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The Contribution of Agricultural Science to Sustainable Rural Development: evidence from the South African Senior Certificate(SASCE)

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Consequences for Agricultural Science in the proposed FET curriculum framework

- Reduction from about 160+ subjects
- It is one of 35 subjects in the reformed FET curriculum
- One of twenty electives from which every learner must choose three
- Consequences
 - Shifts to Agricultural Science?
 - Continuity as 'Easy option'

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Learners taking Agricultural Science in relation to the National total by Province

| Province | Total Candidates | Entered | | Passed | | |
|---------------|------------------|-------------------------|--------|------------------|-------------------------|--------|
| | | Number with Agriculture | % | Total Candidates | Number with Agriculture | % |
| EASTERN CAPE | 66,615 | 22,127 | 32.25% | 28,825 | 12,601 | 43.72% |
| FREE STATE | 27,641 | 1,334 | 4.83% | 15,703 | 414 | 2.64% |
| GAUTENG | 67,655 | 434 | 0.64% | 46,783 | 168 | 0.36% |
| KWAZULU-NATAL | 98,411 | 10,264 | 10.43% | 58,620 | 5,086 | 8.68% |
| MPUMALANGA | 41,327 | 11,673 | 28.25% | 18,136 | 6,064 | 33.44% |
| NORTH WEST | 37,831 | 7,623 | 20.15% | 22,963 | 3,641 | 15.86% |
| NORTHERN CAPE | 6,696 | 331 | 4.94% | 5,571 | 223 | 4.00% |
| LIMPOPO | 85,052 | 38,974 | 45.82% | 48,971 | 29,567 | 60.38% |
| WESTERN CAPE | 38,393 | 1,145 | 2.98% | 30,900 | 720 | 2.33% |
| NATIONAL | 471,621 | 93,905 | 19.91% | 276,472 | 58,484 | 21.15% |

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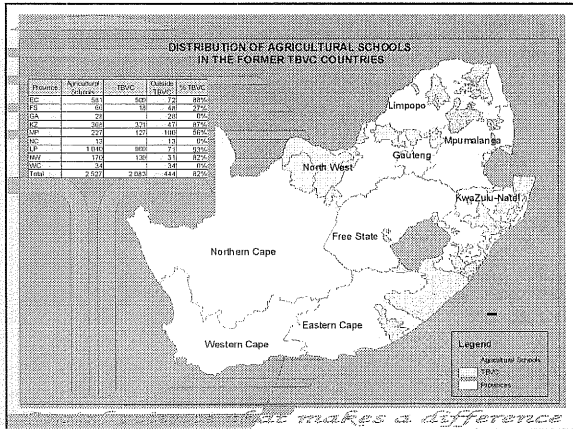
Numbers of schools offering Agricultural Science (SG & HG) by Province

| Province | Agricultural Science | | | Total | All Schools |
|---------------|----------------------|----|-------|-------|-------------|
| | Both | HG | SC | | |
| EASTERN CAPE | 276 | 13 | 292 | 581 | 806 |
| FREE STATE | 26 | 4 | 36 | 66 | 333 |
| GAUTENG | 8 | | 20 | 28 | 637 |
| KWAZULU-NATAL | 207 | 31 | 130 | 368 | 1360 |
| MPUMALANGA | 69 | 3 | 155 | 227 | 399 |
| NORTH WEST | 72 | 2 | 96 | 170 | 377 |
| NORTHERN CAPE | 5 | | 8 | 13 | 104 |
| LIMPOPO | 347 | 22 | 671 | 1,040 | 1335 |
| WESTERN CAPE | 18 | 1 | 15 | 34 | 375 |
| NATIONAL | 1,028 | 76 | 1,423 | 2,527 | 5,816 |

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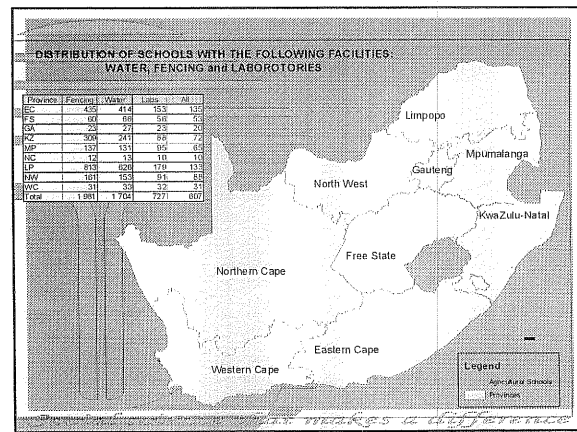
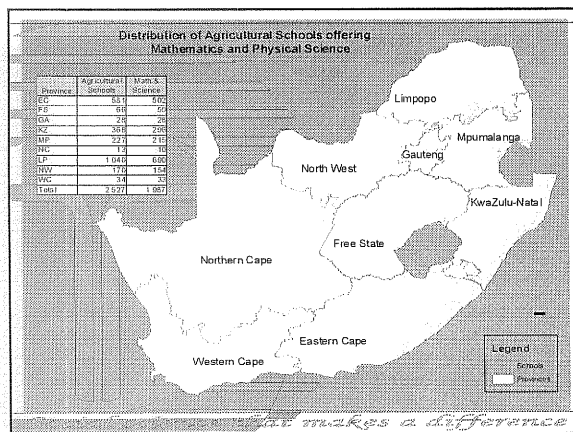
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The contribution of Agricultural Science?

- **Costs**
 - Educator/non-educator costs
 - LSMs, curriculum development and support
 - Educator training
 - Increase educator numbers offering Agr Sci
 - Improvement of school facilities
 - Linking to support/cognate subjects (math,sci,bio)
- **Benefits**
 - Social unknown and private unknown
 - Opportunity costs of offering more valuable knowledge (private and social)?

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The focus of Agricultural Education

- Curriculum orientation and principles
 - OBE
 - Practical experience
- Focus on knowledge and information base
 - Which community?
 - Which practises?
 - What purposes?
 - Which gender?
- The necessity for focus

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Absorption of graduates with Agricultural Science in the labour market and in education

| PATHWAY | | | COMMENTS |
|---------------------------------------|---------------------|---|--|
| Higher Education | 12% of Matrics | Agricultural research and professional training Other programmes | Low entry. Many Agr Sci graduates do not offer Science and Mathematics |
| Intermediate education | ? | Agriculture related courseware Other sectoral training | State facilities closed down (eg: Boskop). Lower availability in Primary Agriculture |
| Employment in the Agricultural Sector | 7% of the employed | Agribusiness employees | 900 000 people |
| | | Agricultural farm worker | |
| | | Emergent farmer | |
| | ? | Small agricultural producer | |
| | ? | Subsistence agriculture | 66% Women in 1,6million households |
| Employment in other economic sectors | 93% of the employed | Assuming unemployment at about 34% | |

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RESEARCH QUESTIONS 1

- Where do learners who have completed Agricultural Science go?
 - labour market
 - further education
 - higher education
 - rural and urban
 - unemployment
- TRACER STUDY PROJECT
- LEARNER CHOICE PROJECT

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Farm based primary agricultural employment and occupations

- Homeland subsistence farming
- Emergent farmers
- Commercial farming
- Farmworkers
- Agribusiness
- What are the needs of these actors?
 - Relevance
 - Improved market value

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Employment on in the commercial farming sector

- Overall employment declined by 25,1% from 1,2m in 1988 to 0,9m in 1999.

| Province | Number of Workers | | Percentage |
|-------------------|-------------------|-------------|------------|
| | 1993 | 1999 (est.) | |
| Gauteng | 34302 | 28260 | 3.14 |
| Mpumalanga | 144519 | 118980 | 13.55 |
| North-West | 126530 | 104130 | 11.57 |
| Northern Province | 93116 | 76680 | 8.52 |
| Free State | 161979 | 133360 | 14.82 |
| Kwazulu-Natal | 165505 | 136260 | 15.14 |
| Eastern Cape | 88383 | 72720 | 8.08 |
| Western Cape | 202962 | 167040 | 18.56 |
| Northern Cape | 75969 | 62550 | 6.95 |
| National | 1093265 | 900000 | 100 |

"Huy and Samson 2001"

Small business that makes a difference

Summary of occupational categories among employed people in the former Homelands

Summary of occupational categories among employed people in the former homelands

| Employment Categories | | % |
|---|-----------|------|
| Subsistence | 823 000 | 37,6 |
| Small Scale Farming and larger commercial | 277 000 | 12,7 |
| Formal work | 869 000 | 39,7 |
| Informal non-farm work | 220 000 | 10,0 |
| TOTAL | 2 189 000 | 100 |

(Orkin and Njobe, 2000. Summary of findings, n.p.)

- Of the 2,3 million households in the Rural Survey, 70,2% engaged in some farming activities

Small business that makes a difference

Farming characteristics in the former Homeland areas, 1997

Farming characteristics in the former Homeland areas, 1999

| REASONS FOR AGRICULTURAL ACTIVITY | Characteristics | | % | Source Table |
|--|---|---------|-----|--------------|
| | | | | |
| MAIN AGRICULTURAL ACTIVITY | Income generation (Main income) | 6 (2,7) | 3,2 | 4,4,4 |
| | Subsistence | 93 | 3,2 | 1 |
| LAND HOLDING SIZE (CROP FARMING) | Livestock | 10 | 4,4 | 1,4,1,5 |
| | Produce - Maize | 92 | 4,4 | 2 |
| LAND ACCESS (ANIMAL GRAZING) | More than 2ha | 30 | 3,1 | 1,0 |
| | Less than 2ha | 70 | 3,1 | 4 |
| LAND ACCESS (CROP FARMING) | Communal Land | 97 | 3,1 | 4 |
| | Own use | 2 | 3,1 | 5 |
| SOURCE OF WATER ON LAND (CROP FARMING) | Tribal authority (inherited or direct allocation) | 78 | 3,1 | 2 |
| | Private (leased or owned) | 6 | 3,1 | 3 |
| LABOUR RESOURCES | No | 88 | 5,2 | 1 |
| | Yes | 12 | 6,1 | 2 |
| SALES OF PRODUCE | Family members or self-employed | 60 | 4,4 | 8 |
| | Other employment | 20 | 4,4 | 8 |
| LABOUR RESOURCES | Direct to consumers and informal traders | 70 | 4,4 | 8 |
| | Retail shops, cooperatives, market agents | 29 | 4,4 | 8 |

(Source: tables from Orkin and Njobe, 1999)

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RESEARCH QUESTIONS 2

- Can a general Agricultural Science curriculum serve the diverse needs in South African agriculture?
- If not, which needs should inform the structure, process and content of the Agricultural Science curriculum?
- ANALYSE THE LINKS BETWEEN CURRICULUM AND NEEDS OF PARTICULAR ACTORS
- SPECIFY LOCAL NEGATIVE ECONOMIC AND SOCIAL FACTORS (eg: infrastructure, markets etc.)

Small business that makes a difference

Assistance most needed by practitioners of agriculture in the former Homelands

| Type of assistance needed | Households which sold produce and generated income | | | | All households with some farming activities | | All households with some farming activities | |
|---------------------------|--|---------|----------|-------|---|------|---|------------|
| | % Response by household income per year | | | | N | % | TOTAL N | % of TOTAL |
| | R 1-50 | R51-100 | R101-200 | R201+ | | | | |
| Water | 11,2 | 34,5 | 41,8 | 33,9 | 32 915 | 34,5 | 520 257 | 31,4 |
| Finance | 15,6 | 8,2 | 17,3 | 58,9 | 23 783 | 24,9 | 465 370 | 28,1 |
| More land | 19,4 | 15,8 | 13,8 | 51,0 | 20 834 | 21,8 | 391 840 | 23,7 |
| Training | 11,0 | 11,0 | 16,5 | 51,5 | 17 960 | 18,8 | 261 601 | 15,8 |
| | | | | | 95 491 | 100 | 1 654 299 | 100 |

Training received by farming households in the former Homelands in 1997

- 10,2% of households (1.6m) had contact with agricultural extension officers
- The following training was received:
 - 3,9% in Agricultural techniques
 - 3,0% in Animal farming
 - 0,5% in Farm management

Distribution of subsistence farmers by gender

Percentage distribution of subsistence farmers in the labour force of the former homelands by gender and province

| PROVINCE | Male | Female | Average |
|-------------------|------|--------|---------|
| Free State | 8 | 1 | 5 |
| North West | 4 | 6 | 4 |
| Mpumalanga | 5 | 16 | 11 |
| Northern Province | 12 | 37 | 26 |
| Kwa Zulu Natal | 41 | 63 | 56 |
| Eastern Cape | 54 | 64 | 60 |
| Gauteng | | | |
| Northern Cape | | | |
| Western Cape | | | |
| Average | 25 | 46 | 37 |

(From: Cerhan and Ngobe 2000, Figure 4)

Thank You