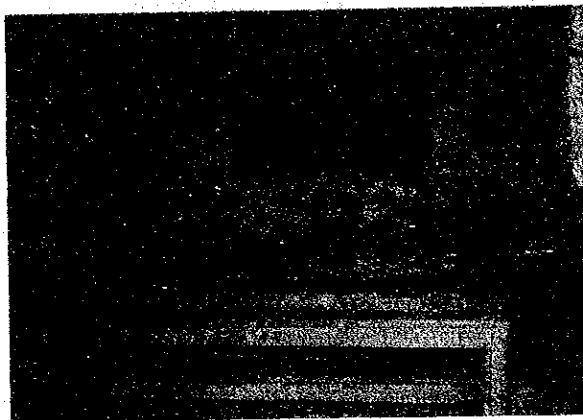


写真3-1-2

## (2) 小学校の教育

6才から3年間、小学校に通学することになっている。カトマンドウのような都市では6才から通学する。しかし、農村ではそうではない。

右の写真は、ダマンの農場へいく途中にある小学校である。全部で4教室である。冬休みで児童はいなかった。内部は黒板と机、椅子があるのみで、他は何もない。教材や教具の影は見当らない。



写真3-2-1 地方の小学校

一方、バクタプル (Bhaktapur) 付近で会った小学生は、登校日だったようであったが、制服を着ていた。これだけからの判断は危険であるが、都市部と農村部にはかなり教育内容などに差が認められるようである。サルヤン (Sallyan) のタクリー族 (Thakuri) では、子どもが8才になると学校へ通って勉強をする習わしであり、カトマンドウに近いネワール族 (Newar) は、子どもが9才から10才になったら学校へ通わせる。また、山地

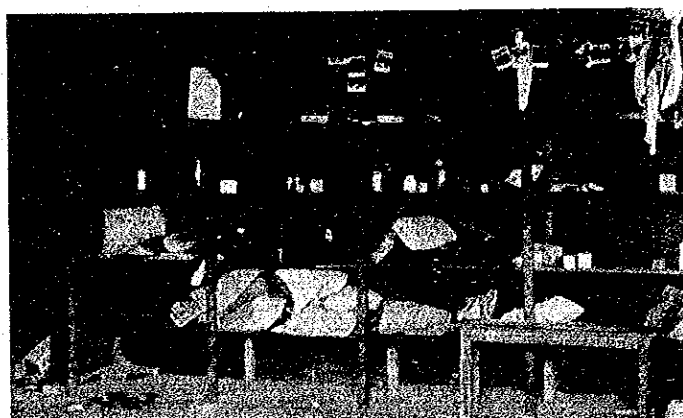


写真3-2-2 小学校の教室内



に住むシェルパ族 (Sherpa) は、一年間に数回も居住地を変更して生活する関係上、幼い子どもにとって通学することが至難になったり、家族が分れて生活するという犠牲を強いられたりしている。ただ、シェルパ族は外国人と接する機会が多いため、学問を身につけることに積極的である。ロールワール (Rolwal) のシェルパの子どもの小学校通学の内訳を示すと、次の表のようになっている。ここから、第1組 (1年生クラス) と第3組 (3年生クラス) に生徒が集っていることがわかる。これは、中途退学と、不規則の通学、復学によるものと説明されている。彼らが再度小学校へくる訳の大部分は、小学校を卒業してサーダー (Sarder: 登山ガイド) になりたいからだといわれる。女兒にも同様のことがいわれる。親は目にみえる利益が、子どもが学校を卒業することで得られることも知っている。一方タライ、

第3-6表 年令別のシェルパ児童の学級分散・性

児童の年令	学 年				性		
	1	2	3	計	男	女	計
5-7	8			8	7	1	8
8-10	4			4	3	1	4
11-14		2	3	5	4	1	5
14~			6	6	5	1	6
計	12	2	9	23	19	4	23
%	52.1	8.7	32.1	100.0	82.6	17.4	100.0

トリブバン大学本部資料 '80

(Tarai) 盆地に住むタール族 (Tharus) は子どもの教育に懐疑的で、通学させようとしなない。特に女兒にその傾向が認められる。直接利益のないこと、貧しいこと、学校が遠方なこと、労働力が大切なこと、などがその理由である。このようなことから、小学校へは全ての子どもが通っているわけではなく、識字率の低さもここに原因のひとつを求めることが可能である。⑦

### (3) 中学・高等学校の教育

カトマンドゥにあるダーバースクール (Durbar School) の中学・高等学校は、外観も立派で、生徒も清潔で明るかった。山岳、西部地域などの中学・高等学校の実態はよく分らないが、何日も歩いて通ってくる生徒は宿泊を余儀なくされるために、食費を少しでも軽減しようと、学校に泊り込んでいる。このために、勉学しようとする生徒に、学校から特別の奨学金を受けている例もあったと報告されている。地方の高等学校は、教育内容は決められていても、様々な程度の教育を施さざるを得ず、SLCの受験ができるまでに教育することのできる高等学校は、極く限られている。(特に山岳地帯)。

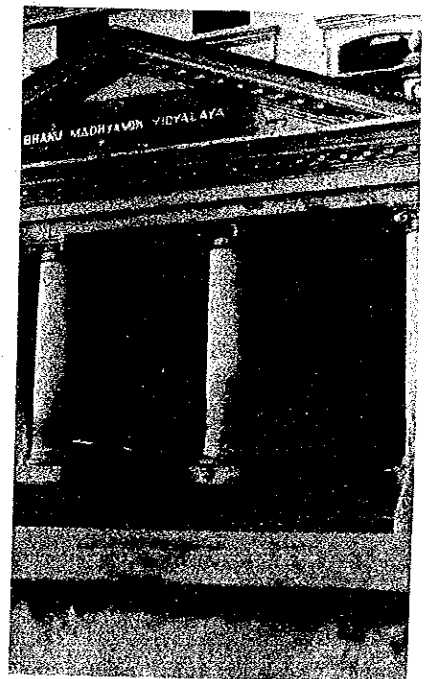


写真3-3 カトマンズの中学校

⑦ Sudha Paneru ed.; Traditional and Prevailing child-rearing Practices Among Different Communities in Nepal: Tribhuvan Univ. '80

### 3-2 小・中・高校の教科課程

教育活動は本来国家隆盛のための草の根である。ネパールも近年ますます教育に力を入れてきた。ネパールには様々な種族，階級制度，宗教，独自の歴史などが教育に影響を与えていると考えられている。

国家教育計画委員会 (National Education Planning Commission) は数多くの試行の結果，以下のような教科課程 (カリキュラム) を作成し，実施している。

基本的には，

- (1) 英語教育系 (English Education System)
- (2) 基礎教育系 (Basic Education System)
- (3) 仏教教育系 (Buddhist Education System)
- (4) サンスクリット教育系 (Sanskrit Education System)
- (5) 回教教育系 (Islamic Education System)

の5種類の系統がある。(1)を主に考察し，(2)以下は要点のみに止める。

(3-3-5-1 英語教育系)

ダーバースクール (Durbar School) 創設によってネパールの英国式教育が，1853年に開始された。現在は以下の教科課程を持っている。

第3-7表 小学校レベル(1学年～3学年)教科課程

教科	時間割上の割合%	配点
ネパール語	40	300
数学	30	200
社会科	20	100
体育・衛生 手工芸・描画	10	50

School Curriculum in Nepal より

全国教育組織案1の71

表7が小学校1年生から3年生までの教科課程である。この段階では，国語(ネパール語)と数学に重点がおかれている。国語は，読み書きの基本の習得，数学は日常生活，特に農業の初歩知識に関係させて授業を進めること，と但し書きがついている。

この他の教科目として，①体育，②個人衛生，③ハンディクラフト，④描画(Drawing)があるが，これらの教科は随時実際活動の中で教育すること，と述べている。④

中学校へ進むと，以下のようになっていく。即ち，性格形成を強調し，同時に労働を尊ぶ気持ちをうえつけることを目指している。

④ Gopi Nath Sharma; School Curriculum in Nepal; Hem Kumari; Sharma; Kathmandu, 1980.

右に、その教科目を示した。小学校での但し書きから、職業の中に農業が含まれていることが考えられる。

高等学校 (Secondary School) は明らかに S I C 合格を目指した教育が行われている。ここでもネパール語、英語、数学、歴史地理、科学、職業が並んでいる。中学校で行われている職業は、ここでは科目として明示されている。その最初の方に農業関係の科目があり、全体で 8 科目が選択必須科目の中に見受けられ、1 科目が自由選択科目の中に見受けられる。

また、職業高等学校では、選択必須科目と自由選択科目が同じ分野から出ており、ここで職業に従事する基礎固めができる。

1981 年以降は、以下のような教科目が望ましいと考えられているので、参考までに記す。小学校の段階は 1971 年の案と同じで、変化はない。中学校の表 11 で目につくのは道徳教育である。時代の波が押し寄せていることが分かる。一方、高等学校をみると、表 12 にあらわれているように基礎的に必要な学科は、必須職業科の他には 3 科目になっている。専門家育成の方向づけがあるようである。

職業は必須科目になっていて、  
 ㉑家政学 ㉒商業教育 ( オフィスマネジメントと会計学 ) ㉓農業 ㉔産業教育 ㉕藤・竹細工 ( 盲目の学生対象 ) ㉖カルマ・カンダ ( Karma Kanda, 宗教上の実践科目で、サンスクリットを選択した者のみ ) ㉗教育、というように分れている。農業は 3 番目にある。

自由選択科目は、1 グループを選択し、そこから 2 教科を選択するように定められている。それは、

A グループ：科学グループ

第 3-8 表 中学校 (4 学年~7 学年) 教科課程

教科	時間割上の割合%	配点
ネパール語	30	200
ネパール語 (II) (6 年と 7 年)	25	170
初等サンスクリット (6 年と 7 年)	5	30
英語	10	100
社会科	13	100
数学	20	150
科学	10	100
職業訓練	10	100
体育・衛生	7	50

全国教育組織案 1971

School Curriculum in Nepal より

第 3-9 表 一般高等学校 (8 学年~10 学年) 配当教科目

教科群	必須・選択の別
(1) ネパール語 (2) 英語 (3) 数学 (4) 歴史地理 (5) 健康教育 (6) バンチャヤット (7) 科学	必須
(8) 職業 (以下から 1 科目) ①農耕法 ②家畜学と日常農作業 ③園芸 ④養鶏 ⑤水産 ⑥観光とホテル経営 ⑦手工芸と木工 ⑧陶芸とやき物 ⑨製織と編物 ⑩金工 ⑪皮革工芸 ⑫煉瓦製造と建築 ⑬林業 ⑭自動車構造 ⑮養蜂 ⑯音楽・舞踊 ⑰速記・タイプ ⑱描画・写真 ⑲ラジオ構造 ⑳看護 ㉑保健活動 ㉒印刷写植 ㉓電機工事 ㉔時計・修繕 ㉕鉛管工事 ㉖家具・室内装飾 ㉗産業デザイン・コマーシャルアート ㉘ステーションナリメーキング ㉙食品工学と調理の仕出し ㉚テキスタイル工学 ㉛オフィス経営 ㉜会計 ㉝藤・竹細工 ㉞登山 (山岳地帯のみ) ㉟教育	選択必須
(9) 選択科目 (以下から 1 科目) ①サンスクリット ②英語 ③フランス語 ④ロシア語 ⑤ドイツ語 ⑥日本語 ⑦ポルトガル語 ⑧スペイン語 ⑨中国語 ⑩ヒンドゥー語 ⑪チベット語 ⑫ウルド語 ⑬アラビア語 ⑭ベルンジャ語 ⑮マイソリ語 (Maithili) ⑯ホイブリ語 (Phojpuri) ⑰ネパール語 ⑱特別数学 ⑲農村経営 ⑳家政学 (女子学生) ㉑物理学 ㉒化学 ㉓生物学と人体生理学	選択

全国教育組織案 1971 年案

(a)科学, (b)数学と統計

Bグループ: 語学グループ

(a)現代語: ①ネパール語 ②英語 ③フランス語 ④ロシア語 ⑤スペイン語 ⑥中国語 ⑦日本語 ⑧ヒンドゥー語 ⑨ベンガル語 ⑩ウルド語

(b)古代語: ①サンスクリット ②ギリシャ語 ③ラテン語 ④アラビア語 ⑤ペルシャ語 ⑥ヘブライ語

(c)地方語: ①ネワール語 ②マインリ語 ③チベット語

特別選択科目は次のようなものである。以下のグループの中から、2つのグループを選びそれぞれのグループの中から2つの教科を選択するようになっている。

1) 社会科グループ

(a) 歴史 (b)地理 (c)公民 (d)経済

2) 商業グループ

(a)農村経済 (b)商業数学(算術) (c)簿記会計 (d)タイピング

3) サンスクリットグループ

(a)サンスクリット文学 (b)サンスクリット研究 (b)の方は以下のうち随意1科目)

①法律 ②文法 ③天文学 ④文学 ⑤ベダ(Veda)

4) 家政学グループ

(a)食品加工 (b)縫製と編物 (c)保育と人口教育

5) その他のグループ

(a)音楽 (b)舞踊 (c)彫刻 (d)絵画 (e)体育 (f)健康教育

(1) 基礎教育系

基礎教育系の小学校は5年制を採用している。これは印度のカリキュラムを改訂したものをそのまま使用しており、教科課程自体も古い。教科は、

①紡績(Spinning) ②園芸 ③算術 ④母国語 ⑤一般科学 ⑥社会科 ⑦描画 ⑧宗教講話 ⑨体育 ⑩衛生と健康

になっており、一週44時間、時間が組まれている。

6年生から8年生までの3年間は、Higher Basic School と呼ばれている。ここでは、次

第3-10表 職業高等学校配当教科目

教科群	必須・選択の別
(1)ネパール語 (2)英語 (3)数学 (4)科学, 衛生学・生理学 (5)社会科(歴史・地理・パンチャヤット)	必須
(6)職業教育 (一般高校の職業の項と同じものから1科目選択)	選択必須
(7)選択科目 (6)にあるものと同一の職業科目)	選択

全国教育組織1971年案

第3-11表 中学校の教科課程

教科	4年生・5年生	6年生・7年生
ネパール語	8	6
サンスクリット	2	2
英語	7	6
数学	6	6
道徳教育	2	2
体育	2	2
科学(含健康教育)	6	6
社会科	6	6
職業訓練またはサンスクリット	1	3
合計	39	39

第3-12表 高等学校の教科課程

	配当
ネパール語	6
英語	7
数学	6
職業	5
選択科目(A集団)	5
“(B集団)	5
特別選択科目	5
合計	39

のような教科が挙げられている。この系は8年間で終るとみえて、9年生10年生の教科目はない。教科は、

(1)基礎職業 (Basic Craft)

㊟農業 ㊟紡績 ㊟木工

(2)ネパール語

㊟必須ネパール語 (ネパール語が母国語でない学生のため) ㊟上級ネパール語

(3)他の言語 (1つの言語選択)

㊟サンスクリット ㊟ネパール・バサ (Nepali Bhasa) ㊟マイシリ語 ㊟ヒンドゥー語

㊟ウルド語 ㊟英語

(4)数学 (基礎)

(5)社会科学

㊟歴史 ㊟地理 ㊟公民

(6)一般科学または家政学 (女子学生のみ)

(7)補助職業 - 選択 (1)を選択しない者に)

㊟農業 ㊟編物・織物 ㊟木工

(8)特別選択科目

㊟描画 ㊟衛生と健康教育 ㊟道徳教育 ㊟一般教育

である。これらは一週44時間の間に行われる。

(2) 仏教教育系の教科科目

仏教系の学校の教育は6年制をとっている。1972年に、7年目に入る時にパリアッチ・ダンマ・パラカ (Pariyrtti Dhamma Palaka) を与えるための試験が行われ、次で、パリアッチ・サダンマ・パラカ (Pariyatti Saddhamma Palaka), Ist degree, の試験が行われる。これらの試験に合格するため、1年生から以下の教科が配当されている。

1年生

(a) シヒラ (Shila) (b) トリ・ラトナ・バンダナ (Tri Ratna Bandana) (c) 伝記

2年生

(a) バリ・スートラ (Pali Sutra) (b) トリ・ラトナ・バンダナー解釈 - (c) 伝記と伝記物語語

3年生

(a) バリ・スートラ (b) シャイティ・プージャ (Chaity Puja) (c) 伝記と伝記物語 (d) 性格教育と道徳教育 (e) 一般知識

4年生

(a) バリ・スートラガート - 意味 - (b) シャイティ・プージャ (c) 伝記と伝記物語 (d) 性格教育と道徳教育 (e) 社会科 (f) 一般知識

5 年生

- (a)パリ・スートラとパリグランタ (Pali Sutra and Paligrantha) - 意味 - (b)伝記  
と伝記物語 (c)伝教哲学 (d)写経 (Letter writing) (e)文法

6 年生

- (a)パリ・スートラとパリグランタ - 意味 - (b)伝記と伝記物語 (c)伝教哲学 (d)写経 (e)文  
法 (f)一般知識

(3) サンスクリット教育系の教科科目

この系統の教育では、1年生から7年生までは英語教育系の教科課程と同一である。8年生以降のものを表13に示した。

(4) 回教教育系の教科課程

現在、学校水準での回教教育は、

㊸マクタブ (Maktabs)

㊹マダラス (Madarsas)

の2流に分かれている。8年生までの教育は、生徒がSLCに相当するテスト、フカニア (Fukania) の資格をとれるように指導している。

3-3 大学における教育

SLCに合格し、大学の入試にも合格した学生が、短期大学あるいは大学に入学する。農学部はキャンパスが3つある。ランブール (Lampur), ラムジョン (Lamjung), バイロワ (Bhairowa) がそれである。最大のもはランブールにあり、無線で連絡を取っている。

農学部入学生はラムジョンとバイロワで実務訓練を受ける。1年間が終ると、JTA (Junior Technical Assistant) の資格を得ることができ。ここでは主に Animal Science を学ぶ。2年生から4年生まではランブールに通学する。2年を終えると、JT (Junior Technician) になれる。3年間のプログラムはランブールで行われ、終了すれば農学士 (Bachelor of Sciencial Agriculture) になる。更に Master of Agriculture を得るために、大学院へも行ける。

1年生のうち、50%はJTAで終えてしまう。ランブールへ進学する者は入学生の半数であ

第3-13表 サンスクリット高等学校  
配当教科目

教科群	
(1)	ネパール語
(2)	サンスクリット
(3)	数学
(4)	社会科 (地理・歴史・パンチャヤット)
(5)	科学、保健体育
(6)	職業教育
(7)	選択科目
	①英語 ②フランス語
	③中国語
	④ヒンズー語
	⑤ロシア語 ⑥日本語
	⑦スペイン語
	⑧ドイツ語
	⑨ポルトガル語
	⑩チベット語
	⑪ウルド語
	⑫アラビア語
	⑬ベルシャ語
	⑭マインリ語
	⑮ホイブリ語
	⑯ネワール語
	⑰ライ語 (Rai)
	⑱リンブ語 (Limbu)
	⑲グルン語 (Gurung)
	⑳マジャール語 (Magar)
	㉑タマン語 (Tamang)

全国教育組織1971年案

る。現在ランプールには750名の学生が通学している。

トリバン大学では、バブルムに新しいセンターを計画中であり、第2番目のものをボカラ(Pokhara)に決定している。

林学科はカトマンドゥにあり、1学年150名である。2年コースであるため、総在籍数は280名になっている。

大学の研究には二つの重要な面がある。第1は教授、教育である。第2は研究活動である。この中には若手の養成が入ってくる。

カトマンドゥに本部を持つこの大学は、各学部ごとに独立した建物を持ち(ここには動物学部を出した)、学生会館、男子寮、女子寮はもちろんのこと、図書館、出版局に至るまで独立した建物である。図書館の蔵書数も多く見受けられた。日本からの大学、研究機関からの紀要もあり印象的であった。

出版局ではこの大学の教科書、参考書、一般啓蒙学術書などを刊行している。オフセット印刷機が2台稼働しており、知的要求は可成り満たされていると思われた。

トリバン大学は、前国王の名前をとって、トリバン総合大学が1960年開設され、学生の入学が始まった。国家教育計画委員会 National Planning Commission の審議の結論は、ネパール国の唯一の、そして総合的な最高学府である。それは法律に基づき、国立の専門教育の中心である。その第一の目的は、

- (1) 教育 teaching
- (2) 研究 research
- (3) 普及 public service である。

トリバン大学のキャンパスはカトマン

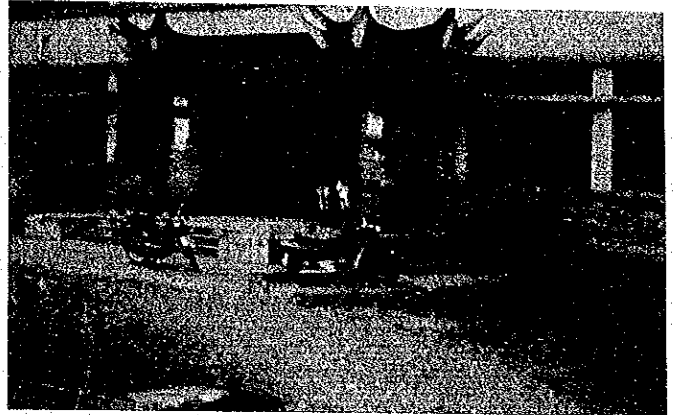


写真3-4 トリバン大学 Zoology の玄関

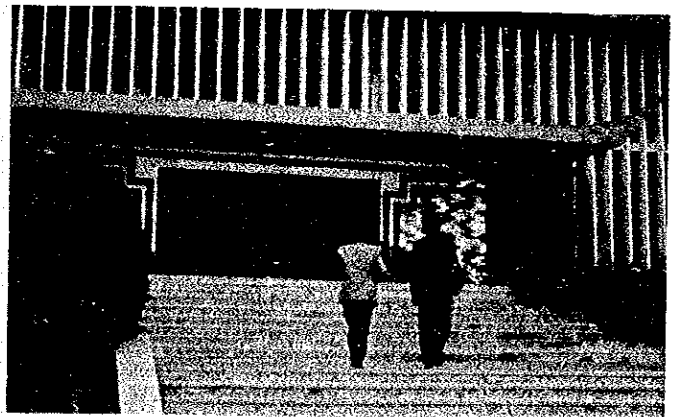


写真3-5-1 LIBRARY の正面



写真3-5-2 LIBRARY の入口、国王の写真と関係図書が展示してある

ス郊外のキルティプール Kirtipur にある。

トリバン大学が1960年以来世に送った学生は1970年までに、学卒8,767名、大学院卒1,851名、博士Ph.D. 1名である。

大学の管理組織は一応次のように決められている。

総長 Chancellor : 国王 His Majesty the King

学長 Pro-Chancellor : 文部大臣 Minister of Education

現(1979年度) : Dr. Mahendra Prasad

副学長, 経理部長, 庶務次長, 課長3名, 各学部長, 学科長, 事務長など設立当時の5学部  
に現在1学部加えられており, 管理体制に企画室長が重要な地位を占めている。図書館は後述  
(印刷局併設)

学部名	内 容
教養学部	Faculty of Arts : 英語科, ネパール語科, ヒンズー科, サンスクリット科, 文 化科, 歴史科, 地理科, 経済科, 数学科, 政治学科
商学部	Faculty of Commerce : Master of Commerce degree の授与
理学部	Faculty of Science : 物理科, 化学科, 地学科, 植物学科, 数学科 現在は Institute of Science & Technology に発展
教育学部	Faculty of Education : Master of Education degree の授与. ネパー ル教員養成機関の最高
大学院	Acharya : Master's level programs
農学部	Institute of Agriculture and Animal Science (Rampur, Nepal) 1977年より始った(米国援助)

(1) 農業部 Plant Science Division

- a. Agronomy
- b. Entomology
- c. Soil Science
- d. Chemistry
- e. Horticulture
- f. Agricultural Engineering
- g. Farm Operations
- h. Plant Pathology
- i. Physics

(2) 畜産部 Animal Science

- a. Animal Husbandry
- b. Poultry Husbandry



- c. Veterinary
- d. Dairy Science
- e. Agricultural Zoology

(3) 農村開発部 Rural Development

- a. Agricultural Extension
- b. Agricultural Education
- c. Agricultural Economics
- d. Farm Management
- e. Rural Sociology
- f. English
- g. Nepali
- h. Agricultural Information
- i. Audio Visual
- j. Mathematics
- k. Statistics

農学部 Institute of Agriculture and Animal Science は略して IAAS, トリブバン大学の新教育組織として注目されている。その目的は次の5項目である。

- (a) ネパールの農業開発原動力となり得る人材の供給
- (b) 職業高等学校の農業教員養成
- (c) 農業の生産様式に改革をもたらすように、農民主導型の農業問題の研究を開発。加うるに、ネパールの国情に合った材料を提供出来る結果が求められる。
- (d) 夫々必要に応じて、色々な基準の専門職を提供することにより、農業省と文部省の関連を強める。
- (e) 農民の短期教育により、半商業的な活動をも農業分野に開拓したり、別の種類の農業生産に従事させるなどの普及事業。

トリブバン大学農学部の概要は、教官リスト、在外研究者、農業部、畜産部、普及部(農村開発)のカリキュラム、大学入学生数その他の概要(P. 40~51)が年報に出されているのでコピーした。

とくに研究活動で、農業問題に何が注目されているかも知ることが出来て便利である。

(P. 22-28)

### 3-4 学制と農業教育

現在、小学校が7,256校、児童数45万人、中学校576校、高等学校458校で中学、高校生徒数は97,000人である。その他に速成の成人教育センターが4,500ユニットあり、現

在までに120,000人が教育を受けている。その他に特殊学校(マルチパーパス・スクール)が12校あり職業教育を行っている。

高等専門教育機関として単科大学が29, 総合大学が1つある。総合大学は前国王の名を冠し、トリブワン大学と称し、国立大学でカトマンズの南部にある。この大学にはアート, エデュケーション, ビジネス, エンジニアリング, サンスクリットの5学部があるが、農学部はない。

農業の高等教育機関として唯1校, ナラヤニ県(Narayani zone)ランプール(Rampur)に農業畜産専門学校がある。

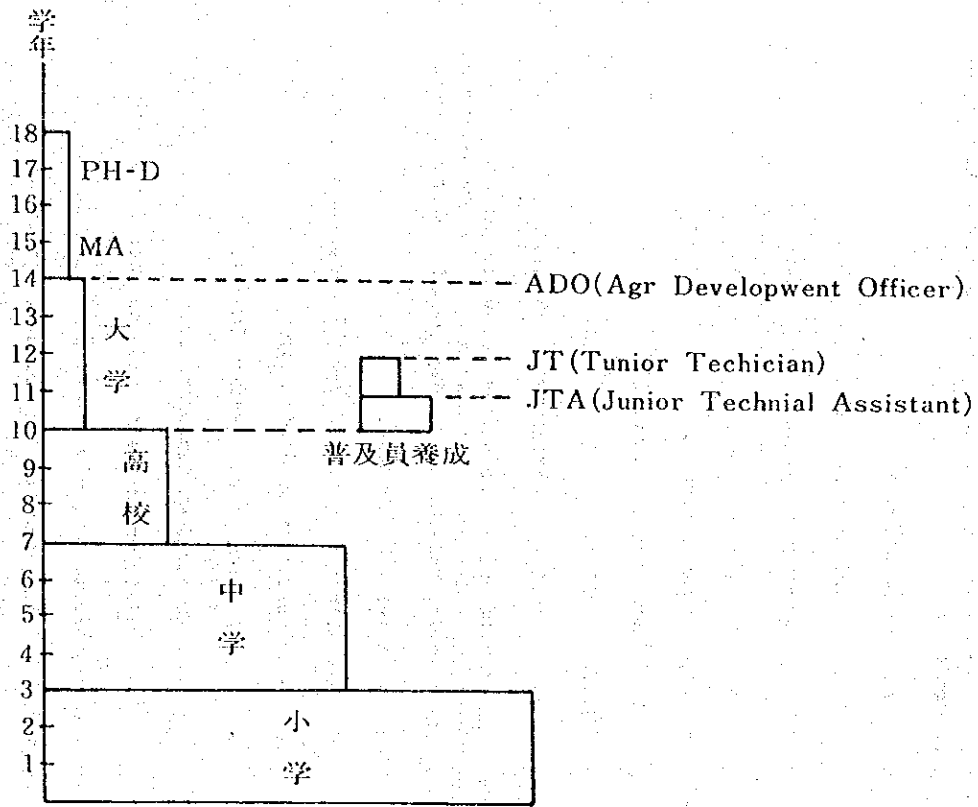
現在は小学校(1-5年), 中学校(6-8年), 高校(9, 10年)であるが教育5カ年計画により修業年限を小学校(1-3年生), 中学校(4-7年生), 高校(8-10年生)に変えつつある。

また国立大学は農学部, 林学部, 獣医学部, 医学部などを含む多数の学部, 研究所を創設整備する計画がある。新設を要する如き分野の教育はこれまで主としてインド, バングラディシュその他隣国の大学で受けていた。日本の大学の工学部などを卒業し帰国した者もあるが, 現況下では彼等にとって希望するに相応しい職がない。また, 医師の開業も企業としては成り立たないといわれている。高等教育を受けたネパール人の各部門別の人数は第3-14表の如く人口に対して0.068%に過ぎない。農業関係265人, 林業関係99人である。獣医師の数は45人で豚以上の大動物頭数1,437.7万頭に対する数としては余りにも少く, 家畜頭数32万頭に對し, 1人の割合になる。

第3-14表 Estimated Stock of Manpower of Nepal in Higher, Middle and Lower Levels (as of 1970/71)

Subjects	High Level	Number of Persons Middle and Lower Levels	Total
Engineering	465	—	465
Civil Engineering	260	432 (overseers)	692
Mechanical Engineering	57	—	57
Electrical Engineering	81	—	81
Chemical and Related Technology	—	—	—
Other Engineering	67	—	67
Textile, Garments and Foot-ware	—	—	—
Textile Technology	—	—	—
Health	326	—	326
Education	240	—	240
Commerce	730	—	730
Agriculture	265	981	1,246
Forestry	99	98	197
Veterinary	15	—	15
General Science	727	—	727
Art Subjects	1,751	1,511	6,262
Total	7,648	10,091	17,742
Percentage to total population	0.068%	0.089%	0.157%

Source: Computed from National Planning Commission, Fourth Plan estimated by UNESCO in 1967 and the editor's revision.



6-23

第3-4図 ネパールの学校制度と普及職員のレベル

CHAPTER II Personnel List

I. Plant Science - Karki, Amrit Bahadur, Ph.D., Reader  
Division Chief

A. Agronomy

Gupta, Om Prakash, Ph.D. V Visiting Professor  
Mishra, Nand Kumar, M.Sc. (Ag.) PS Reader  
Nepal, Tara Prakash, SL Assistant Lecturer  
Sharma, Krishna Prasad, SL ,, ,,  
Shakya, Shanta Man, PS ,, ,,  
Sharma, Ram Chandra, PS/B ,, ,,  
Subedi, Laxmi Prasad, PS ,, ,,  
Prasad, Moti Lal, J.T. PS Instructor  
Upreti, Gopi, B.Sc. (Ag.) CTS

B. Soil Science

Karki, Amrit Bahadur, Ph.D. PS Reader  
Khatri, Chhetri, Tej Bahadur, M. Agri. Sc. PS Reader  
Sharma, Padma Prasad, SL Assistant Lecturer  
Shah, Shree Chandra, SL ,, ,,  
Baral, Dilli Ram, B.Sc. (Ag.) CTS

C. Horticulture

Mehta, Raj Deo Prasad, DA Lecturer  
M.Sc. (Ag.)  
Adhikari, Rishi Raj, PS Assistant Lecturer  
Dhakal, Durga Dutta, SL ,, ,,  
Shrestha, Gyan Kumar, SL ,, ,,  
Koirala, Ram Chandra, J.T. PS Instructor

D. Agricultural Chemistry

Shrestha, Ananda Prasad, PS Assistant Lecturer  
M.Sc. (Chem.)

The Institute is presently organized in three main academic divisions by subject area and supported by two administrative sections. This staff list is in accordance with that organization, as follows:

- I. Plant Science
- II. Animal Science
- III. Rural Development
- IV. IAAS Journal
- V. Academic Affairs
- VI. Administrative Affairs
- VII. Visitors
- VIII. Participant Programme

Each name is followed by the highest academic diploma or degree received by the individual, and also a code for the status of that person on 1st Baisakh 2034. The code is explained here:

- PS = Permanent Staff
- C = Staff on Contract (usually from another country)
- SL = Currently on Study Leave
- B = At Present at a Branch Campus
- T = Employed on Temporary Basis
- V = Visiting Professor from another University
- PC = Peace Corps Volunteer
- DA = Department of Agriculture, deputation

Office of the Dean - Basnyat, Netra Bahadur, M.Agr. Sc.,  
Assoc. I.A.R.I., Dean

Shrestha, Krishna Raj, M.A., Assistant Registrar

Nepali, Dainik Bahadur,  
B.Sc. (Ag.) PS/B Assistant Lecturer  
Yadav, Jagat Lal, B.Sc. (Ag.) PS  
Kayasta, Arjun Kumar, Assistant Lecturer  
B.Sc. (Ag.) SL Instructor  
Coleman, Carson, B.Sc. PC Peace Corps Volunteer

B. Poultry Husbandry  
Joshi, Nanda Prakash, SL Assistant Lecturer  
Shah, Saha Deo, B.Sc. (Ag.) SL

C. Veterinary  
Tiwary, Sudarshan, J.T. PS Instructor

D. Dairy Science  
Vacant

E. Agricultural Zoology  
Augusty, K.T., M.Sc. (Zool.) C Lecturer

III. Rural Development - Pyakuryal, Kailash, Nath, M.Sc. (Ag.)  
Reader, Division Chief  
Axinn, George H., Visiting Professor

A. Agricultural Extension  
Pyakuryal, Kailash Nath, PS Reader  
M.Sc. (Ag.)  
Dongol, Badri Bahadur Singh, SL Assistant Lecturer  
B.Sc. (Ag.)  
Tiwary, Satya Narayan, SL  
B.Sc. (Ag.)  
Gautam, Krishna Murari, CTS  
B.Sc. (Ag.)

B. Agricultural Education  
Bhandari, Bishnu Bahadur, PS/B Assistant Lecturer  
M.Sc.  
Shrestha, Anitrua, PS  
M.Sc. (Ag. Ed.)  
Suvedi, Murari Prasad, PS  
Uip. Ag. Ed. V  
Axinn, Nancy W., M.Sc. Visitor

E. Agricultural Botany  
Karmacharya, Siddhi Bir, PS Lecturer  
M.Sc. (Bot.)  
Gurung, Santa Bahadur, SL Assistant Lecturer  
B.Sc. (Ag.)

F. Entomology  
Neupane, Fanindra Prasad, PS Reader  
M.Sc. (Ag.)  
Mandal, Chandra Kishore, PS/B Assistant Lecturer  
B.Sc. (Ag.)  
Thapa, Resham Bahadur, PS  
B.Sc. (Ag.)

G. Plant Pathology  
Shrestha, Sundar Man, SL Assistant Lecturer  
B.Sc. (Ag.)

H. Agricultural Engineering  
Bauer, Earl, B.Sc., B.A. PC Peace Corps Volunteer  
Basnet, Badri Bahadur, CTS Agri. Eng.  
Shrestha, Khadga Bahadur, SL Assistant Lecturer  
B.Sc. (Ag.)  
Shrivastav, Gautam Prasad, CTS  
M.E.

I. Physics  
Mallik, Thakkan, M.Sc. PS Lecturer  
(Math.)

II. Animal Science - Basnyat, Netra Bahadur, M. Agri. Sc.,  
Assoc. IARI, Acting Division Chief  
Axinn, Nancy W., M.Sc., Visitor

A. Animal Husbandry  
Shrestha, Chandra Man, SL Assistant Lecturer  
B.Sc. (Ag.)  
Sapkota, Maheshwor, PS  
B.Sc. (Ag.)  
Tiwary, Krishna Raj, SL  
B.V.Sc.

<u>C. Agricultural Economics</u>		IV. IAAS Journal - Kailash Nath Pyakuryal, M.Sc. (Ag.) Editor-in-Chief, Reader	
Shivakoti, Ganesh Prasad, B.Sc. (Ag.)	SL Assistant Lecturer	Axinn, George H.	V Consulting Editor
Pokharel, Bholia Nath, B.Sc. (Ag.)	PS " "	Bauer, Ellie	PC Consulting Editor
Tulachan, Pradeep Man, B.Sc. (Ag.)	SL " "	V. Academic Affairs - Neupane, Fanindra Prasad; M.Sc. (Ag.) Assistant Dean, Reader	
Bauer, Earl W., B.Sc. B.A. Shah, Laxman, B.Sc. (Ag.)	PC Peace Corps Volunteer CTS	A. <u>Examinations</u>	
D. <u>Farm Management</u>		Mallik, Thakkan, M.Sc. (Math.)	PS Lecturer
Bajracharya, Sri Bindu Ratna, B.Sc. (Ag.)	SL Assistant Lecturer	Piya, Ishwar Kumar, B.A.	T Assistant Administrative Officer
Bauer, Earl W., B.Sc. B.A.	PC Peace Corps Volunteer	Sharma, Khada Nand, B.A.	PS Acting Asst. Adm. Officer
E. <u>Rural Sociology</u>		B. <u>Library</u>	
Pyakuryal, Kailash Nath, M.Sc. (Ag.)	PS Reader	Chaudhary, Laxmi Narayan, B.A.	SL P.A.
F. <u>English</u>		Karmacharya, Shiddi Bir, M.Sc. (Bot.)	PS Lecturer
Bauer, Ellie, M.F.A. Coleman, Susan, R.N.	PC Peace Corps Volunteer PC " "	Mrs. Karmacharya	
G. <u>Nepali</u>		C. <u>Warden</u>	
Rijal, Upendra Prasad Sharma, M.A. (Nepali)	PS Assistant Lecturer	Khatri Chhetri, Tej Bahadur, M. Agri. Sc.	PS Reader
H. <u>Agricultural Information</u>		D. <u>Student Welfare</u>	
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I. <u>Audio Visual</u>		VI. Administrative Affairs - Basnyat, Netra Bahadur, M. Agr.Sc., Assoc. I.A.R.I. Acting in Charge	
Subedi, Murari Prasad, Dip. Ag. d.	PS Assistant Lecturer	A. <u>Finance and Budget</u>	
J. <u>Mathematics</u>		Tiwari, Buddhi Sagar, B.A.	PS Acting Asst. Adm. Officer
Mallik, Thakkan, M.Sc. (Math.)	PS Lecturer	B. <u>Personnel and Records</u>	
Shakya, Prakash Ratna, M.Sc. (Math.)	PS Assistant Lecturer	Shrestha, Krishna Raj, M.A. (Nepali)	PS Assistant Registrar
K. <u>Statistics</u>		Gupta, Uma Shanker, B.Sc. (Ag.)	PS/B Assistant Lecturer

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- Miller, Jim, Ph.D. University of Illinois (Campus Planning)
- Murdock, John, Ph.D. University of Wisconsin, President and Executive Director, MUCIA
- Nelson, Wallace W., Ph.D. University of Minnesota (Farm Management)
- Scherer, H.D. Indian University (Registrar)
- Shulte, Emmett, E., Ph.D. University of Wisconsin (Soil Science)
- Smuckler, Ralph, Ph.D. Michigan State University, Dean, International Programmes
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- Gupta, Om Prakash, Ph.D. V. Visiting Professor
- C. American Peace Corps Volunteers
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- Bauer, Ellie F., M.F.A.
- Coleman, Carson, B.Sc.
- Coleman, Susan L., B.Sc., R.N.
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- Maharjan, Babu Ram, Supervisor
- VIII. Participant Programme
- C. Property Management
- Devkota, Kashi Nath, B.Com. T Asst. Adm. Officer
- D. Procurement
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- E. Campus Development
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- A. MUCIA/IAAS Office
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- Rayamajhi, Udaya, B.Com. T Kathmandu Office
- Mark, Lynne D. V Interim Team Leader
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- Crepeau, George, Ph.D. The Ohio State University, MUCIA  
Board Director
- Deans, Robert, Ph.D. Michigan State University  
(Animal Science)  
MUCIA/AID/NEPAL Project

Maheshwar Sapkota Michigan State University M.Sc. Animal Science.

Krishna Raj Shrestha Michigan State University Educational Administration.

Participants Presently in India

Name	Name of Institution	Area of Study
Durga Dutta Dhakal	College of Agriculture	M.Sc. Agri.-Horticulture.
Badri Bdr. Dongol	S.K.N. College of Agri.	M.Sc. Agriculture-Rural Sociology.
Santa Bdr. Gurung	Punjab Agri. University	M.Sc. Agriculture - Agri. Botany (Plant Physiology).
Sri Chandra Shah	Punjab Agri. University	M.Sc. Agriculture - Soil Fertility.
Saha Dev Saha	Allahabad Agri. Institute	M.Sc. Agri.-Animal Husbandry.
Sunder Man Shrestha	University of Udaipur	M.Sc. Agri.-Plant Pathology.
Ganesh P. Shivakoti	S.K.N. College of Agri.	M.Sc. Agri.-Agriculture Economics.
Krishna Raj Tiwari	Veterinary College	M.Sc. Agri.-Animal Nutrition.

Participants Presently in USA

FY - 76 Participants

Name	Name of Institution	Area of Study
Sribindu Ratna Bajracharya	Michigan State University	M.Sc. Farm Management-Agriculture Economics.
Nanda P. Joshi	The Ohio State University	M.Sc. Animal Science.
Tara P. Nepal	Michigan State University	M.Sc. Plant Science.
Satya Narayan Tiwari	The Ohio State University	M.Sc. Extension/Adult Education.

FY - 77 Participants

Narayan Kunwar	University of Wisconsin	M.Sc. in Agriculture information and Audio-visual.
Krishna P. Sharma	Michigan State University	M.Sc. Plant Science (Breeding).
Padma P. Sharma	University of Minnesota	M.Sc. Plant Science (Agronomy).
Chandra Man Shrestha	University of Illinois	M.Sc. Animal Science (Breeding).
Pradeep Man Tulachan	University of Illinois	M.Sc. Agriculture-Economics.

FY - 78 Participants Departing September 2+3, 1978 for USA

Rishi Raj Adhikari	Michigan State University	M.Sc. Horticulture.
Bhola Nath Pokharel	The Ohio State University	M.Sc. Agricultural Economics.
Kailash Nath Pyakuryal	Michigan State University	Ph.D. Rural Sociology.



### Practical Study

In all courses offered during the academic year, students encountered study in the field and in the laboratories. Because IAAS is committed to helping the students learn the practical aspects of agronomy, special emphasis was given to field-oriented practical study. Often, students found themselves in the field 'learning while doing' the varied aspects of field operations for major crops especially rice, maize, and wheat. Concentration in field operation was given in:

1. Field preparation for raising different crops (particular reference given to rice, maize, wheat, mustard, rape, potatoes).
2. Uprooting of rice seedlings.
3. Transplanting of rice seedlings by farmers' methods, and in rows.
4. Sowing - wheat, maize, mustard, rape and potatoes.
5. Seed and seed selection.
6. Seed treatments.
7. Interculture operations in maize, wheat and rice.
8. N.P.K. fertilizer calculation in different combinations plus their basal and top dressing application.
9. Use of pesticides and fungicides for plant protection.
10. Harvesting, threshing, chaffing, storage, and marketing.

Practical study was also given in weed plant identification, seed samples, fertilizer samples, fungicide samples. Students also participated in observations of field trials conducted during Kharif and Rabi seasons. Additional opportunity to practice the proper handling and care of tools and equipment was offered to students as part of their practical studies.

### Research Projects

The research committee approved a number of projects for the Kharif and Rabi seasons, 2034. Research projects successfully completed by the Agronomy Section of the Plant Science Division are as follows:

## CHAPTER III - Plant Science Division

The division of Plant Science is composed of a number of disciplines. Each discipline's activities are discussed separately.

### Agronomy

#### 1. Teaching Activities

The course offered to different levels of students during this academic year (2034-2035) were:

Certificate:

PS 103 Introduction to Crop Production

Diploma, B.Sc. Agriculture:

PS 103 Introduction to Crop Production

PS 204 Crop Physiology and Biochemistry

Diploma in Agricultural Education:

PS 208 Crop Production I

PS 305 Crop Production II

PS 401 Weed Control

### Project Work

In the 2034 Kharif season, 12 B.Sc. Agriculture students and 18 Diploma Agricultural Education students did project work in rice. Each student was allotted a 500 sq. metre area and all production inputs were provided by the Institute. All the field operations, from land preparation, to transplanting, through interculture and harvest were done by the students. No outside labourers were permitted to be hired by the students. The profits obtained from rice ranged from Rs. 100/- to /s. 324/- per students.

During Rabi season, 53 Diploma in Agricultural Education students, 50 B.Sc. Agriculture students, and 103 Certificate students participated in wheat project work. Certificate students were given 200 sq. metres of land each, and all the other students were given 200 sq. metres of land each. As with rice project work, all the field operations from land preparation, sowing, interculture, and harvest were done by the students. Initially, all the inputs were provided by the Institute. After harvesting, threshing and marketing their wheat crop, students returned the input costs (Rs. 25/- per student for 200 sq. m plot size). The profit realized by the students ranged from Rs. 25/- per individual to Rs. 50/- for a 200 sq. m area.

Wheat did not show any response to the application of 120 kg of N/Ha without Phosphorus or Zinc. However, with increased doses of N, the wheat grain yield increased. When 40 kg P<sub>2</sub>O<sub>5</sub> along with 10 kg zinc/Ha was applied to wheat, the grain yield was more than double at both the 60 kg N/Ha and 120 kg N/Ha levels. On the basis of these encouraging findings, further investigation will be undertaken.

PS/Agro-9: Response of Potato to Sources, Levels, and Time of Application of Nitrogen.

Sources of Nitrogen: rape cake, urea, ammonium sulphate.

Levels of N: 60 and 120 kg/Ha

Time of Application: 1) full dose at planting  
2)  $\frac{1}{2}$  dose at planting,  
 $\frac{1}{2}$  dose 40 days after planting.

A common dose of 60 kg P<sub>2</sub>O<sub>5</sub> was applied to all plots except control.

Remarks: Rape cake proved to be a very good organic fertilizer for potato cultivation. It was much superior to urea and ammonium sulphate as a source of nitrogen. However, its high cost makes it uneconomical. Sixty kg N/Ha and 60 kg P<sub>2</sub>O<sub>5</sub>/Ha continues to be recommended.

The full dose of N and P<sub>2</sub>O<sub>5</sub> should be applied as a basal dose at the time of planting.

PS/Agro-10: Non-target Effect of Diquat on Potato.

Remarks: The application of 0.25 kg/Ha of Diquat to potatoes, ten days after planting, gave a marked increase in potato production by way of some unknown, as yet, stimulating actions.

Entomology, Soil Science and Chemistry

Teaching Activities

During this academic year the following courses were offered in the three levels of study at IAAS:

Certificate:

PS 101 Inorganic Chemistry  
PS 102 Organic Chemistry

2034 Kharif:

PS/Agro-5: The Effect of Spray Herbicide for Weed Control in the Production of Transplanted Paddy.

PS/Agro-6: The Effect of Granular Pre-emergence Herbicides for Weed Control in the Production of Transplanted Paddy.

Remarks: In all, four herbicides in liquid form and four in granular form were tested in different treatment combinations. Out of these, Butachlore (Machet) was found to be the most effective for weed control and most selective to the crop. Because of the abnormally late paddy season in Kharif, 2034, weed growth, in general, in experimental plots, was not enough to cause yield differences in paddy. The trial is to be repeated with a few selected herbicides in Kharif, 2035.

PS/Agro-7: Performance of Wheat Under Four Planting Dates, at Two Levels of Nitrogen, and Two Seeding Dates.

Remarks: Four planting dates, from November 1, 1977 to December 15, 1977, with 80 kg and 120 kg/Ha of N, and 100 kg and 120 kg/Ha seed rate were tested.

For different planting dates, no perceptible difference with regard to grain yield was noticed. At later planting dates, a heavy seed rate and high levels of N application yielded equally with early-planted seed at a lighter seed rate and lower levels of N applications. On the basis of grain yield performance, the last week of November to the first week of December seems to be the optimum time for wheat sowing in Chitwan Valley. This study is to be continued.

PS/Agro-8: Evaluation of the Response of Wheat to Graded Levels of Nitrogen (0, 60, 120 kg N/Ha), Phosphorus (0, 40, 80 kg P<sub>2</sub>O<sub>5</sub>/Ha) and Zinc (0, 50 kg Zinc Sulphate/Ha).

Remarks: Experiments to study the response of wheat to different levels of N, P, and Zn showed extremely interesting results contrary to the conventional practices of farmers who use urea or ammonium sulphate alone for fertilizing their wheat crop.

### Horticulture

#### Teaching Activities

In all course, theory and practical were unified with a view toward familiarizing students with practical knowledge based on sound theory. The following courses were offered during the academic year:

#### Certificate:

- PS 103 Propagation of Horticultural Plants
- PS 106 Vegetable Crop Production

#### Diploma in Agricultural Education:

- PS 106 Vegetable Crop Production
- PS 210 Floriculture and Pomology
- PS 207 Floriculture and Gardening
- PS 405 Preservation of Fruits and Vegetables

#### B.Sc. in Agriculture:

- PS 207 Floriculture and Gardening

#### Project Work

Eighteen students did vegetable project work in kitchen gardening. Each student was given 60 sq. metres of land. They planted cauliflower crops, eggplant, tomato, potatoes, bush beans, radishes mustard leaf, etc. All the work, from land preparation through harvesting, was done by the students. The net profit for each student ranged from Rs. 15/- to Rs. 7/- . The loss was due to the total failure of the tomato and cauliflower crops. The following observations were made:

- a) late blight produced a total failure of the tomato crop;
- b) damping off and stalk rot destroyed the cauliflower crops;
- c) the potato crop gave the highest income followed closely by the radish crop. These crops matured at the same time and allowed the students to sell their produce without too much interference with classes. For other vegetables, the students could not find profitable marketing situations.

#### Research

Research could not be done in the cultural aspects of horticulture due to lack of staff. A few research projects were undertaken in cauliflower and potato. Descriptions of these are

### Diploma in Agricultural Education:

- PS 205 Introduction to Soil Science
- PS 206 Soil Fertility and Plant Nutrition
- PS 303 Insect Pests and Rodent Control

#### B.Sc. Agriculture:

- PS 205 Introduction to Soil Science
- PS 206 Soil Fertility and Plant Nutrition
- PS 203 Introductory Agricultural Entomology
- PS 303 Insect Pests and Rodent Control

#### Teaching Resources

Collecting and preservation equipment for entomological study was received during this year, plus new books and journals. These will allow for more comprehensive and rigorous study of entomology. Our short-term visiting professor from the University of Wisconsin did much to encourage the development and receipt of these teaching resources.

A new laboratory for soil science and chemistry is being installed. Some of the necessary equipment has also been received.

#### Field Experimentation

- a) Paddy: Although a general increase in yield was obtained, there was no statistically significant response to Zn fertilization. A slight yield reduction with reduced Zn uptake by the plants may be attributed to the ionic imbalance in the soil solution. A need for further study concerning available Zn in relation to P, Cu, and N content in the farm's soil is suggested.
- b) Tori: A field trial was carried out to study the effect of boron on tori (*Brassicaceae*). Significantly higher yield of mustard was obtained with boron application.
- c) Cauli- A field trial was carried out to study the effect of flower:boron on cauliflower. Application of boron significantly increased the yield and the quality of the cauliflower. In non-treated plots, cauliflower suffered from typical 'die-heart' (hollow stem, blackening, rotting) symptoms. In order to examine the economics of boron as fertilizer, for next season it is considered worthwhile to carry out trials with this micronutrient with respect to soil application vs. foliar application methods.

- Found that the welding machine, battery charger, drill machine and grinder were valuable equipment and utilized them fully;

- Repaired and maintained other vehicles - motorcycle and bicycles.

Since much of the machinery is not new, the workshop's major concern was keeping this machinery operable. This is a constant and difficult problem because spare parts are not readily available in the market. Machine storage and shelter is another major problem. The construction of a temporary implement shed has helped to some extent.

#### Farm Operations

The approximate areas under different crops and their approximate yield for 2034-2035 are as follows:

<u>Summer Crops</u>	<u>Approx. area in Ha.</u>	<u>Approx. production in qtl.</u>
Rice	35	1000
Maize	2.5	30
Dhaincha (seed prod.)	1.5	10
Dhaincha (green manure)	5.5	-
Experimental plots	.5	-
Student Project Work	1.5	-
<u>Winter Crops</u>		
Wheat	10	170
Potato (experimental)	25	20
Rape & Mustard	2	12
Student project work (wheat)	3.5	-
Wheat research project	5	-

This year, approximately ten hectares of cultivatable land was left fallow. These hectares will be again farmed in the coming year.

found elsewhere in the Plant Science Division report. Five trials testing the effect of different levels of nitrogen, zinc, molybdenum, boron and lime were conducted. The findings were very helpful in teaching and for recommendations to the farmers.

Similarly, two trials on potatoes were conducted - one, to see the response to levels, sources, and time of application of nitrogen; two, to see the effect of Diquat.

#### Orchard

The 4.5 hectare fruit orchard has mangoes, guavas, and litchi. This year, 2,000 pineapples were planted as intercropping in this orchard. In addition, one-half of a hectare was planted with Eureka lemon. The total income from fruits was Rs. 7,162/74. Guava were also utilized for jelly-making.

Approximately one hectare of land is used for vegetable production. Both mixed-cropping and relay cropping patterns are used. The income from vegetable production during this year was Rs. 5,524/76. Vegetables produced were radish, mustard leaf, eggplant, tomato, cauliflower, chilies, cucurbits, beans, peas, okra, sorrel, sweet corn, carrots, lettuce, and onions.

#### Agricultural Engineering Workshop

##### Teaching Resources

This year, the Institute's farm machinery was used as practical training equipment for students enrolled in related courses. This practical aspect of the students' learning was less than desirable due to the insufficient amount and varieties of implements and machinery. A broader, more applicable range of equipment and implements are needed to provide adequate practical instruction.

##### Workshop Activities

During the academic year 2034-2035; the agricultural engineering workshop:

- Repaired and maintained the tractors, jeeps, power tillers, pump set, bus, and other machinery and equipment as needed;
- Repaired and maintained the electricity during the first half of the year;
- Converted workshop verandah into office and store rooms;

### Special Research

Two long-term research projects - one in soils and one in entomology - are in progress as part of the on-site studies of two staff members who are working toward Ph.D. degrees. Following are brief reports of their in-progress findings as of the present.

#### General Features of the Soils of Chitwan Valley

Tej Bahadur Khatri Chhetri  
Reader (Soil Science)

A Ph.D. research programme was developed in collaboration with Professor E.E. Schulte, Department of Soil Science, University of Wisconsin, U.S.A., (major professor for this research) at Rampur in June, 1977 (Jestha-Ashad, 2034). The objective of this research programme are:

1. To determine the nature and extent of secondary and micro-nutrient deficiencies of the soils in Chitwan Valley;
2. To develop chemical soil test procedures for diagnosing deficiencies of selected micro-nutrients;
3. To calibrate soil test data under field conditions.

According to the research proposal, objectives 1 and 3 are to be carried out at IAAS and its vicinity as far as possible. Objective 2 is designed to be completed at the University of Wisconsin.

From July-December, 1977 (Srawan-Paush, 2034) a preliminary survey of micro-nutrient deficiency in Chitwan valley was conducted. Efforts were made to traverse areas in the Chitwan valley as thoroughly as possible during rice, maize, mustard, and cauliflower seasons and to represent a wide range of soils from different terraces of the Narayani and Rapti rivers. Data collected included: 1) visual symptoms of abnormalities due to soil, 2) personal contact information given by farmers about farming history, fertilizer use, incidence of disease and pests, etc., 3) maize, mustard, rice and cauliflower plant samples, and 4) soil samples from the same area as plant samples at 0-15 cm and 15-45 cm depths. Prepared soil and plant samples were sent to Professor Schulte at the University of Wisconsin for chemical analysis.

The physical characteristics of the soils of this district show that most belong to the loam and sandy-loam groups with a few falling in the sandy-clay loam group. The colour of the surface soils vary, for the most part, from very dark grey to very dark greyish-brown (10 YR 3/1-3/2) with the subsurface soils having yellowish brown to dark yellowish brown colour. The texture of the subsurface soil is mostly sandy loam. The soils of the valley, in general, are well-drained except in some locations where the drainage is impeded by the physiographic conditions. The soils can be classed as belonging to relatively 'young' groups where there has been no development of B-horizon.

Considerable variation in pH has been found. However, the majority of the soils fall under the medium to slight acid group (4.6-6.5 pH values) with some pockets having medium alkaline (below 8.5 pH) reaction. The reactions of these soils generally indicate the need for liming for better production.

In the Chitwan valley, full scale cropping began only a few years ago (after the introduction of the resettlement programme in the mid-1950's), and because of this, a relatively high amount of organic matter is still found in the surface soil (average of 70 samples analyzed = 2.8%). However, this does not mean that this organic matter will not be exhausted. A judicious use of organic matter is still needed.

The average of the P soil tests for the 70 tested samples was 166.9 kg/Ha. Most of the soils have high P and the high P values are a reflection of past fertilization. Judging from this data, a majority of the soils may not respond to added phosphatic fertilizer. A high level of soil P is known to reduce zinc availability when the soil's zinc is low. Forth of the surface samples (0-15 cm) tested deficient, nine low and the remaining others medium in zinc content. The average soil zinc content of the 70 samples was 4.4 kg/Ha, which is low.

Boron was low to deficient in all of the soil samples tested (average = 0.68 kg/Ha). A summary of the chemical analysis of the soils is given in Table 1.

Table 1. Summary of Analysis of Soil Samples

pH	Organic matter %	P	K	Ca	Mg	S	Mn	Zn
70	70	70	70	70	70	70	70	70
4.2-7.7	1.1-6.8	4-448	77-896	672-10,800	90-582	4-1.2	1-202	0.6-11.9
Mean	2.8	166.9	196	2231	324	0.68	53	4.4
Standard deviation	0.81	0.99	170.81	1740	126	0.16	37	4.9

Sub-surface Samples (15-45 cm)	
Sample size	61
Range	5.2-8.2
Mean	6.31
Standard deviation	1.18

Sub-surface Samples (15-45 cm)	
Sample size	61
Range	0.4-2.1
Mean	1.35
Standard deviation	0.73

A Summary Report on "The Bionomics and Management of Chilo Partellus (Swinhoe) in the Valley of Chitwan"

Fanindra Prasad Neupane, Reader  
(Entomology)  
Assistant Dean for Academic Affairs

A research study programme was designed during June, 1977 (Jestha, 2035) in collaboration with Professor John L. Libby, Department of Entomology, University of Wisconsin, U.S.A. to learn the annual cycles, single life cycle, host range and activity of Chilo zonellus Swinhoe, and develop an integrated pest management (IPM) programme for this pest. The insect is believed to be a major borer of corn, rice, sorghum, sugar cane and possibly other crops.

Corn is the second most important cereal crop of Nepal following rice. It is grown primarily in the hill areas and inner Terai. In the Chitwan valley, the total area under corn is more than under rice.

Corn borer, Chilo partellus (Swinhoe) is the most serious insect pest of this crop. It has been observed to cause a significant loss in yield.

During Jestha 2034, (June, 1977), visits were made to farms adjacent to IAAS to observe the insect problem in corn. It was found that corn borer Chilo partellus (Swinhoe) was damaging vast, cornfield areas. At this point it was decided to study the bionomics and management of corn borer. Initial studies from the natural population of the insect were carried out. These studies centered on 1) life history, 2) infestation record, 3) seasonal history, 4) natural enemies.

A light trap study, analyzing black-light trap moth catches, incandescent light moth catches and relating these to maximum-minimum temperature accumulation and rainfall is being used to study number of generations per year. All moth flights are monitored with these light traps. The timing of moth activities is important to know for the proper timing of control measures.

Preliminary data collected on type of corn infested with Chilo, part of plant infested and cropping period led to the designing and installation of host crop preference plots during Baishakh-Jestha, 2035 (May-June, 1978). Corn, rice, sorghum, finger millet, and sugarcane were the crops grown.

Of the 22 maize samples collected, eight were deficient in zinc and eleven were low. Boron was low in all but one sample. Copper was low in five samples and sulphur was low in two samples.

Boron was low in both of the cauliflower samples tested.

Rice samples were collected from 27 locations. Seven samples were deficient in zinc and sixteen were low. All the samples tested showed copper deficiency.

A boron deficiency was found in seventeen rice samples, ten samples were low in sulphur, and thirteen samples low in magnesium.

The interpretation of the levels of nutrient elements in mustard is yet to be done. Assistance in doing so will be sought from the Department of Agriculture, Saskatchewan Canada, where mustard is grown extensively. As a vegetable, it would be a good source of protein (23% crude protein) and calcium (2.4%). A summary of the chemical analysis of plant samples is given in Table 2.

Table 2. Summary of Analyses of Plant Tissue Samples

Crop	N	P	K	Ca	Mg	S	Al	Fe	B	Cu	Zn	Mn
Mustard (20)	4.34	0.30	2.81	1.79	0.31	0.35	66	111	3.7	3.3	10	23
Range	5.84	0.66	5.96	3.39	0.63	0.86	128	312	9.7	7.6	58	150
Mean	5.12	0.50	4.28	2.39	0.44	0.63	81	152	6.3	5.5	31	68
Maize (22)	1.62	0.22	1.02	0.34	0.14	0.12	45	126	2.5	3.4	9	17
Range	3.00	0.51	2.37	0.82	0.38	0.28	330	408	4.7	13.2	47	74
Mean	2.39	0.31	1.76	0.54	0.27	0.17	105	205	3.5	7.1	15	42
Cauliflower (2)	3.50	0.55	3.86	1.54	0.26	0.58	56	126	8.9	4.4	30	20
Rice (32)	1.58	0.1	1.31	0.13	0.13	0.12	10	31	1.0	1.0	4	9
Range	2.66	0.28	2.22	0.64	0.24	0.28	71	127	10.5	3.5	19	603
Mean	1.93	0.16	1.67	0.24	0.16	0.17	15	46	3.2	-	12	152

From the soil and plant analysis data it could be hypothesized that zinc (Zn) and boron (B) are the two micro-nutrients most likely to be limiting crops yields in Chitwan valley.

Seasonally, the first generation caterpillars were seen in corn plants during Baisakh (April). The succeeding generations were found to be serious in corn plants. In the Chitwan valley, monsoon maize is harvested during Sawan (July-August). After the corn harvest, the insect is assumed to migrate to paddy and other alternate hosts. It was observed that in winter maize (planted during September (Bhadra-Aswin)) the crop was not damaged by this insect. Very few plants were found to be attacked.

Rice is attacked by several stem borer species, the Chilo species being found during the late season. It has been identified as Chilo partellus.

Chilo partellus caterpillars were studied under laboratory conditions. Fifty were taken from farmers' fields (September planted corn) in the eastern part of the Chitwan valley during October, 1977 (Aswin-Kartik, 2034), kept in petriplates and fed soft corn stalks. They stopped feeding and growing after a month, many perished and very few hibernated in this stage throughout the whole winter. A few died during hibernation. Out of the two remaining caterpillars, one perished during the middle of Chaitra, 2034 (first week of April, 1978) and in Jestha, 2035 (May, 1978), one which could not pupate was still in hibernation.

During Bhadra, 2034 (August-September, 1977), an extensive survey of the natural enemies of Chilo partellus was made. Identification of many of these parasites was made by Professor Libby at the University of Wisconsin, U.S.A. Parasites found:

1. Egg parasite (most probably Taichogramma sp.)
2. Apanteles flavipes (Cam.)
3. Xanthopimpla stemmator (Tgunberg)
4. Bracon chiensis, Szep.
5. Pupa parasite (to be identified)
6. Larvae parasite (to be identified)
7. Larvae parasite (to be identified).

Another special research project was completed during this academic year. Techno-socio-economic Aspects of Bio-Gas in the Chitwan District of Nepal was studied by IAAS researchers (K.N. Pyakuryal, Dr. A.B. Karki, Mrs. Nancy Axinn). This project studying the aspects already mentioned, was financially

In addition, Chilo control on maize is being studied in research plots with various chemical controls (Sevin 4% G, etc.) applied in granular form in the whorl or sprayed. Timing of insecticide application is determined by moth flight and egg laying. Sprays are being applied weekly while moth flights persist and one week following the flight to cover the egg hatching period. Life history study reveals that the incubation period of Chilo observed is 4-5 days and in starved condition during Bhadra (August-September), the moths survived for 1-4 days (male) and 1-5 days (female).

In recording the infestation, the borer was observed to attack different parts of the corn - stem, tassel, and cobs. During harvest, cobs as well as stalks were examined for borer infestation. Infestation was observed on basal, middle, and top portions of the corn plants. The infestation is expressed in terms of percentages in Tables 1 and 2.

Table 1: Percentage of Infestation in Cobs

Variety of Corn	No. of Cobs Examined	No. of Cobs Infested	% of Infestation	Remarks
Pab corn -A	108	83	76.85	Late sown
Pab corn - B	36	17	47.00	"
Sweet corn	39	20	51.00	"
Rampur Yellow	565	56	9.91	Early sown

A = American seed, B = American seed crossed openly with local varieties.

Table 2: Percentage of Infestation on/in Stalks

Variety of Corn	No. of Stalks Examined	% of Stalk Infested	Portion of Stalk Attacked (percent in terms of total plants observed)		
			Basal	Middle	Top
Pab corn	57	98.2	61.4	80.7	59.6
Sweet corn	30	96.6	86.6	86.5	93.3

## CHAPTER IV - Animal Science

### Course Offered

At IAAS during the 2034-2035 academic year, the following courses were offered in the Institute's programmes:

### Certificate:

- AS 101 Introduction to Animal Science
- AS 104 Agricultural Zoology I

### Diploma in Agricultural Education:

- AS 101 Introduction to Animal Science
- AS 305 Poultry Management and Disease Control
- AS 309 Poultry Feeding and Marketing
- AS 403 Sheep, Swine and Goat Husbandry
- AS 405 Domestic Animal Diseases
- AS 407 Fishery Management
- AS 408 Fish Culture

### Diploma B.Sc. Agriculture:

- AS 101 Introduction to Animal Science
- AS 205 Agricultural Zoology II

### Teaching Resources

Adding to the resources developed and utilized during the 2033-2034 academic year, this year the division initiated the use of farmers' livestock (buffalo, sheep, goats, bullocks) brought to the campus for students' practical classes. In support of this resource, students also went directly to farms in the surrounding communities to become acquainted with and study on-going livestock activities. These direct experiences added substantially to the knowledge gained by the students and afforded the teaching staff an opportunity to more fully understand the activities and problems associated with livestock in the campus area.

The feed mill became operational during the second half of the year. It was immediately put to use to grind feed for poultry and will serve as an additional teaching resource as nutrition and feed preparation for poultry and livestock syllabi are developed in the curriculum.

supported by US/AID and the American Peace Corps/Nepal. Among the important findings of this study are:

- 1) a mass scale attempt to promote a bio-gas programme was not found, since nearly 60% of the interviewed non-users said they had not seen a go-bar gas plant;
- 2) technical supervision by capable persons able to maintain, repair, and recognize minor technical difficulties, was lacking;
- 3) a bio-gas plant substituted for nearly 50% of the firewood consumption in households where one was used.



year. Certificate Course in Animals Science to make it realistic and practical. The Subject Matter Committee has been requested to consider this matter and to prepare a syllabus in keeping with the thinking presented.

The divisional office and classes will move to the livestock farm Srawan semester, 2035. It is expected that 40-45 students who have completed their pre-professional training at Tripureswore and Khumaltar Training Centres will be admitted to the second year Certificate programme in Animal Science, Srawan semester, 2035.

#### Teaching Staff

The division's staff was increased at the end of this academic year with the addition of one Lecturer in dairy animal husbandry and breeding (M.Sc. on contract from India), two Assistant Lecturers (B.V.Sc.) and one Assistant Lecturer (B.Sc. Ag.). This will enable the division to carry on instruction and development of the new animal science programme.

At present, five staff members are studying toward advanced degrees and one member is scheduled to leave during the beginning of Srawan semester, 2035. All are engaged in higher studies in either India or the U.S.A.

Although, at present, the transitory nature of the staff presents a challenge, that future is hopeful with returning qualified staff members and improved physical facilities. It is estimated that in a few years a diploma level course of study can be initiated in veterinary and animal sciences.

#### Research Activities

The following applied research projects were initiated and approved this year:

AS/Dairy - 1 Milk and Milk Products Consumption in a  
Chitwan Village. C.P. Shivakoti

AS/Vet. - 1 Studies on the Seasonal Occurrences of  
Infectious Diseases in Livestock Farms  
Around IAAS.

K.R. Tiwari

The fish pond was utilized by fishery major students in project work for scientific growth studies of fish. Fish were also grown in a floating cage in the pond as part of the students' studies.

The fish pond was later utilized for experimental culture of prawns. A prawn breeding ground was located in the 'ghol' about 3 kilometres north, near the forest adjoining the Narayani River. Young prawns were collected from this breeding ground and brought to the Institute pond for experimental culture during Baisakh, 2035. They survived until the hot summer months when most of them perished because of high water temperatures.

This year, the Animal Science Division is entering a new and challenging period of development. The HMG Livestock Farm at the National Maize Development Centre, Rampur, will become part of the Institute on 1 Srawan, 2035. One hundred twenty-four hectares (34 of which are marshy) of farm land will be added to the Institute plus the following livestock:

<u>Buffalo Unit</u>	<u>Cow Unit</u>	<u>Swine Unit</u>		
Milch	-- 49	Cows	-- 11	39 sows and board
Dry	-- 17	Calves	-- 7	
Bull	-- 4	Male - 5		
Pregnant	-- 15	Female - 2		
Calves	-- 60	Heifers	-- 7	
29 male		(Over 1 yr.)		
31 female		Bullock	-- 4 (Sahhwal)	
Heif	-- 4	Bulls	-- 2	
(Muriu: - all)		(Harianna & Tharparker		
		pure cross)		

Six staff quarters and one office building will also become part of the Institute.

The livestock farm was primarily meant for the raising of buffalo calves and piglets for distribution to farmers in some of the districts of Nepal through the extension service of the Department of Agriculture. There will be a need to renovate the farm so that it can be used well for teaching and learning. For this, a short-term consultant (from MUCIA) was invited to advise the division on such matters as physical facilities requirements, herd development and curriculum development for teaching purposes. In his report, Professor Robert Dean proposed building renovation, plus the construction of a milk collecting centre, a laboratory, a dispensary, a classroom, and a poultry pen. Construction is to be started soon at an estimated cost of Rs. 5,00,000/-. In terms of curriculum development, the report urged that basic work be done on the first

## CHAPTER V - Rural Development

In Falgun, 2034, the Rural Development Division was converted to the Rural Development Instructional Committee. All the faculty members in the division became members of this instructional committee. The instructional committee was responsible for the academic affairs of the division.

The following courses were offered during 2034-2035 in each academic programme:

### Certificate in Agriculture:

- RD 101 Nepal Studies
- RD 103 Algebra and Trigonometry
- RD 104 Calculus and Geometry
- RD 105 Rural Social Systems of Nepal
- RD 107 Agricultural English I
- RD 108 Agricultural English II
- RD 141 Compulsory Nepali

### Diploma in Agricultural Education:

- RD 201 Principles and Procedures of Teaching/Learning in Agriculture
- RD 205 Orientation to Vocational Agriculture
- RD 206 Instructional Materials
- RD 303 Agricultural Economics and Farm Management
- RD 304 Curriculum Planning
- RD 306 Review Paper
- RD 308 Practice Teaching

### Diploma in Agriculture:

- RD 105 Rural Social Systems of Nepal
- RD 107 Agricultural English I
- RD 108 Agricultural English II
- RD 201 Principles and Procedures of Teaching/Learning in Agriculture
- RD 303 Agricultural Economics and Farm Management
- RD 402 Non-Formal Education in Agriculture

### Teaching Resources

Audio-visual aids were added to the Rural Development Laboratory. In addition to an overhead projector, a slide projector, a movie projector and a tape recorder, a public address system was procured and used to amplify the academic, cultural, and guest seminar programmes. The staff seminar series was continued with

A preliminary research study on feeding local chickens strictly on paddy and wheat grain remaining in the threshing yard was undertaken. Survival rate, growth rate, amount of required, and economic feasibility of sales were considered. Preliminary results indicate paddy grain remaining on the threshing flour from 20 bighas might be enough to support 300 chickens for approximately five months and the wheat grain might be enough for two months.

### Students Projects

The lack of adequate staff prohibited student projects in live-stock and poultry. However, student projects have been prepared for the coming academic year. In poultry, it is proposed that 40 one-day old chicks be given to 4 students. Students will plan rations, feed, care for, and raise these to production stage, and then sell their products at the market, returning the cost of raising and keeping chickens. Students will be required to keep records of their inputs and outputs, and of course, benefit from any profit occurring.

A similar type of project is envisioned for swine husbandry for this coming year. In this instance, students will be given two-month old piglets that they will raise for six months using their knowledge in feeding, preventive veterinary, and economic profitability to produce the optimum marketable pig. Again the students will keep records and market their products.

students and the involved staff gain first-hand knowledge of existing educational problems and concerns.

Students of lower secondary and secondary schools of Palpa, Gorkha, Mahottari, Nawalparasi, and Chitwan and the students of Tri-Chandra Campus, Kathmandu, and Morang Campus, Biratnagar visited the IAAS Campus and this division guided and helped them become acquainted with the Institute's activities and progress.

Educational tours for certificate students were organized and supervised by staff members of Rural Development.

The excursion tour of 'All-Nepal Progressive Farmers' from 63 different districts of Nepal was organized by the Extension and Training Division of the Department of Agriculture. These farmers visited the Institute, toured the campus and participated in a discussion programme.

A three-day farmer-training programme was organized by the Agricultural Extension Office in cooperation with this division. The programme was held on campus.

In addition to the above mentioned activities, the farmers' visit programme was continued upon request from the farmers.

#### IAAS Journal

This division took a leading role in publishing the new Journal of the Institute of Agriculture and Animals Science. The Editor-in-Chief, Consulting Editors, and General Secretary were all members of this division. After the successful publication of the first volume, texts for the second volume have already been sent to Tribhuvan University Press for publication.

#### Research Activities

Various research projects were approved by the IAAS Research Committee for the summer and winter seasons, 2034-2035. The research projects conducted during the year were:

RD/FM-2 Farm Input/Output Analysis: B.N. Pokharel

A simple farm-record keeping instrument will be developed and tested with 10 farmers in this locality.

Major Hypothesis: 1) Given appropriate assistance, Chitwan farmers will be willing to have accurate records of input/output; 2) Such data will help farmers make decisions.

weekly seminars throughout the year. Guest speakers at these seminars included Dr. Norman Borlugh, Nobel Prize holder; Dr. George Crepeau, Executive Director of MUCIA; Mr. Ernest Heck, American Ambassador to Nepal; Dr. Bryant Kearle, Professor of Communications, University of Wisconsin; Dr. Emmett E. Schulte, Professor of Soil Science, University of Wisconsin; Dr. M.V. Ravov, All-India Wheat Coordinator; Dr. C. Harwood, Multiple-Cropping expert, Rockefeller Foundation, and staff members who presented papers of interest to seminar attendees.

The fortnightly IAAS Newsletter was continued with a slight degree of irregularity due to manpower constraints.

The receipt of new books and journals added much needed support to the teaching staff and to the students' learning. This area still needs strengthening because Rural Development is such a broad and diverse field.

#### Teaching Staff

The appointment of a new Reader in agricultural economics at the close of Magh semester will enrich the department during the coming year. Two Assistant Lecturers were promoted to Lecturers and one temporary staff member became part of the permanent staff. In addition to these promotions and appointment, three staff members from this division are scheduled to leave for high studies in Bhadra, 2035.

#### Extension Activities

A 'Field Day' for the farmers of Chitwan District was held at the IAAS Campus. Approximately 300 farmers from various Panchayats in Chitwan, staff members of the Agricultural Extension Office, HMG, researchers and staff from the Maize Development Centre, Rampur, personnel from the Livestock Farm, and the faculty members of IAAS participated in this field day. After visits to the various research plots and display centres, a three-hour farmers' discussion seminar was arranged so that farmers and staff could exchange ideas. This proved to be one of the most successful events of the day, allowing farmers and staff to share in problems and possible solutions.

The vocational agricultural schools of eleven districts - Sunsari, Saptari, Dhanusa, Mahottari, Parsa, Sarlahi, Chitwan, Rupandehi, Syangja, Kaski and Tanahu - were served by 35 Agricultural Education fourth semester students in practice teaching. Staff members assigned to practice teaching supervision visited all these schools two times during the period to supervise and advise the students. This sort of programme helped the practice teacher-

Out of these projects, RD/FM-2 was not completed because it was essentially a student learning project and the time period for data collection (approximately twelve weeks) was insufficient for the gathering of adequate data. Projects RD/FM-3 and RD/Ag-Ext.-2 are completed and reports are available on request. Research papers based on these reports are at the press for publication in the second issue of the IAAS Journal. Projects RD/FM-4 and RD/Ag-Ext.-1 have been completed, the first draft is ready and under review before circulation.

Programme Planning, Programme Budgeting, and Progress Reporting

Planning, programme budgeting, and progress reporting became the regular functions of this division. Previously, these activities were carried on the Office of the Dean but, after the divisions were formed, all these responsibilities came under this division. The division was also responsible for keeping the Review Room and its materials up-to-date.

RD/FM-3 Regional Comparisons of Small Farms: K.N. Pyakuryal

Similar data collected from farms in Chitwan District and Lamjung District will be compared: farm size, farm family, farm inputs/outputs.

Major Hypotheses: More than 90% of farms in these areas are small holdings where livestock, cereal crops, fruits and vegetables are integrated with family ecosystems.

Information Flow on Small Farms: George H. Axinn

RD/Ag-Ext.-2

Mapping information flow via formal and non-formal systems to Nepalese farmers will be useful to agricultural extension, schools and agri. policy makers.

Hypotheses: There is a constant in-out flow on Nepalese farms. 2) This into flow is more timely under certain conditions.

RD/FM-4 Energy Flow on Small Farms: Nancy W. Axinn

Measurements will be made on several local farms of the energy inputs/outputs and related to various indexes of socio-economic status.

Major Hypotheses: 1) Efficiency of energy conversion is an index of development; 2) Quantity of energy converted correlates with socio-economic status.

RD/Ag-Ext.-1 Adoption of Solar Ovens (gham chulo) by Farm Families: Nancy W. Axinn

Completed solar ovens will be used in food preparation with Nepalese families. Instructions are available for people who want to construct their own ovens. Observation will be of willingness to adopt this new practice. Diffusion of innovation criteria can be evaluated.

Hypotheses: 1) Farm families will be willing to use oven after demonstration of cooking dal, bhatt, karakari; 2) farmers will be willing to expend construction costs to free time for productive ag. work.

## Midwest Universities Consortium in International Activities

### MUCIA Advisors

George H. Axinn, team leader, and Nancy W. Axinn, team member, completed their two-year assignment at IAAS, departing for the United States during Ashad, 2035 (June, 1978), to assume their duties at Michigan State University. Herbert R. Bird, team member (Animal Science), returned to the United States because of illness. Rex E. Ray visited the Institute twice during Baisakh and Jestha, 2035, before assuming his duties as team leader on 2 August, 1978. Lynne D. Mark served as interim team leader during the period between George Axinn's departure and Rex Ray's arrival.

Twelve short-term advisors spent a total of approximately 220 man-days on the campuses of Tribhuvan University, Kathmandu, and IAAS, Rampur. The names of these advisors are listed in the IAAS Staff Listing in this report.

Two new team members have been appointed and will be arriving during Srawan semester, 2035. H.C. Bittenbender, advisor in Crop Science and Kenneth P. Miller, short-term advisor in Animal Science will be much needed additions to the staff.

### Participant Programme

There are nine participants from the staff presently studying in U.S. universities and ten staff members studying in Indian universities. Plans are underway to send five more participants to U.S. universities and seven participants to universities in India during the coming academic year. The name, field of study, and institution of study for each participant is listed in the IAAS Personnel Listing.

### Support Services

During the past year, a total of 195 books and journals were secured and distributed at the Rampur Campus and the branch at Lamjung.

Equipment for entomology, soils laboratories, and a weather station arrived and are presently in use. An additional slide projector (carousel) was purchased and has arrived for use in the instructional programme at IAAS. A sizeable order of equipment and supplies has been shipped and is expected to arrive early in Srawan semester.

Approximately 2,600 hours of electrical power was provided to IAAS during times when other sources of electricity were not available. A MUCIA vehicle was provided for one of the IAAS staff members for approximately 2,800 km of travel in connection with research activities. The two-way radio has provided daily communication between Kathmandu and the Central Campus at Rampur and serves as a critical link in conducting IAAS and MUCIA official business and also as an emergency system.

### Joint Annual Review

The first Joint Annual Review was held in Bhadra, 2034. The annual review is conducted for the purpose of reviewing, yearly the scope of the work and the activities of IAAS. The outcomes of this review form the basis for plans projected for the coming year. The Vice-Chancellor and the Rector of Tribhuvan University, the Dean of IAAS, the U.S. Ambassador to Nepal, USAID/Nepal, MUCIA/USA, and MUCIA team members participated in this review. The second Joint Annual Review is scheduled to be conducted in Mangsir, 2035 (November, 1978).

CHAPTER VII - Academic Affairs

Academic Programmes

The Institute provided training for the following different levels:

Pre-Professional Agriculture: This is a one year course after S.L.C. or its equivalent examination. The training was held in different training centres, namely Nepalgunj, Parwanipur, Janakpur, Tripureswar, Khumaltar and Lamjung Campus.

Final year of Certificate (Final I. Sc. Ag.): This is a one year course after pre-professional agriculture. The training was held at the Central Campus, Rampur.

Diploma in Agricultural Education: This is a two-year course after certificate in Agriculture or Certificate in General Science. In this course, fresh students as well as in-service high school teachers were admitted. The training was at the Central Campus, Rampur.

Diploma in Agriculture (B.Sc.): This is a four-year course after pre-professional agriculture; a three-year course after I.Sc. (Ag.) or I.Sc. in general science; and is open to students with a Diploma in Agricultural Education. This programme is at the Central Campus, Rampur.

Student Enrollment

The number of students enrolled at different levels, at different places during the 2034-2035 academic year is presented in Table 1.

Table 1: Level: Pre-Agriculture

Centre	Semester	Students Enrolled		Total	Quota
		Fresh	Inservice		
Janakpur	I	58	-	58	55
Khumaltar	I	55	-	55	55
Lamjung	I	94	-	94	100
Nepalgunj	I	61	-	61	50
Parwanipur	I	55	-	55	55
Tripureswar	I	55	-	55	55
Total		378		378	370

Rampur

Certificate	II & IV	103	-	103	100
Diploma in Agri. Ed.	I	25	26	51	100
	III	16	17	33	-
Diploma in Ag. (B.Sc.)	I	43	-	43	50
	II	10	-	10	-
Total		197	43	240	
Grand Total		575	43	618	

Students enrolled at the various campuses of IAAS represented nearly all the zones of Nepal as seen in Table 2.

Table 2: Distribution of Students According to Class and Zone of Residence

Zone	B.Sc. (Ag.)	Dip. Ag.Ed.	Certificate	Total
Mechi	5	3	-	8
Koshi	3	10	-	13
Sagarmatha	5	14	7	26
Janakpur	11	15	17	43
Bagmati	5	10	8	22
Narayani	9	0	20	34
Gandaki	7	11	33	51
Lumbini	5	4	10	19
Dhaulagiri	-	5	-	5
Rapti	2	4	3	9
Karnali	-	-	-	-
Bheri	2	2	1	5
Seti	-	1	1	2
Mahakali	-	1	3	4
Total	53	85	105	241

### Library

During this academic year, the IAAS central library procured 350 books, 40 current journals and periodicals plus back volumes of 20 research journals from India, the U.S.A., the U.K., and the Philippines. Also, the library received annual reports from various international research institutes. The library fund was fully utilized for securing the above acquisitions. Constant correspondence is done to attempt to obtain the best readable materials for this library. MUCIA has been helpful in supplying books, bulletins, and magazines. During the 2034-2035 academic year the library's budget was approximately Rs. 87,938/- for the Central Rampur Campus and the Lamjung Campus.

The reference room has, in particular, become more useful to students and staff. Its physical set-up, its texts and references are improving. There are remaining concerns regarding the numbers and variety of resources available for students and staff. As the students and staff population increases, and as more courses begin to be taught, more texts, an increased variety of references, and support resources are requisite.

The transactions of the library have also increased during this academic year. A minimum of 100 persons (staff and students) consulted the library daily. In an attempt to meet the needs of students and staff, the library was kept open three evenings per week for study and reference work. The teaching staff volunteered their services to supervise this activity. Additional library support staff would be needed to continue this much needed evening library extension programme. Mr. I.N. Chaudhary, librarian, returned to the Institute at the close of the academic year. He had completed his library science training at Rajasthan University, India, and is now engaged in card cataloging and classification as per AACR and Dewey Decimal Classification systems.

### Warden's Hostel Report

On hundred seventy-five students (approximately) were accommodated in the hostel during this academic year. Bunk beds (two-tiered) were built to provide beds for this number of students. With these, some of the rooms could accommodate six students rather than the usual four.

This year, three students served as prefects, helping the warden with welfare and discipline.

The number of students who passed the Magh semester, 2034-2035, examinations at different campuses at different levels are presented in Table 3.

Table 3:

Centre	Level	Semester	Number of Students Passed	
			Fresh	In-service Total
Janakpur	Pre-Agri.	II	48	48
Lamjung	"	II	43	43
Nepalgunj	"	II	39	39
Parawanipur	"	II	45	45
Khumaltar	"	II	35	78
Tripureswor	"	II	43	-
Total			283	283

Rampur	Certificate	IV	89	-	89
	B.Sc. Ag.	III	9	-	9
	B.Sc. Ag.	II	35	-	35
	Dip. Ag. Ed.	IV	16	17	33
	Dip. Ag. Ed.	II	18	18	36
Total			167	35	202
Grand Total			450	35	485

The number of students who passed the comprehensive examinations at different times during the 2034-2035 academic year is presented in Table 4.

Table 4:

Level	Number of Students Appearing	Number of Students Passed	Class	
			Distinc-	Merit Pass
Diploma in Agri. Ed. Certificate	47	47	1	35
	21	21	-	18
Diploma in Agri. Ed. Certificate	3	3	-	1
	13	8	-	5
Diploma in Agri. Ed. Certificate	33	32	4	23
	85	85	3	82

Level	Number of Students Appearing	Number of Students Passed	Class	
			Distinc-	Merit Pass
Diploma in Agri. Ed. Certificate	47	47	1	35
	21	21	-	18
Diploma in Agri. Ed. Certificate	3	3	-	1
	13	8	-	5
Diploma in Agri. Ed. Certificate	33	32	4	23
	85	85	3	82

Education Day and Saraswati Puja, the students and staff presented an outstanding cultural programme, perhaps the best of the year. During this academic year, houses were formed on-campus. Students and staff were divided into five houses for sports, games, literary and cultural activity.

An additional volleyball court and a new basketball court were built this year. As the student body grows, these facilities will have to be expanded and a full-time athletic teacher will become necessary.

Students attending IAAS come from virtually every zone of Nepal, some from very remote and distant areas. Emergencies and illness are always a part of student life. A Student Welfare Fund was established to provide loans to students on an emergency-basis.

#### Medical and Health Facilities

Medical and health care and facilities are a continual concern on the campus. This year, no professional medical assistance or personnel was available on campus. Occasionally, one of the doctors from Bharatpur Hospital came to the campus to treat students and staff. The Institute provided transportation for him back and forth. Most of the time, students and staff sought medical assistance at Bharatpur hospital. Both the Institute vehicles and MUCIA provided transportation for such treatment. Medical and health facilities and adequate, trained personnel remain major problems of this growing campus. Strong support in these services have a real effect on the learning and teaching that takes place. As the student body, teaching staff, and support staff numbers increase, medical and health support should develop to meet these needs.

During Srawan semester, the students continued to manage their own mess with a Mess Management Committee. Again, this committee purchased the food, planned the menu, supervised the cooking and operated with funds collected from the students for this purpose. This committee operated the mess on a non-profit basis. During Magh semester, the students felt that this was becoming too difficult and time-consuming, often interfering with their studies. At this point, the operation of the mess was assigned to a local businessman on a contract according to Institute regulations. Two meals are served to each student participating in the hostel mess and the cost each month per student is Rs. 125/-.

The common room is a center for students to listen to the radio, read newspapers and magazines, and play in-door games.

This year, a two-bed room was initiated for the students' guests and was well-used.

The hostel had the opportunity to host participants in the Maize Seminar during winter vacation, 2034, and also members of the Campus Chiefs Seminar held during Chaitra, 2034.

#### Student Welfare

During this academic year, sports, cultural activities and other extracurricular events became an integral part of campus life. The sports programme included matches and practice on campus as well as off-campus. Football, volleyball, tennis, badminton, table tennis and chess were some of the major games. The IAAS football team took part in the Inter-Campus Football Match sponsored by the Student Welfare Section at Dharan, and on the occasion of Saraswati Puja, an eventful student-staff football match was held on campus. The IAAS tennis team, coached by Dr. George Axinn, won the University tennis match held at Pokhara. Education Day and Saraswati Puja were the climax for cultural, sports, and literary events. Mr. Gopal Dhoj Shrestha, Registrar of Tribhuvan University (on-campus for the Campus Chiefs Seminar), presented the awards to the outstanding students and winning athletes in various cultural, literary and sports activities. The three major award-winners were:

Outstanding Athlete: Bhagiman Limboo (B.Sc. Ag. III)  
Best Cultural Direction: Tara Lama (Dip. Ag. Ed. II)

Outstanding Extra-Curricular  
Activity Coordinator: Dadi Ram Kharel (B.Sc. Ag. II)



CHAPTER VIII - Administrative Affairs

Building Programmes

For the construction of the Central Campus of the Institute of Agriculture and Animal Science, a sum of Indian Rupees 3,13,99,281 has been made available under the Grant Agreement between His Majesty's Government of Nepal and the United States of America.

A contract was signed March 23, 1977, with Sharma and Company for the construction of one hostel complex for 270 students, housing for sixteen staff, four laboratories, seven large and small classrooms for 270 students plus workshop and far implement shed. The other contract for the improvement and construction of the Rampur-Bharatpur Road has been signed with the National Construction Company of Nepal (NCCN) and work is well underway.

The progress of the work has been, generally, adversely effected by the shortage of materials and labour. Scarcity of quality bricks during 1977 and the shortage of cement since the beginning of 1978 have, in particular, hampered progress. The Institute has secured an import license for 1000 mt of cement to be brought from India for this project. Therefore, it is expected that work will proceed at full speed immediately after the rains cease. In spite of all these hindrances, it is expected that, by the end of August, 1978, about 18 rooms on the ground floor of the three-storied hostels will be completed and arrangements are being made to accommodate students in those rooms even though the construction will be going on. Out of the sixteen units for staff housing, six units are completed and the remaining 10 units are in varying stages of construction. Foundation work for classrooms, laboratory, and store is complete. The threshing floor is complete, the workshop and farm implement shed are complete up to the lintel level, and out of 9.7 km of the Rampur-Bharatpur Road, 2.5 km are complete.

In accordance with the master plan, the old administrative building was to be renovated. However, the building was found to be completely infested with termites and a technical expert was consulted. Professor John Libby of the University of Wisconsin served as expert and reported that the termites cannot be successfully controlled in this old building. The renovation work has been abandoned, and in the second phase, the inclusion of an administrative building is being considered.

Shortly, preparatory work for implementation of the second phase of the building programme - comprising of additional staff housing, a two-hostel complex for 270 students each, eight more laboratories, and additional classrooms of varying sizes - will begin.

The Campus Development Committee met monthly to review the progress of the building programme. The Dean of the Institute continued to serve as Chairman, and the Project Manager is Secretary. Representatives from USAID, KUBA, and MUCIA are the other committee members.

Financial

At the Institute of Agriculture and Animal Science, budgetary allocations for the 2034-2035 were:

	Central Campus	Branch Campus (including Lamjung)
1. Staff Salaries	Rs. 9,43,235/-	Rs. 3,85,120/-
2. Student Scholarship	4,70,000/-	2,67,500/-
3. Supplies and Equipment	5,03,000/-	1,04,000/-
4. Agricultural Operations	1,14,160/-	23,000/-
5. Construction and Repair	4,70,885/-	10,87,406/-
6. Books	73,748/28	14,190/-
7. Miscellaneous	9,11,636/21	4,37,565/81
<b>Total</b>	<b>Rs. 34,86,664/49</b>	<b>Rs. 23,18,781/81</b>

Property Management

An inventory of movable and immovable property was kept in the same manner as in previous years. Office equipment, laboratory equipment, furniture, and other goods have been listed according to the inventory for physical verification.

Vigorous staff recruiting, interviewing and selection is a continuing process in keeping with the long range academic staff development programme, which calls for an academic staff of 93 in the year 2042. Of those, 32 will be in Plant Science, 18 in Animal Science, 25 in Rural Development, and 18 at branch campuses. Staff development is closely related to the teaching, research, and extension activities of IAAS. As these activities are activated, continue to develop, and are evaluated, the size, specialities, and advanced training/higher education of the staff will need assessment. If readjustments are necessary, these will be viewed with an eye on the requisites of the ongoing programmes and events of IAAS.

At the close of this academic year, nine staff members are studying in the U.S.A., each toward the M.Sc. degree, and ten are presently in India, also engaged in study for the M.Sc. degree. Preparations have also been completed for sending an additional five staff members to the U.S.A. and seven to India for further study during the coming year.

(The names of staff engaged in further study are listed under the personnel lists in Chapter II).

#### Branch Campuses

During this academic year, IAAS operated six different branch campuses, five of these in cooperation with HMG, Department of Agriculture, and one satellite of the Central Rampur Campus located at Sundar Bazaar in Lamjung.

Student at all branch campuses studied in the pre-professional agriculture curriculum:

<u>First Semester</u>		<u>Second Semester</u>	
PS 001 Practice of Agronomy I	PS 002 Practice of Agronomy II	PS 005 Practice of Vegetable and Flower Production	PS 006 Practice of Fruit Production
AS 001 Practice of Animal Production I	AS 002 Practice of Animal Production II	RD 002 Farm Management Practices	PR 002 Project work
RD 001 Practice of Non-Formal Education in Agriculture	PR 001 Project Work		

This was the initial year for this curriculum. All the courses carry a five-credit hour value in accordance with Tribhuvan University regulations.

Old and non-used goods (utensils, office furniture, one truck, etc.) were sold at auction. The total income from this auction, excluding the truck was Rs. 91,381/-. With the Project Manager's help, repairs were made at some of the residential quarters and in the office building. Office machines, equipments, and furniture were also repaired.

A Volkswagen was purchased from West Germany for official Institute use. Two old American Jeeps were handed over to the Institute by MUGIA. The MUGIA project also handed over to IAAS meteorological instruments in the form of a weather station.

Each year sees the increased need for repair and maintenance of existing facilities and equipment. Competent technicians - carpenters, electricians, plumbers - would permit and provide more adequate care.

#### Staff Development

A condensation of the personnel listing displays the significant gains in staff size and development. Following are the comparisons between 2033-2034 and 2034-2035:

	Total	Permanent Staff	Staff on Study/Leave
Plant Science 2033-2035	21	16	8
2034-2035	30	22	10
Animal Science 2034-2035	9	7	6
2034-2035	11	9	5
Rural Development 2033-2034	15	13	5
2034-2035	20	15	6

Toward the end of this academic year, after recruiting and interviewing numerous candidates, four additional permanent staff members were selected - two assistant lecturers in Plant Science and two Assistant Lecturers in Animal Science.

The number of students at each branch campus during the 2034-2035 academic year:

Janakpur	-----	58
Khumaltar	-----	55
Lamjung	-----	94
Nepalgunj	-----	61
Parawanipur	-----	55
Tripureswore	-----	55

Lamjung Satellite Campus

The Lamjung Campus was in full operation even though construction was in progress. In addition to the prescribed curriculum, a Work Experience Programme (WEP) was initiated in which the students 'learned while they learned'. Extra-curricular sports, literary and cultural activities were also part of campus life. The construction of a hostel with a capacity for 64 students has been completed. Building and other construction to be completed by June, 1979 (Jestha/Ashad, 2036) are:

Lab and Classroom	Staff Club House
Administrative Block	Cooperative Store
Latrines and Urinal Block	Campus Canteen
Duplex quarters (2 units for 4 families)	Threshing Floor
Mess Block	Football Field
Campus Chief's Residence	Fencing with gates on Campus
Library Building	Fencing with gates of Sajha Pakha Field
Guest House	
Drama stage	

An adequate supply of water remains a critical need at Lamjung. A water supply scheme and a poultry house are proposed.

Financial:

The allocated budget for Lamjung Campus for the 2034-2035 year were:

1. Staff Salaries	Rs. 76,850/-
2. Student Scholarships	67,000/-

3. Supplies and Equipment	Rs. 24,000/-
4. Agricultural Operations	15,000/-
5. Construction and Repair	10,82,406/-
6. Books	14,190/-
7. Miscellaneous	2,84,475/81
	<u>Rs.15,64,421/81</u>

As this campus continues to grow, it will provide an excellent opportunity for staff and curriculum development to meet the needs of the farmers in that locality as well as the students.

Other Satellite Campuses

Toward the end of this academic year, the decision was made to convert the British Training Camp at Bhairawa into a satellite campus, to be opened Magh semester, 2035. This campus will be the second satellite of the Institute of Agriculture and Animal Science, in keeping with the locations indicated by His Majesty the King.

The complex will eventually accommodate approximately 350 students. Its fertile land, good water supply, and existing buildings can be renovated to meet the needs of an educational enterprise.

It is foreseen, that with the opening of the Bhairawa Campus in Magh, 2035, 225 students will be able to enroll in the first year (pre-professional) agronomy curriculum. It is envisioned that, in the future, this campus will feature a two-year, B.Sc. in Agriculture programme, to provide a much needed source of middle-level manpower to serve HMG and the developing requisites of agriculture in Nepal.

