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Journal

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AGTERGROND

Die volstruisbedryf is ‘n belangrike landboubedryf vir die Suid-Afrikaanse ekonomie. Die bedryf is veral belangrik in die Wes-Kaap, waar die grootste konsentrasie kommersiële volstruise aangetref word. Dit is grootliks ‘n uitvoerbedryf, wat staatmaak op die uitvoer van vere, vleis en leer. Volstruisleer word verder beskou as uniek en eksoties en is gevolglik ’n luukse produk wat ‘n belangrike bron van inkomste vir volstruisprodusente is *(Engelbrecht et al., 2009)*.

Velinkomste word egter tot ‘n groot mate bepaal deur velskade, omdat dit afgraderings en laer eenheidspryse tot gevolg het. Fyner velskade is veral problematies omdat dit eers na prosessering sigbaar is en die waarde van die leer aansienlik verminder.

‘n Spesifieke tipe fyn velskade wat ‘n toenemende probleem is vir die volstruisbedryf is putjies of “pitting”, soos dit algemeen na verwys word. Dit is klein, ronde holtes of induikings (1 - 2mm in deursnee) op die oppervlak van die geprosesseerde vel wat sigbare nerfskade toon (Figuur 1, 2 en 3).

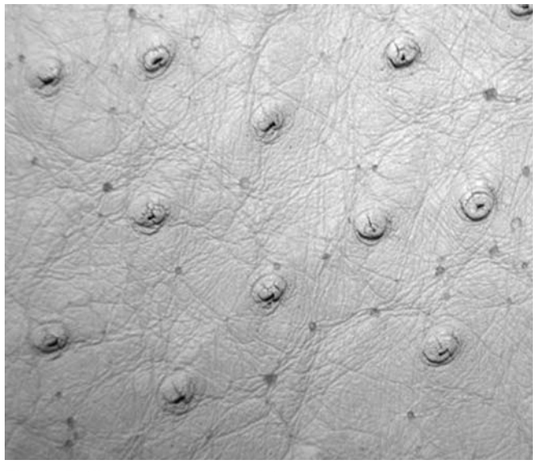
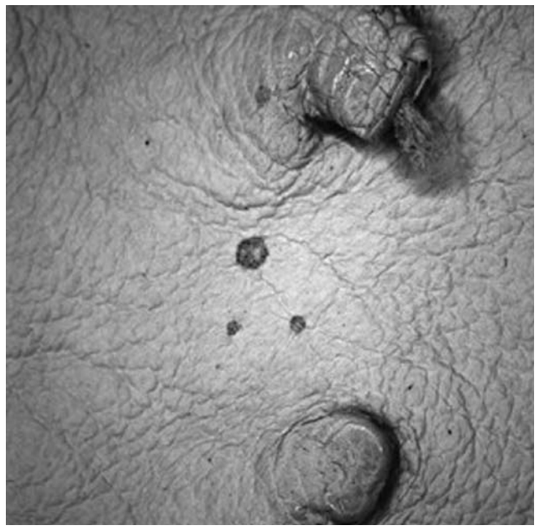


Fig. 1. Putjies op verwerkte volstruisleer.



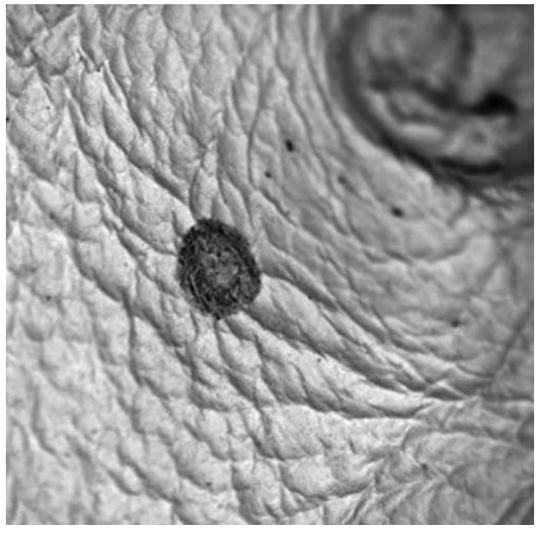


Fig. 2 en 3. Putjies soos gesien onder ’n gewone ligmikroskoop

Die skade is meestal beperk tot die knoppie (veerbedekte) area van die vel. Graderingsinligting en histologiese ondersoeke het daarop gedui dat die skade op die lewende volstruis opgedoen word, en dus vanaf die plaas afkomstig is (Russel & Kohl, 1999). Definitiewe verskille in afgraderings weens putjieskade is tussen produsente gevind, terwyl daar ook ‘n mate van herhaalbaarheid by produsente was (m.a.w. produsente met ’n geskiedenis van putjieskade is geneig om daardie prestasie te herhaal). Teen hierdie agtergrond is besluit om produsentinligting op plaasvlak te verkry en te koppel aan graderingsinligting om meer inligting aangaande die moontlike oorsaak of oorsprong van putjieskade te verkry.

PROSEDURE

Graderingsinligting van twee volstruislooierye in die Wes-Kaap is gebruik om produsente te identifiseer wat deel van die ondersoek kon uitmaak op grond van die voorkoms van putjieskade by hulle slagvolstruise. Produsente met onderskeidelik min en baie afgraderings weens putjieskade, is geïdentifiseer. Slegs produsente wat op ‘n gereelde basis noemenswaardige getalle volstruise geslag het, is egter uiteindelik oorweeg. In totaal is 43 produsente by die ondersoek betrek. Dit was nie moontlik om meer produsente te betrek nie, omdat meeste produsente se afgraderings weens putjieskade gemiddeld was (5 – 10%), of te veel gewissel het.

‘n Vraelys is opgestel om inligting oor hierdie produsente se plase, boerderypraktyke en slagvolstruise in te samel. Produsentinligting wat bekom is met die vraelyste is nougeset aangeteken, gerekenariseer en verder verwerk. In gevalle waar dit toepaslik was, is frekwensie verdelings verkry en weergegee. Nie-parametriese Chi² metodes is gebruik om die verband tussen vraelysinligting en die voorkoms van putjie-afgraderings (soos deur indiwiduele produsente se graderingsresultate weergegee) te ondersoek. Vir die doel is die Freq.exe program gebruik (Van Ark, 1990). Weens die beperkte aantal totale waarnemings en besondere lae frekwensies wat gevolglik waargeneem is, is gepoog om meer verteenwoordigende resultate te verkry deur die inligting op ‘n sinvolle wyse te verpoel en al die data te verwerk na 2x2 interaksies. Die “Fisher exact probability (F.E.P.) test” vir die ontleding van lae frekwensies is gevolglik gebruik.

Betekenisvolle verskille ($P < 0.05$) in die boerderypraktyke van produsente waarvan die afgraderings weens putjieskade verskil is uitgelig, aangesien dit moontlik ‘n aanduiding sou kon gee van die oorsaak van putjieskade.

RESULTATE

Voorkoms van die probleem

Graderingsinligting vir 2005 tot 2008 is gebruik om produsente te klassifiseer volgens die frekwensie afgraderings van velle weens putjieskade oor hierdie tydperk. Die persentasie afgraderings weens putjieskade het gewissel van 0.7 tot 24.6% van die velle wat gelewer is. Die persentasie afgraderings weens putjieskade, asook die konsekwentheid daarvan oor jare, is gebruik as kriteria om produsente te selekteer vir die finale ontleding. Slegs produsente wat deurlopend óf min óf baie afgraderings weens putjieskade gehad het, se inligting is uiteindelik gebruik.

Slegs 31 produsente is gevolglik in die finale ontleding ingesluit, waarvan 16 produsente deurlopend min (<5%) en 15 deurlopend baie (>10%) afgraderings weens putjies gehad het. Die verwerkte vraelysinligting is vervolgens aan statistiese ontleding onderwerp om betekenisvolle verskille tussen hierdie twee groepe produsente te bepaal, met die doel om die onderliggende redes vir putjieskade beter te probeer verstaan.

Die invloed van boerderygebied en plaasomgewing

Elf van die produsente wat by die finale ontleding betrek is boer in die Klein Karoo omgewing en 20 in die Suid-Kaap. Die voorkoms van “pitting” het egter nie betekenisvol verskil tussen die twee gebiede nie. Die helfte van produsente in die onderskeie areas het ‘n lae voorkoms van die defek gehad, terwyl die ander helfte ‘n hoë voorkoms gehad het (6 teenoor 5 in die geval van die Klein Karoo produsente).

Die omgewing of toestande op die plase (soos weerspieël in reënval, populasie-digtheid, kampgrootte, ens.) het nie betekenisvol verskil nie. Die samestelling van die boerdery met betrekking tot die boerdery aktiwiteite op die plaas en op buurplase (volstruis- en ander vertakkings) het ook nie verskil tussen die twee groeperings produsente nie.

Die invloed van algemene bestuurspraktyke

Die sortering van volstruise tussen troppe, sowel as vere-oes praktyke was nie betekenisvol verskillend tussen die twee groepe produsente nie, aangesien die meerderheid produsente beide volstruise tussen troppe rondskuif en vere pluk.

Die invloed van voedingspraktyke

Voedingspraktyke het nie betekenisvol verskil tussen die groep produsente met min teenoor die groep met baie putjieskade op hul volstruisvelle nie.

Oorsprong van slagvolstruise

Die plek waar die slagvolstruise as kuikens grootgemaak is het betekenisvol verskil tussen die twee groepe produsente. Produsente met baie putjieskade se kuikens is hoofsaaklik elders (op ander plase) grootgemaak, teenoor produsente met min putjieskade waarvan kuikens tot ’n groter mate op die plaas van oorsprong grootgemaak is (F.E.P. = 0.02). Die proporsie van produsente in die onderskeie kategorieë wat hul kuikens elders laat grootmaak, was 0.93 (14 uit 15) teenoor 0.56 (9 uit 16).

Stadium van slagting

Daar was nie betekenisvolle verskille in die stadium waarop volstruise geslag is nie, met meeste produsente wat hulle slagvoëls slag voor hulle ‘n gewig van 95kg bereik (11 uit 16 en 14 uit 15 onderskeidelik). >

Siekte en parasietbeheer

Die ouderdom waarop volstruise die eerste keer vir eksterne parasiete behandel word, asook die gereeldheid van behandeling het nie betekenisvol verskil tussen die groepe nie. Daar was ook nie betekenisvolle verskille tussen die twee groepe produsente wat betref die afwisseling van middels, al dan nie.

Betekenisvolle verskille is wel gevind in die tipe behandeling wat produsente gebruik het. Die groep produsente met min putjieskade het meer van opspuitmiddels gebruik gemaak as die groep met baie putjieskade (F.E.P. = 0.002). Die onderskeie proporsies was 0.94 (15 uit 16) teenoor 0.4 (6 uit 15). Veertien produsente in totaal het egter beide tipe middels gebruik.

Wanneer die kwarantynbehandeling nie in ag geneem is nie, het produsente met baie putjieskade betekenisvol meer van opgietmiddels gebruik gemaak (0.93 teenoor 0.56; F.E.P. = 0.02). Die groep met min putjieskade het weer meer gebruik gemaak van organofosfaat opspuitmiddels as die groep met baie putjieskade (0.31 teenoor 0.0; F.E.P. = 0.03). Wanneer die kwarantynbehandeling wel in ag geneem is, was daar ook verskille wat betref die gebruik van sintetiese piretroïed opspuitmiddels (F.E.P. = 0.02), met ’n groter proporsie van die groep met min putjieskade wat piretroïed opspuitmiddels gebruik het (0.81 teenoor 0.4). Die groep met min putjieskade het ook vir die kwarantynbehandeling meer van piretroïed opspuitmiddels gebruik gemaak (0.81 teenoor 0.33; F.E.P. = 0.009).

Daar was ook betekenisvolle verskille (F.E.P. = 0.004) wanneer in ag geneem is wanneer die eerste keer met ‘n opspuitmiddel behandel is. ’n Hoër frekwensie van die produsente met min putjieskade het hul volstruise voor 8 maande ouderdom met ‘n opspuitmiddel behandel (13 uit 16 teenoor slegs 4 van die 15 met baie putjieskade).

Algemeen

Bostaande resultate het daartoe gelei dat van die oorspronklike vraelys inligting verwerk is om sekere faktore beter te ondersoek. Die teenwoordigheid van óf eksterne parasiete óf ’n bron van besmetting was van die aspekte wat verder ondersoek moes word. Aannames dat eksterne parasiete waarskynlik ‘n groter probleem sal wees op lusernweiding as in voerkrale, het daartoe gelei dat die gebruik van lusernweiding weer bekyk is.

Die gebruik van lusernweiding was soortgelyk tussen die groep met min en die groep met baie putjieskade (0.56 en 0.67). Daar is daarom ondersoek ingestel na die kombinasie van lusernweiding en ‘n effektiewe parasietbeheerprogram – gedefinieer as die gebruik van ’n spuitprogram, op grond van bostaande resultate. Produsente waarvan die volstruise nooit op lusernweiding was nie en die waar lusernweiding gebruik is, maar waar ‘n spuitprogram gevolg is, is saamgegroepeer teenoor produsente waarvan die volstruise op lusernweiding was sonder dat ‘n spuitprogram gevolg is. Daar was betekenisvolle verskille, met meer van die groep met baie putjieskade se volstruise wat op lusernweiding was sonder ‘n spuitprogram (10 uit 15 teenoor 3 uit 16; F.E.P. = 0.009).

Die beweging van volstruise is ook ondersoek, aangesien dit gepaard gaan met meer risiko. Alhoewel daar nie betekenisvolle verskille was nie, het die groep met min putjieskade wel geneig om meer geslote sisteme te hê (4 uit 16 teenoor 0 uit 15; F.E.P. = 0.06). (’n Geslote sisteem is gedefinieër as ’n boerderyeenheid waar geen volstruise van buite af ingebring word nie, m.a.w. al die slagvolstruise was van dagoud tot slagouderdom op die slagplaas.) Produsente wat volstruise ingebring het van grootmakers (van ander plase) of ingekoop het op later stadiums, se boerderye is geklassifiseer as oop sisteme omdat daar beweging na die plaas was.

BESPREKING

Slegs enkele aspekte het betekenisvol verskil tussen produsente met min putjieskade en produsente met baie putjieskade. Oor die algemeen het omgewingstoestande, boerdery-aktiwiteite en bestuur grotendeels ooreengestem, of andersins nie konsekwent verskil tussen die twee groepe produsente nie.

Een belangrike verskil was dat produsente wat baie putjieskade gehad het meestal nie self hul slagvolstruise grootgemaak het nie. Hul slagvolstruise is meestal op ‘n later stadium vanaf grootmakers ingebring of ingekoop. Daar was dus waarskynlik ‘n mindere mate van beheer oor hoe hierdie volstruise hanteer en bestuur is voordat hulle na die slagplaas gebring is, wat gepaard gegaan het met ’n groter mate van risiko – soos ook aangedui deur die tendens dat die groep met min putjieskade meer geslote sisteme het. Dit bevestig ook die bevindinge van Nel et al. (2000), wat aanduidings gevind het dat slagprodusente wat self hulle kuikens grootgemaak het, oor die algemeen beter velgraderings verkry het as produsente wat slagvolstruise inkoop of elders laat grootmaak.

Ander aspekte wat verskil het, het meestal te doen gehad met die bestuur en behandeling van eksterne parasiete, spesifiek die tipe middels wat vir die doel gebruik is. Die gebruik van opspuitmiddels was meer algemeen onder die produsente met min afgraderings weens putjieskade, terwyl produsente met baie afgraderings weens putjieskade weer meer van opgietmiddels gebruik gemaak het. Die ouderdom waarop opspuitmiddels vir die eerste keer gebruik word was ook beduidend. Dit wil voorkom asof die gebruik van opspuitmiddels teenoor opgietmiddels die voorkoms van putjieskade verminder.

Alhoewel meeste middels basies kontakgifstowwe is, maak slegs opspuitmiddels direkte kontak met die vel op die rug (waar putjieskade meestal voorkom) tydens aanwending. Opgietmiddels word by volstruise meestal slegs onder die vlerke en soms op die stuitjie aangewend, juis weens ’n vrees dat die middels self velskade sal veroorsaak deur die vel te brand. Dit is dus onwaarskynlik dat die opgietmiddel self verantwoordelik kan wees vir putjieskade op die rug, aangesien dit meestal nie in kontak kom met die vel op die rug nie. Verder versprei opgietmiddels hoofsaaklik met gravitasie en sal dus nie ’n direkte invloed op die vel op die rug kan hê nie. Dit sal ook nie baie effektief wees teen parasiete wat hoër op die volstruis se rug is nie. Opspuitmiddels sal uiteraard meer effektief wees teen parasiete wat op die rug sou voorkom omdat dit direk op die rug aangewend word.

Die groep met min putjieskade het tot ’n groter mate van beide piretroïed en organofosfaat opspuitmiddels gebruik gemaak as die groep met baie putjieskade. Dit lyk dus asof beide hierdie aktiewe bestanddele putjieskade moontlik verminder indien dit aangespuit word. As opgietmiddel was die sintetiese piretroïede egter nie so effektief nie, soos afgelei kan word aan die groot proporsie van produsente met baie putjieskade wat dit gebruik het. Aangesien geen organofosfaat opgietmiddels gebruik word nie, is dit onmoontlik om te voorspel of dieselfde tendens wat betref die tipe middel (opspuit of opgiet) ook vir organofosfate sou geld. Dit is dus onduidelik of die aktiewe bestanddeel ook ’n rol speel (en nie net die aanwendingsmetode nie).

Hierdie verskille, asook die verskille wat verkry is wanneer die kombinasie van lusernweiding en ’n spuitprogram ondersoek is, dui daarop dat die beheer van eksterne parasiete moontlik met die voorkoms van putjieskade verbind kan word. Putjieskade sal daarom waarskynlik meer effektief beheer kan word met spesifieke middels, afhangende van die tipe parasiet wat betrokke is, die aktiewe bestandeel, nawerking en aanwendingsmetode van die middel.

Indien een of ander parasiet wel ‘n rol speel in die voorkoms van putjieskade op volstruisvelle, sal die frekwensie van putjieskade by volstruise dus afhang van ‘n kombinasie van daging (teenwoordigheid van parasiet) en effektiewe beheer van die parasiet (ouderdom van eerste behandeling, gereeldheid van behandeling, aanwendingsmetode en effektiwiteit van die middel).

Kennis van die tipe parasiet wat betrokke is, is nodig vir effektiewe beheer van sodanige parasiet en die voorkoming van putjieskade. Aanduidings dat die gebruik van sekere tipe middels putjieskade kan verhoed moet ook opgevolg word. Verdere navorsing is dus nodig om tot die kern van hierdie probleem deur te dring en effektiewe oplossings te vind vir die hoë frekwensie putjieskade op volstruisvelle.

VERWYSINGS

ENGELBRECHT, A., HOFFMAN, L.C., CLOETE, S.W.P. & VAN SCHALKWYK, S.J., 2009. Ostrich leather quality: a review. Animal Production Science, 49, 549-557.

NEL, K., LAMBRECHTS, H., CLOETE, S. & CLARK, J., 2000. Bestuurspraktyke wat die gradering van volstruisvelle kan beïnvloed. Elsenburg Joernaal 2000, 52-58.

RUSSELL, A.E. & KOHL, R., 1999. Salting of ostrich skins: Comparative cure quality in stack-salting and drum-brining of ostrich skins. LIRI Report no. 2005. (Grahamstown Ostrich Tanning Company: Grahamstown, South Africa)

VAN ARK, H., 1990. Freq.exe – for the comparison of frequencies. Bio- and Datametrical Services, Department of Agriculture, Pretoria. **EJ**

Agricultural economics is alive and well in **Africa**!

by Riaan Nowers

A simple review of the diversity of topics presented at the recent conference held in Cape Town, South Africa

The Western Cape was privileged to host the 48th Agricultural Economics Association of South Africa (AEASA) in September in Cape Town. What made this bigger and prestigious conference unique, was the fact that it was the first time that its African counterpart, the African Association of Agricultural Economists (AAAE), joined it at co-hosting this event. Again, it was a first of its kind where almost all the top executive members of the AAAE were present. This definitely brought in a welcome African flavour which not only broadened local economists' horizons, but also contributed to the event, in making our continent's challenges and solutions more visible and transparent to participants.

In essence, this conference broadened the knowledge and understanding of agricultural issues in Africa, improved understanding of agricultural policies, and made available insights into sometimes unique agricultural problems and their solutions. It also provided an opportunity for all Africans to have a taste of the diversity that Africa has to offer to its own people. It soon became evident through the conference that most papers from a country-perspective dealt with South African and Kenyan issues and perspectives. This is not to say that Kenya and South Africa are the leading countries regarding agricultural economic issues, but perhaps rather that these issues are more representative of the challenges the continent has to deal with. There was, however, also good representation of papers touching on agricultural economic issues from Ghana, Nigeria and Zimbabwe as can be viewed in Table 1.

Most of the papers that were delivered on local agricultural issues were focusing on the Eastern Cape, Free State and Limpopo provinces, with papers on KwaZulu-Natal and Western Cape issues receiving somewhat less attention (even though the latter received specific attention during the symposia). Table 2 shows the spread of the above across the nine provinces and may encourage local economists to concentrate research on their local economies where possible.

Table 1: Percentage of topics with an African perspective

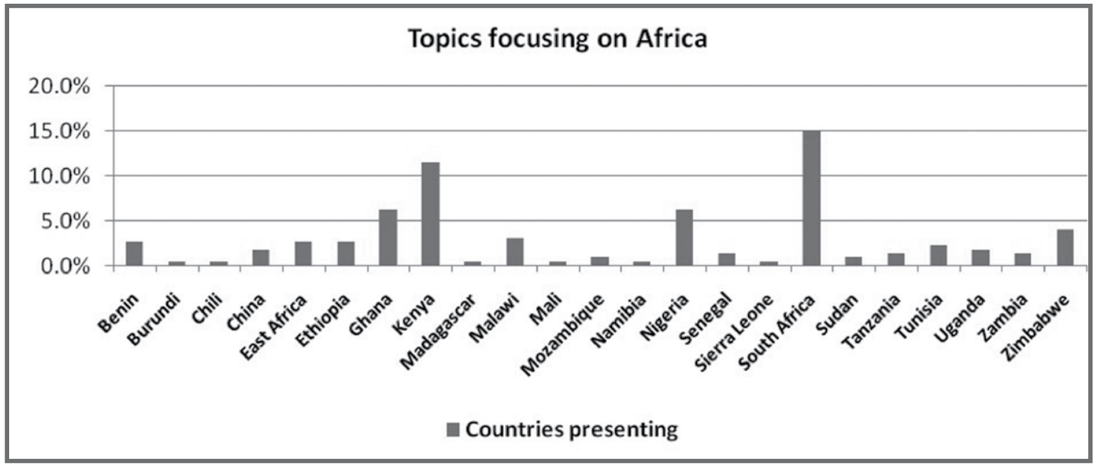
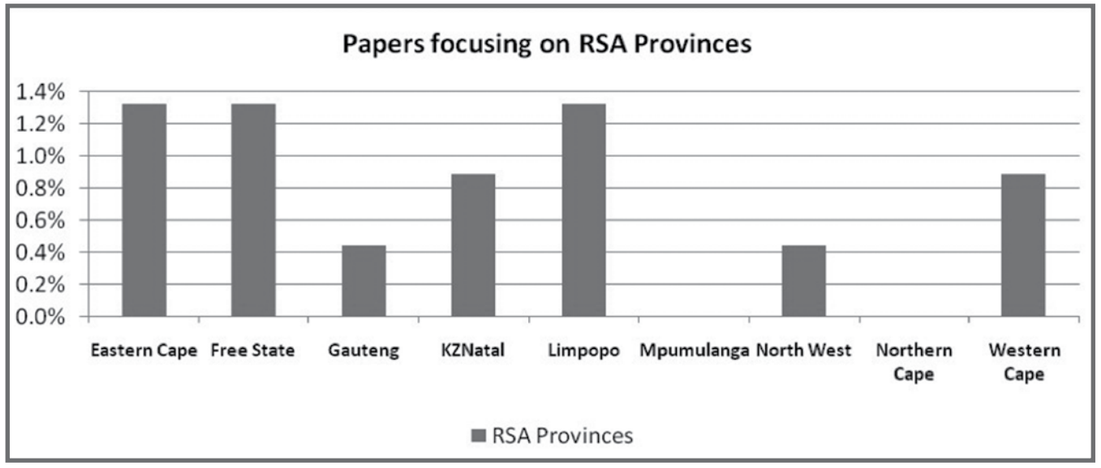


Table 2: Percentage of topics focusing on local South African provinces



The analysis of the diverse range of papers delivered revealed a wide spread of agricultural economic fields covered by the various presenters. This analysis was difficult to make and subsequently a single paper may have been categorised in more than one agricultural economic field as the fields do overlap because of its nature. It was not surprising that papers dealing with macro economics and production economics headed this list as shown in Table 3. What was somewhat surprising, is the fact that very few papers focused on Policy Analysis alone. Some 10,6% of all papers touched on small-scale farming with 10,1% of papers handling various marketing related matters. >

Table 3: Clustered areas within papers were delivered.

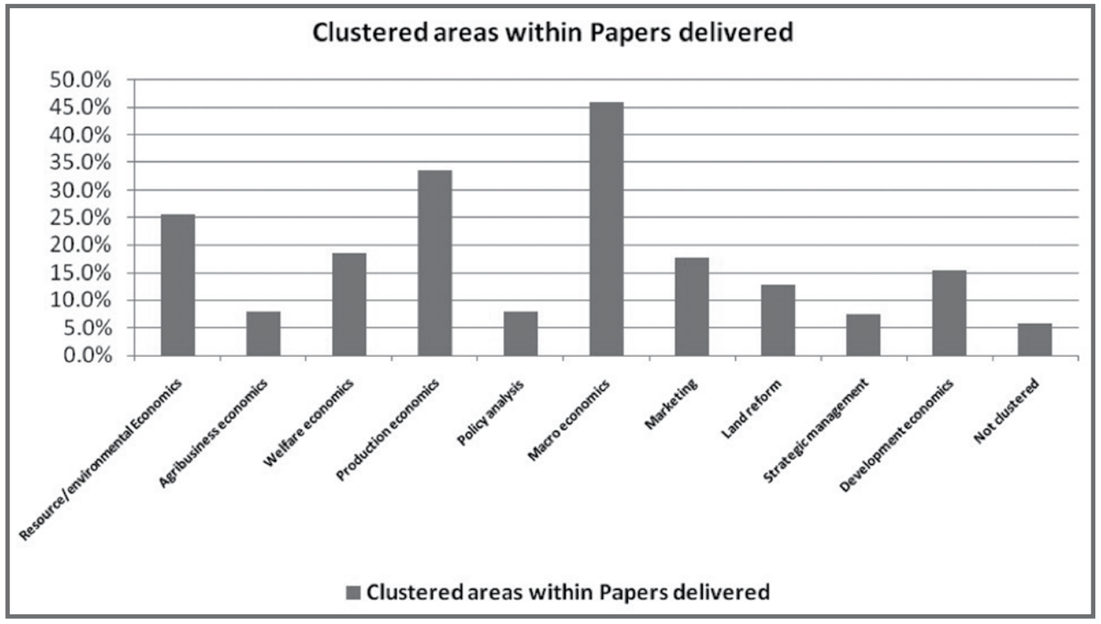
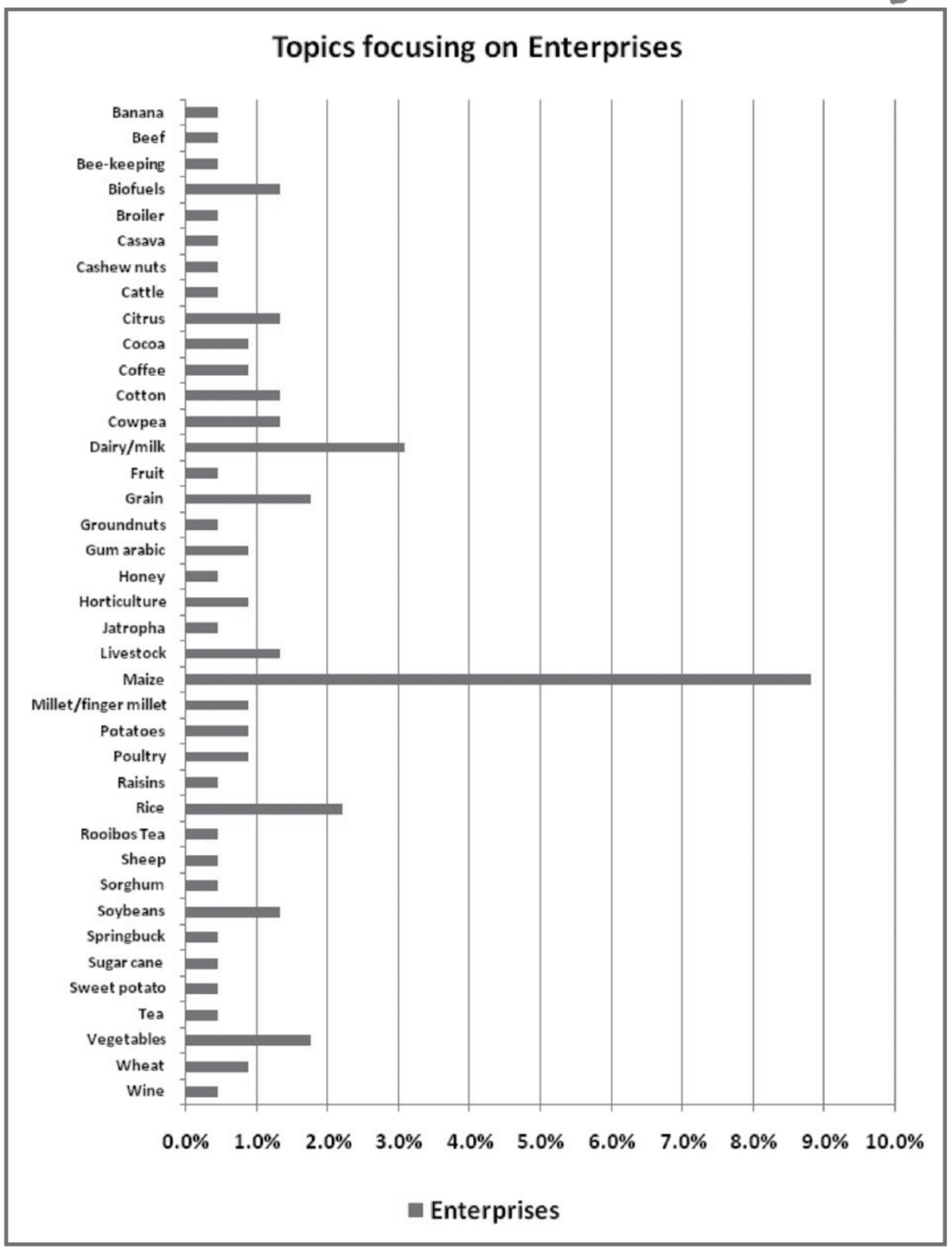


Table 4: Clustered fields of Agricultural Economic topics



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Epidemiology Unplugged

putting economics on the veterinary agenda!

by Riaan Nowers[1]

Is it possible to include economic issues on the epidemiology Agenda? Impossible! Well this IS possible and this is exactly what happened at the recent 12th International Symposium on Veterinary Epidemiology and Economics (ISVEE). This article will shed some valuable light on the pertinent economic issues highlighted at this important symposium.

The theme for ISVEE XII was just that! Epidemiology Unplugged – Providing power for better health. This gathering reflected the needs for epidemiology and related disciplines such as agricultural economics and geographical information system (GIS) experts to adapt to the changing needs of diverse societies, particularly in the context of developing countries which has so often been neglected in the past. The rising prominence of emerging and re-emerging zoonotic diseases have emphasised the need for cross-pollination and increased communication between socio-economists, veterinary health workers and epidemiologists.

ISVEE XII hosted 494 presentations and 250 poster papers cutting across a diverse range of sub-themes. Disease and livestock surveillance, determination of diseases, clinical trials and zoonoses, risk detection and analysis, modelling techniques, animal health economics, aquatic animal epidemiology, epidemiological tools, poverty alleviation, wildlife, animal welfare and food safety, roundtable discussions on Brucellosis and Influenza, antimicrobial resistance and emerging animal diseases, were some of the major subthemes covered. Some 28,1% of these presentations addressed economic-related issues such as risk analysis, quantitative and qualitative modelling, impact analysis, value chain analysis, etc. A more detailed outline of the issues covered at this Symposium within the field of agricultural economics is as follows:

- **Risk analysis (39%)**
- **Climate change impacts (1%)**
- **Surveillance and Geographical Information System applications (18%)**
- **Modelling techniques (Stochastic, qualitative, quantitative, etc) (36%)**
- **Economic analysis (28%)**
- **Perceptions and Attitudes (2%)**
- **Value chain analysis (2%)**
- **Scenario analysis (1%)**
- **Trade and export issues (1%)**
- **Database and information management (6%)**

The poster display demonstrated a diverse set of themes as well, aiming at bringing together disciplines that are often functioning in its own world. The fact that there was a sub-theme dedicated alone to Animal Health Economics, proved that ISVEE is taking economic analysis of its interest field seriously in unlocking the secrets of epidemiology.

The following break-down of poster groups and the number of economics-related posters are indicative of multidisciplinary thinking and action: >

[1] The author wishes to commend the Department's management for the courage and commitment demonstrated to allow him to attend this conference as this made a valuable contribution to his thinking and working environment.

- Animal health economics
  (16 ‘economic’ posters)
- Aquatic animal epidemiology
  (1 ’economic’ poster)
- Epidemiological tools
  (8 ‘economic’ posters)
- Epidemiology and poverty alleviation
  (3 ‘economic’ posters)
- Food Safety, environmental epidemiology and occupational health
  (5 ‘economic’ posters)
- Investigation of determinants and distribution of diseases
  (10 ‘economic’ posters)
- Risk and decision analysis
  (14 ‘economic’ posters)
- Surveillance and disease control
  (15 ‘economic’ posters)
- Wildlife disease and the wildlife/livestock/human interface
  (6 ‘economic’ posters)
- Zoonoses and emerging diseases
  (1 ‘economic’ poster)

One of the very interesting issues that were highlighted was the ‘Biosecurity’ issue that received specific attention. This ties in well with both the national and provincial strategic issues that were recently identified which are of strategic importance to the agricultural sector. Within this, early detection and surveillance methods through GIS, as well as pro-active thinking and action will be needed to alleviate and mitigate such disasters. Detailed information management on diseases and shared databases will necessitate investment in both technologies and human resources to prevent costly environmental disasters.

This Symposium undeniably showed the way forward and demonstrated a commitment to bring scientists together to share intellectual capital and assets to achieve just this. Policymakers and tertiary training institutions should take note of this kind of interaction and should support and partake in these deliberations in order to harmonise agricultural development in all regions across the world. In fact, recently the President of the Agricultural Economics Association of South Africa highlighted a need for agricultural economists to be more multidisciplinary in their approach. One of the areas where the gap was identified for agricultural economists to focus on, is health economics - in particular related to animal diseases. From a government perspective, is it not time that agricultural economists are dedicated to (and even housed within) non-agricultural economics programmes (such as veterinary, research and development in livestock and plant production) and agricultural engineering programmes, rather than housed within a sometimes often stale agricultural economics environment?

Why the above? Simply because it was refreshing to note that at this venue, economists were tackling real-life agricultural issues and using multidisciplinary approaches which so often get lost when attending ‘specialised’ and often too ‘academic’ agricultural economics conferences. ISVEE XII is to be congratulated in the contribution it made to encourage the interaction between various disciplines (veterinary, agricultural economics and others) during the scientific programme, breaks and social events which bides well for an agricultural sector geared towards a sustainable future. **EJ**

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The analysis in Table 4 shows the diverse topics from diverse arenas covered by presentations. These diverse topics echoed the diverse spread of agricultural economists that attended the conference. The general feeling was that although there were some alternative thinking about, and thus sometimes conflicting views regarding time-management of paper sessions.

The fresh way that African as well as international economists viewed local challenges, paved way for our economics researchers to tackle this with new vigour and from alternative angles. The importance of cross-pollination that occurs at events like conferences should never be under-estimated as the value sometimes are only realised some time later. It is important that farmers, agribusiness managers, government officials and even politicians attend these forums to ascertain what the latest local, continental and international issues and solutions are to every-day issues.

From a government perspective it is also important that officials do not only attend, but actively participate in these conferences. The value of this cross-border and cross-cultural cooperation and participation are of extreme value to local economies and its people. **EJ**

RABIES EVENTS
in the Western Cape Province **2010**

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INTRODUCTION

Rabies outbreak control and routine vaccination plays a major role in the State Veterinary efforts in the Western Cape. This article is a summary of the rabies events and vaccination effort by the State services for the year 2010.

REPORTING

We were excited in 2010 to transfer to an online event logging system which has had much success, and Figure 1 is evidence of this where a good spread of rabies vaccinations can be seen. The one aspect of this discussion which is missing, is the rabies vaccinations which are done by private veterinarians. These are done as a routine in young puppies and kittens and depending on owner compliance, should carry on through the animal’s life. We are not yet acquiring this data and which has has the result that a significant number of vaccinations are not shown on the map and in the tables. Rabies vaccinations performed by welfare organisations have been taken into account in the Boland State Vet area, where most of these organisations exist, but these data are not considered in most of the other SV areas.

CASES

Cases and highly suspect cases of rabies have been reported in 2010 from four of the six State Vet areas, these being SV George (n=2), SV Malmesbury (n=4), SV Vredendal (n=2) and SV Beaufort West (n=2). This adds to a total of 10 cases during the year. (See the stars of Figure 1 for an indication of the spatial spread of Rabies cases in the Western Cape during 2010.)

The following descriptions are typical of rabies reports in animals in the Western Cape. One case involved a bat-eared fox which showed abnormally tame behavior by entering the yard and barn of a farmer in the Prince Albert local municipality. The farmer shot and killed the fox and rabies was later confirmed by the Allerton laboratory. Another case of rabies reported by the Malmesbury State vet officials occurred in the Piketberg region. This case occurred in a large grey mongoose which attacked a dog on a farmstead and then ran to a neighboring house and tried to attack the farmer. It was destroyed and subsequently tested positive for rabies. There was fortunately no evidence that the dog was bitten. >

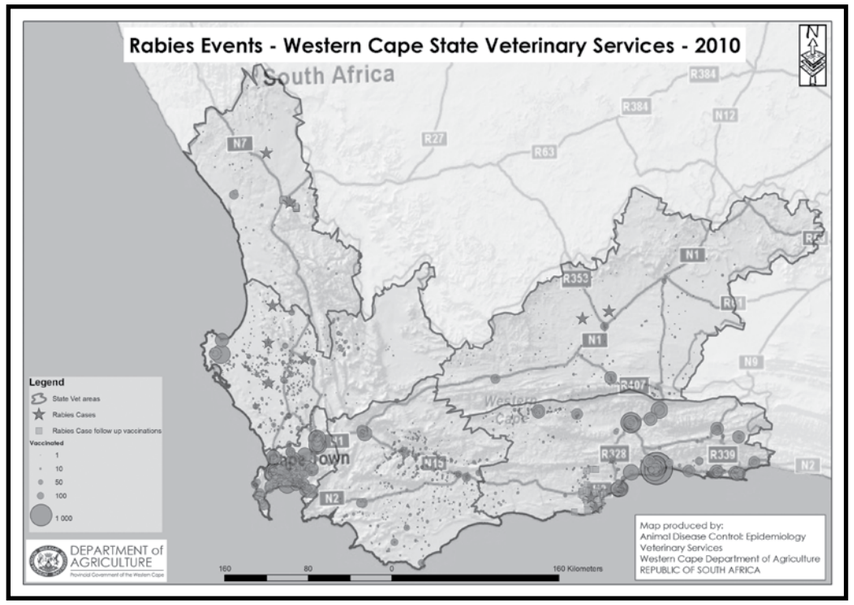

Figure 1: State reported rabies events and vaccinations within the Western Cape Province during 2010. Stars indicate rabies cases and highly suspect cases, squares indicate all vaccinations performed as a result of a suspect case and circles are proportionately representative of routine rabies vaccinations performed, mainly by State officials.

SPREAD OF VACCINATION EFFORTS

As private vet rabies vaccinations will be limited mostly to urban vaccinations the one major impact that the State has in terms of vaccination is accessing rural dogs (and cats) during farm visits. The owners of the farms may have their animals vaccinated in town at the local vet, but farm workers are unlikely to have access to this aspect of vaccination. Animal health technicians make an effort to vaccinate as many animals as possible when visiting farms. A good example in Figure 1 is the area in the State Vet Swellendam area south of the N2 where numerous scattered vaccinations were performed. Although these vaccinations don't come anywhere close in quantity to rabies vaccination campaigns (such are used in the Boland and George areas—see Table 1), the coverage that they get is extremely valuable. Rabies outbreaks from the wildlife host to the domestic animal are most likely to occur on farms in rural communities, as this is the most significant wildlife-domestic animal interface. Eight out of ten rabies cases during 2010 came from very rural areas in the Beaufort West, Malmesbury and Vredendal State Vet areas. It must be said, however, that rabies campaigns also have an important effect, particularly in a social context. These campaigns are generally held in the more disadvantaged communities where access to a vet is not a distance challenge, but rather an economics challenge. These campaigns also give the State vet officials access to larger numbers of people who will benefit from animal health education over and above that pertaining just to rabies.

ANIMAL FACTORS

There have been four cases of rabies in wild animals in the Malmesbury State vet region during 2010. Two cases have been in bat-eared foxes and one case in a common duiker (this was not confirmed but highly suspect), with the grey mongoose making up the fourth case. In total, of the 10 reported cases of rabies this year in the Western Cape, only 1 has occurred in a domestic animal (cat) with the majority (6/10) of cases occurring in bat-eared foxes. This is not surprising as the bat-eared fox is the enzootic host for rabies in the region. It is very important to note, however, that this does not mean that bat-eared foxes are carriers of the virus in the Western Cape: if they get infected they will almost certainly perish. The bat-eared fox acts rather as the maintenance host for the rabies virus variant that occurs in the Western Cape and, should the virus spill over to another host like the domestic dog, the infection will generally not propagate further. The difficulties that the Johannesburg Health and Veterinary authorities faced during 2010 were that the variant that broke out in their dog population was the domestic canid form, which is a variant of the virus that easily circulates amongst susceptible domestic dogs. This is the variant that occurs endemically in KwaZulu-Natal. The close association of domestic dogs and humans in urban populations then predisposes the outbreak spilling over into the human population but, again, as mentioned above, humans in this case will act as dead end hosts. The major concern regarding rabies in the Western Cape is the 'importation' of the domestic canid form of the rabies virus, as has occurred in Johannesburg and surrounds in 2010. This would cause a significant outbreak in exposed, unvaccinated populations of dogs within our borders.

Table 1: Routine and Outbreak associated rabies vaccinations performed by State veterinary officials during 2010

State Veterinarian	Routine Vaccinations		Outbreak Follow Up Vaccinations		Totals
	Dog	Cat	Dog	Cat	
Boland	27815	5214	0	0	33029
George	21701	6238	830	366	29135
Swellendam	5686	1173	0	0	6859
Malmesbury	5303	2072	6	0	7381
Vredendal	437	50	388	61	936
Beaufort West	1808	428	0	0	2236
Totals	**62750**	**15175**	**1224**	**427**	**79576**

The majority of dogs and cats vaccinated by the State against rabies will come from previously disadvantaged communities. Taking dogs from these communities as a case in point: many will have more freedom of movement and access to other dogs than those dogs in affluent areas with greater access control. 'Stray' dogs in disadvantaged areas are thus an important demographic for the State to target. Rabies spread in an outbreak is heavily dependent on contact between infected and naïve animals, so a dog in an enclosed access controlled space with rabies is much less of a risk factor than a free roaming dog. The majority of canine rabies in South Africa occurs in KZN and the Eastern Cape, and movement of dogs from these populations to a naïve "open" population of dogs is a real concern.

The fact that the majority of our rabies cases occur in rural areas in wild animals reiterates the importance of the rural vaccinations performed by State officials.

CONCLUSIONS

In general, the mix the State achieves using rural and urban campaigns, creates a subjectively balanced rabies control strategy. Continued research into the number of vaccinated animals that are required to successfully prevent rabies outbreaks is needed, although work of this nature has been done in KwaZulu-Natal. One of the challenges of this research is estimating base canine populations. One way is linking canine populations to human populations, the latter figures of which can be obtained from STATSSA. There are however many variables which influence the keeping of dogs as pets/work animals which must be taken into account. Western Cape Veterinary services will hopefully be doing some work in the near future focussing on the canine population compared to the human population in Khayelitsha, and use this data to better estimate Provincial canine populations. **EJ**